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ICT appropriation, working conditions and hospital performance in the Cameroonian context

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Abstract

The aim of this research is to show the influence of working conditions in the relationship between the appropriation of ICT and hospital performance in Cameroon. To achieve this goal, a field survey was conducted with a valid random sample of 479 workers from first and second category public hospitals in Cameroon. The data collected were subjected to descriptive and econometric analyzes. The results of inferential analyzes carried out by means of multiple linear regression show that working conditions in hospitals in Cameroon play a mediating role in the relationship between each of the two dimensions of ICT appropriation, which are perceived utility, perceived ease of use and hospital performance. These results, discussed from the perspective of Berbain and Minvielle (2001), Picard (2007), Venkatraman and Camillus (1984) and theorists of the school of human relations such as Emery and Trist (1968), Herzberg (1959) and Mayo (1949), suggest to managers of hospital structures to: ensure the adequacy between work and the physical and psychological capacities of human resources, take care of the quality of their relations with the hierarchy, ensure their comfort and physical security and finally, provide them with stimulating remuneration in order to optimize hospital performance

Keywords: ICT appropriation, Perceived usefulness, Perceived usability, Working conditions, Hospital performance.

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1. Introduction

For the past decade in Cameroon, as in other African countries, there has been a real craze in the use of information and communication technologies. In the hospital sector, for example, Ndongo et al. (2010) observes that Cameroonian public hospitals have made changes in their operational environment through the introduction of ICT in their daily operations after years of hesitation due to insufficient funding from the State. One of these changes relates to the adoption and use of medical technologies in various aspects of hospital management, particularly hospital information systems (HIS). These are integrated information support systems (medical sensors, scanners, expert systems, patent registration management) set up in most hospitals in order to integrate and provide rapid information. regarding the functioning of patient services, clinics, accessories, legal, financial and other administrative matters (Jouët., 2010).

To this end, several Cameroonian public hospitals have developed partnerships with university institutions and large hospitals in foreign countries, in order to deploy ICT tools and applications for health services. These systems should make it possible in particular to improve the management and processing of clinical information

produced within the maternity unit; the management of essential medicines and medical consumables as well as for accounting; patient and antiretroviral management; management of the blood bank; queue management and biometrics (Ndongo et al. 2010).

However, despite the enthusiasm that seems to be observed among hospital users, the expected impact of ICT on hospital health systems remains mixed globally (Millerand, 2008). The integration of these innovations in these hospitals does not seem to produce the expected results, despite the considerable sums granted by governments in the implementation of these Bagayoko projects (2010). How then can we understand that there is a kind of enthusiasm for the use of ICT, but that the results do not follow? Banallah (2019) considers that the poor performance observed in organizations in general and health structures in particular is generally due to the unfavourable working conditions. In a report made in 2019, she noted that health personnel are very exposed to certain forms of arduousness inherent in care missions and which do not allow personnel to offer the full potential that is within them.

On the strength of all of the above, the question guiding this research is that of knowing whether working conditions do not play a mediating role in the relