The analysis of the impact of organizational power on employee productivity at Algerian university hospitals

تحليل اثر القوة التنظيمية على انتاجية الموظفين في المستشفيات الجامعية الجزائرية

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Abstract: The purpose of this study is to investigate the impact of organizational power on employee productivity from a sample of Algerian university hospitals. Principal results indicate that referent power, expert power, information power and reward power are average positive correlated with productivity behavior and productivity ability. Results corresponding to ANOVA and multiple correspondence analysis show that variables from personal information having an impact on productivity are gender and academic qualification. In particular, gender has an impact on both productivity ability and productivity behavior, where academic qualification has only an impact on productivity ability.
Keywords: organizational, productivity, hospitals, university, Algeria

ملخص: الغرض من هذه الدراسة هو دراسة تأثير القوة التنظيمية على إنتاجية الموظفين عبرعينة من المستشفيات الجامعية الجزائرية. تشيراهم النتائج إلى أن القوة المرجعية، قوة الخبرة، قوة المعلومات وقوة المكافأة ترتبط ارتباطا متوسطا موجبا بالسلوك الإنتاجي والقدرة الإنتاجية. تظهر نتائج تحليل التباين والتحليل العاملي المتعدد أن المتغيرات من المعلومات الشخصية التي لها تأثير على الإنتاجية تتمثل في نوع الجنس والمؤهل العلمي. على وجه الخصوص، يؤثر نوع الجنس على كل من القدرة الإنتاجية والسلوك الإنتاجي، فيما يؤثر المؤهل العلمي على القدرة الإنتاجية فقط.
كلمات مفتاحية: تنظيمية، إنتاجية ، مستشفيات، جامعة، الجزائر

Résumé: L'objectif de cette étude est d'étudier l'impact du pouvoir organisationnel sur la productivité des employés à partir d'un échantillon d'hôpitaux universitaires algériens. Les principaux résultats indiquent que le pouvoir de référence, le pouvoir d'expertise, le pouvoir d'information et le pouvoir de récompense sont en moyenne corrélation positive avec le comportement et la capacité de productivité. Les résultats correspondant à l'ANOVA et à l'analyse des correspondances multiples montrent que les variables relatives aux informations personnelles ayant un impact sur la productivité sont le sexe et la degrès académique. En particulier, le sexe a un impact à la fois sur la capacité de productivité et sur le comportement de productivité, où la degès académique n'a qu'un impact sur la capacité de productivité.
Mots-clés: organisationnel, productivité, hôpitaux, université, Algérie

I- Introduction:

Employees' behavior towards their job differs across different levels in an institution which might impact the productivity per worker (Somoye, 2016, pp. 566-573). This latter is influenced by the leader's organizational power variables (French, 1959). Human resources in the hospital including doctors, nurses and the rest of personnel should optimize the final output described in terms of interventions, laboratory examinations, outpatient and inpatient cases, and therefore productivity (Vita, 1990, pp. 1-21). University hospitals in Algeria have many issues in providing various services. Employees of those hospitals including doctors, nurses and the rest of personnel are consuming lots of time in accomplishing the services required by patients (Barbieri, 2014, pp. 1-34). However, the leaders have to come up with new policies which make the power they have more effective to influence and improve employee productivity at university hospitals that are receiving everyday a lot of number of people (IPA, 2017, pp. 8-66).The core problem of this study is that there is insufficient arrangement of organizational power to enhance and develop employees' productivity in Algerian university hospitals. Unfortunately, those latter depended on traditional approach in performing the work and employees are not empowered to develop current systems and processes (Wade, 2003, pp. 33-37). The Aim of this study is to identify the effect of organizational power represented by reward power, coercive power, legitimate power, referent power, expert power and information power, on enhancing employee productivity at university hospitals of Algeria over the period 2017 - 2019. The specific objectives of our study are:

- ✓ To analyze the relationship between organizational power variables and employee productivity at university hospitals of Algeria;
- ✓ To identify the effect of personal characteristics (gender, age, education, years of experience) on productivity at Algerian university hospitals;
- ✓ To identify the appropriate organizational power policy to be implemented by decision-makers to enhance employee productivity in Algerian university hospitals;
- ✓ To rank the efficiency of organizational power variables on enhancing the employee productivity.

The research questions of our study are:

- ✓ What is the effect of organizational power on employee productivity in Algerian university hospitals?
- ✓ What is the level of leader's awareness in Algerian university hospitals of organizational power variables (reward power, coercive power, legitimate power, referent power, expert power, information power)?
- ✓ What are variables of organizational power most influencing employee's productivity in Algerian university hospitals?
- ✓ What is the effect of organizational power on employee productivity based on personal characteristics (gender, age, education, and years of experience)?

II- Methods and Materials

We first adopted a descriptive analytical methodology to assess the effectiveness of organizational power and its effects on enhancing employee productivity at university hospitals of Algeria. This methodology is not limited to the process of describing the research problem, but it includes analyzing, measuring and interpreting the gathered data, in order to address a solution. The study also adopts quantitative research methodology and there is a questionnaire distributed to employees from three university hospitals that are the centre hospitalo-universitaire (CHU) of Mustapha Pacha, CHU of Beni Messous and CHU of Bab El Oued, in order to identify the type of power adopted by managers and its effects to their productivity as well as their perception from their direct manager behavior. The questionnaire consists of 43 questions concerning independent and dependant variables, and it is divided into two sections:

- Section 1: personal information (gender, age, academic qualification, years of experience and occupation);
- Section 2: questions related to the independent variable (organizational power) and questions related to the dependent variable (employee productivity).

Variables were measured using the five-dimensional Likert scale. Since it is not quite practical and synthetic to analyze and describe graphically all questions one by one, we proceeded to variable transformation by redefining the Likert scale point based on intervals as following:

The interval size (IS) of a particular scale is given by the following formula:

$$\text{IS} = 1 - \frac{100\%}{\text{Number dimensions of Likert}}$$

Given that the number of dimensions of Likert = 5;

$$\text{IS} = 1 - \frac{100\%}{5} = 0{,}8$$

This gives us the following table:

Table 1. Likert scale based on intervals

Original Likert scale	Interval scale	Description
1	[1,00 – 1,79]	Strongly disagree
2	[1,80 – 2,59]	Disagree
3	[2,60 – 3,39]	Neutral
4	[3,40 – 4,19]	Agree
5	[4,20 – 5,00]	Strongly agree

Source: Done by the author based on Likert scale transformation procedure

The analysis of the relationship between variables of organizational power and employee productivity was based on scatter plots and correlation coefficients. The analysis of the effect of personal characteristics on productivity was based on the analysis of variance (ANOVA) (Armstrong, 2000, pp. 235-241). To identify the appropriate organizational power policy to be implemented by decision makers, Multiple Correspondence Analysis (MCA) (Johnson, 2007) was applied to rank the efficiency of organizational power variables on enhancing employee productivity.

II.1. Population size

The target population for the study represents university hospitals in Algeria. There are 15 hospitals of this kind distributed across all the country. The sampling unit consists of employees at all administrative and functional levels. Out of 206 550 employees working in all university hospitals overall the country, there are 47 530 employees working in the centre hospitalo-universitaire (CHU) of Mustapha Pacha, CHU of Beni Messous and CHU of Bab El Oued (INSP, 2018).

II.2. Sample size

In order to determine the appropriate sample size, we adopted Yamane's formula (Yamane, 1967, pp. 23-31).

$$n = \frac{N}{1 + N(error)^2}$$

- Where, n = the sample size;
- N = the population size;
- Error = 5%.

By applying the Yamane's formula of sample size with an error of 5%, the calculation from the population of 47 530 employees came up with 405.

II.3. Sample size

The method of purposive sampling was used to develop the sample of the study under discussion. According to this method, which belongs to the category of non-probabilistic sampling techniques (Barreiro, 2001, pp. 144-152), sample members are selected from various departments of Mustapha Pacha, Beni Messous and Bab El Oued CHU's in which they provide direct services to the citizen namely: Neonatology department, Periodontology department, Functional Rehabilitation department, Ophthalmology department, Hepatology department, Diabetology department, Thoracic Surgery department, Gastroenterology department, Surgical Clinic department, Dermatology & Venereology department, Immunology department, Parasitology & Mycology department, Forensic

Medicine department, Neurology & Pathology Department and Oral Surgery department.

II.4. Pilot testing of the questionnaire

Pilot testing of the questionnaire includes checking for validity and checking for reliability.

- **Questionnaire validity**

The questionnaire was analyzed by three specialized academics in human resources management to ensure its validity and its clarity. Also, fifteen questionnaires were randomly distributed to employees of different departments of the CHU of Mustapha Pacha to obtain their feedback. The observations and suggestions of the specialized academics and participants were taken into account in designing the final questionnaire.

- **Questionnaire reliability**

The questionnaire reliability refers to the way of assessing the quality of the measurement procedure used to collect data (Schuerger, 1989, pp. 66-73). The study questionnaire reliability was determined by Cronbach Alpha. The Cronbach Alpha result must be closer to 1 in order to consider the questionnaire as valid (Graham, 2006, pp. 930-944). The reliability test by 22 employees revealed subscale alpha coefficients of 0.961 (96.1%) which is considered an acceptable value.

- **Guttman spilt-half coefficient**

The Guttman spilt-half coefficient is a method to calculate the reliability. The Reliability is calculated by first splitting a test into two halves (Guttman, 1945, pp. 255-282). The Guttman spilt-half coefficient for the questionnaire was 71.1% which is consider acceptable percentage for the questionnaire.

III- <u>Results:</u>

Our sample consists of 405 individuals where 58.2% are males and 41.5% are females. Concerning age, about 88.1% are under 40, 10.4% are between 41 and 50 years and only 1.7% are more than 51 years old. For academic qualification, almost half (44.9%) of individuals of our data set have bachelor degrees where only 10.6% are postgraduate. Concerning years of experience, about 36.8% of employees have an experience between 6 to 10 years, 31.9% less than 5 years, 18.3% between 11 and 15 years and only 13.1% more than 16 years.

In the following tables, we first present descriptive statistics that summarize the level of agreement and the perception of managers concerning organizational power variables at university hospitals of Algeria as well as the general tendency of employees concerning productivity behavior and productivity ability variables.

Table 2. Analysis of questions related to reward power

N°	Reward power	Mean	SD	Order	Level of importance
1	The manager has the power to reward productive employees	2,58	1,32	5	Neutral
2	Rewards are awarded to team work results only, not to individual performance.	2,95	1,23	3	Agree
3	The salaries and rewards meet the satisfaction level of the productive individuals	2,43	1,29	6	Neutral
4	There is harmony in giving rewards to individuals	3,07	1,25	1	Agree
5	The manager motivate the productive employees and promote them according to their performance	3,05	1,40	2	Agree
6	Manager reward the committed employees within the organization	2,95	1,36	4	Agree

Source: Done by the author based on the results of the questionnaire

According to table 2, managers at Algerian university hospitals have shown their agreement with most of reward power questions. In particular, they adopt the idea that:

- Rewards should be given to team work based on results and not on performance;
- There is a harmony in giving rewards to individuals;
- The manager should motivate the productive employees and promote them according to their performance;
- The manager rewards the committed employees within the organization.

Table 3. Analysis of questions related to coercive power

N°	Coercive Power	Mean	SD	Order	Level of importance
7	The manger has the power to punish employees in case of non-compliance to work instructions.	2,45	1,09	5	Neutral

8	The manager punishes the employees if the work assigned to them is not completed	2,69	1,06	4	Neutral
9	The manager forces the employees to follow his/her decisions	2,83	1,12	3	Agree
10	A manager's personality considered as a source of punishment in case his/her decision is not applied	2,97	1,06	2	Agree
11	Punishments are imposed on team results only, and not on individual performance.	3,10	1,25	1	Agree

Source: Done by the author based on the results of the questionnaire

According to table 3, managers at Algerian university hospitals have shown their agreement with most of coercive power questions. In particular, they adopt the idea that:

- The manager should force the employee to follow his/her decisions;
- A manager's personality is considered as a source of punishment in case his/her decision is not applied;
- Punishments are imposed on team results only, and not on individual performance.

Table 4. Analysis of questions related to legitimate power

N°	Legitimate power	Mean	SD	Order	Level of importance
12	The manager executes the works law without flexibility	3,22	1,10	1	Agree
13	The manager uses his or her position to resolve disputes between individuals	2,43	1,14	4	Neutral
14	The manager force employees to follow his/her instructions and decisions due to his work position	2,71	1,14	3	Agree
15	The manager delegate a person to monitor the employees work	3,09	1,26	2	Agree
16	The manager distributes work tasks based on his/her work position	2,25	1,02	6	Neutral
17	The manager has the power to influence and direct the employee’s behaviors toward the work goals.	2,29	1,08	5	Neutral

Source: Done by the author based on the results of the questionnaire

According to table 4, managers at university hospitals have shown their agreement with half of legitimate power questions. In particular, they adopt the idea that the manager should execute the work law without flexibility, force the employee to follow his/her instructions and decisions due to his/ her work position and delegate a person to monitor the employees work.

Table 5. Analysis of questions related to referent power

N°	Referent power	Mean	SD	Order	Level of importance
18	There is discussion with relevant employees before taking decision	2,12	1,09	3	Neutral
19	We depend on experience employees to solve problems	1,98	0,99	4	Neutral
20	Trying to invest my relationships to achieve the organization goals.	1,90	0,89	5	Neutral
21	I have the ability to influence others in their decisions	2,32	0,93	2	Agree
22	Use social media to enhance a good organization reputation	2,44	1,16	1	Agree

Source: Done by the author based on the results of the questionnaire

According to table 5, managers at Algerian university hospitals have shown their agreement with just two referent power questions, where they adopt the idea that:

- Managers have the ability to influence others in their decisions;
- Managers should use social media to enhance a good organization reputation.

Table 6. Analysis of questions related to expert power

N°	Expert Power	Mean	SD	Order	Level of importance
23	The manager has extensive experience in the organization	1,98	1,00	4	Agree
24	The job occupied by the manager requires diverse knowledge of work activities	1,71	0,82	6	Neutral
25	The manager can influence employees by his cumulative experience	1,92	1,00	5	Neutral
26	The manager can influence employees by his experience	1,99	0,93	3	Agree
27	The manager can resolve work problems through his/her work experiences	2,00	0,90	2	Agree

28	The manager can distinguish between productive and non-productive ideas through his experience	2,19	0,92	1	Agree

Source: Done by the author based on the results of the questionnaire

According to table 6, managers at Algerian university hospitals have shown their agreement with most of expert power questions. In particular, they adopt the idea that:

- The manager should have an extensive experience in the organization;
- The manager can influence employees by his/her experience;
- The manager can resolve work problems through his/her work experiences;
- The manager can distinguish between productive and non-productive ideas through his/her experience.

Table 7. Analysis of questions related to information power

N°	Information Power	Mean	SD	Order	Level of importance
29	The manager has the ability to interpret the information flows	2,18	0,92	1	Agree
30	The information that the manger has, contributes to increasing the manager's power	1,86	0,87	5	Neutral
31	The manager has the ability to persuade by having the required information's	2,05	0,96	4	Neutral
32	The manager can solve problems through his ability to interpret the data	2,14	0,89	2	Agree
33	The manager works to develop social relationship in order to increase information flow	2,14	0,99	3	Agree

Source: Done by the author based on the results of the questionnaire

According to table 7, managers at Algerian university hospitals have shown their agreement with most of information power questions. In particular, they adopt the idea that the manager has the ability to interpret the information flows, can solve problems through his/her ability to interpret the data and works to develop social relationship in order to increase information flow.

Table 8. Analysis of questions related to productivity behavior

N°	Productivity behavior	Mean	SD	Order	Level of importance
34	I am delighted enough authority to make particular decisions	2,30	0,97	1	Agree
35	I have courage and enthusiasm to do more productive works	1,86	0,76	2	Neutral
36	I have the desire to make suggestions to develop new working methods	1,76	0,79	4	Neutral
37	Support my colleagues at work to be more productive	1,68	0,77	5	Neutral
38	I have confidence to express my ideas and suggestion	1,79	0,82	3	Neutral

Source: Done by the author based on the results of the questionnaire

According to table 8, most employees have shown their agreement that being delighted enough authority to make particular decisions can strongly improve productivity behavior at university hospitals in Algeria.

Table 9. Analysis of questions related to productivity ability

N°	Productivity ability	Mean	SD	Order	Level of importance
39	Achieving the work assigned to me with great efficiency	1,62	0,74	5	Neutral
40	I have the ability to present ideas to improve working methods	1,75	0,74	4	Neutral
41	I have the ability to find new solutions to work problem	1,78	0,72	3	Neutral
42	I ensure that changes in work methods occur from time to time	1,95	0,81	2	Agree
43	I have the ability to see through the problems faced by others at work	2,02	0,87	1	Agree

Source: Done by the author based on the results of the questionnaire

According to table 9, most employees have shown their agreement that ensuring changes in work methods and being able to see through problems faced by others at work can strongly improve productivity ability at university hospitals

in Algeria. Based on variable transformation as well as interval scales presented in table 1, we present the following results concerning independent variables:

Table 10. Frequency table for independent variables based on interval scales

	Reward power		**Coercive power**		**Legitimate power**		**Referent power**		**Expert power**		**Information power**	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Strongly disagree	61	15 %	31	8%	25	6%	110	27 %	159	39 %	121	30 %
Disagree	112	28 %	111	27 %	165	41 %	181	45 %	184	45 %	185	46 %
Neutral	109	27 %	167	41 %	174	43 %	88	22 %	46	11 %	80	20 %
Agree	92	23 %	80	20 %	36	9%	18	4%	10	2%	12	3%
Strongly agree	31	8%	16	4%	5	1%	8	2%	6	1%	7	2%

Source: Done by the author based on the results of the questionnaire

According to table 10, we notice that:

- About 31% of individuals agree with statements concerning reward power;
- About 24% of individuals agree with statements concerning coercive power;
- About 10% of individuals agree with statements concerning legitimate poser;
- Only 6% of individuals agree with statements concerning referent power;
- Only 3% of individuals agree with statements concerning expert power and;
- Only 5% of individuals agree with statements concerning information power.

Based on variable transformation as well as interval scales presented in table 1, we present the following results concerning dependant variables:

Table 11. Frequency table for dependent variables based on interval scales measures

	Productivity behavior		**Productivity ability**	
	Frequency	%	Frequency	%
Strongly disagree	161	39,75%	166	40,99%
Disagree	200	49,38%	196	48,40%
Neutral	35	8,64%	37	9,14%
Agree	7	1,73%	4	0,99%
Strongly agree	2	0,49%	2	0,49%

Source: Done by the author based on the results of the questionnaire

According to table 11, we notice very low rates of employees who showed their agreement with statements concerning productivity behavior and productivity ability. Also,there is a non apparent strong relationship between variables corresponding to organizational power and employee productivity at Algerian university hospitals. However, this can be checked based on correlation coefficients presented in table 12.

Table 12. Correlation coefficients between variables

Variables	**Productivity behavior**	**Productivity ability**
Reward power	**0,2202**	**0,1799**
Coercive power	0,0792	0,0748
Legitimate power	0,0887	0,0818
Referent power	**0,3999**	**0,3819**
Expert power	**0,3698**	**0,2704**
Information power	**0,4161**	**0,2380**

Source: Done by the author using SPSS

Correlation coefficients corresponding to "Referent power", "Expert power", "Information power" and "Reward power" indicate quite average positive correlation with "Productivity behavior" and "Productivity ability".

Results of ANOVA for the analysis of the effect of personal characteristics on productivity for different combinations are presented in table 13.

Table 13. ANOVA results

Personal information	**Productivity**	**F statistic**	**Probability**
Gender	Productivity ability	6,557	**0,011**
	Productivity behavior	5,153	**0,024**
Age	Productivity ability	0,228	0,877
	Productivity behavior	1,347	0,259
Academic Qualification	Productivity ability	3,244	**0,022**
	Productivity behavior	0,587	0,624
Years of Experience	Productivity ability	0,776	0,508

	Productivity behavior	1,405	0,241
Occupation	Productivity ability	0,003	0,955
	Productivity behavior	0,003	0,957

Source: Done by the author using SPSS

At 5% level of significance, variables from personal information that have an impact on productivity are "Gender" and "Academic Qualification" (Probability < 5%). In particular, "Gender" has an impact on both "Productivity ability" and "Productivity behavior", where "Academic Qualification" has only an impact on "Productivity ability".

Principal results of multiple correspondence analysis (MCA) based on significant statistical test values corresponding to organizational power and employee productivity are presented in table 14.

Table 14: Principal test values issued from MCA output

Variables	Test value	Significance
- Productivity - Information power	**4,8631** **5,6692**	Significant
- Productivity - Referent power	**4,8631** **4,0824**	Significant
- Productivity - Expert power	**4,8631** **6,3477**	Significant
- Productivity - Reward power	**4,8631** **6,0482**	Significant
- Productivity - Legitimate power	**4,8631** **3,2583**	Less significant
- Productivity - Coercive power	**4,8631** **2,3277**	Less significant

Source: Done by the author using SPSS

According to table 14, we notice that information power, referent power, expert power and reward power, with this ranking, are variables that have significant impact and dependence to employee productivity.

IV- Conclusion:

The questionnaire that we had consists of 43 questions concerning independent and dependant variables. Since it is not quite practical and synthetic to analyze and describe graphically all those questions one by one, we proceeded to variable transformation. This latter consists of estimating representative

answers to a particular variable based on averaging answers concerning questions of that variable.

Although managers have shown agreement disparities concerning organizational power variables, some ideas are considerably adopted at the level of Algerian university hospitals. In this context, managers agree that rewards should be distributed to employees with a certain harmony based on results, where the promotion of individuals should be based on performance. Also, managers should have a strong personality to force employees to follow his/her decisions. They strongly agree that executing the work law without flexibility and monitoring employees work have positive impact on productivity. In order to control all that, managers need to have an extensive experience in the organization, can distinguish between productive and non-productive ideas, have the ability to interpret information flows and data, and work to develop social relationships inside the organization. On the other side, being delighted enough authority to make particular decisions, ensuring changes in work methods and being able to see through problems faced by others at work can strongly improve productivity at university hospitals from employees' point of view.

Throughout this paper, we could show links existing between organizational power and employee productivity at university hospitals of Algeria. According to our previous statistical analysis, the effect of organizational power on employee productivity is quite variable. Referent power, expert power, information power and reward power have positive effect on productivity. This means that an increase in one of those variables will cause an increase in employee productivity at university hospitals of Algeria. The other variables corresponding to legitimate power and coercive power don’t have a statistically significant effect and their influence on employee productivity is very weak. In other words, the efficiency of organizational power variables on enhancing employee productivity is ranked according to their degree of dependence and influence as the following: information power, referent power, expert power, reward power, legitimate power and coercive power.

Concerning the level of leader’s awareness of organizational power variables, despite the fact that many variables appeared to have a positive impact on productivity, we noticed a very weak agreement with this by managers. This reflects the weak level of awareness in leader’s Algerian university hospitals of organizational power variables. Variables from personal information that have an impact on productivity are “gender” and “academic qualification”. In particular, “gender” has an impact on both “productivity ability” and “productivity behavior”, where “academic qualification” has only an impact on “productivity ability”.

At the end, we can say that an appropriate organizational power policy should take into account all the above mentioned facts in order to enhance employee productivity at university hospitals of Algeria.

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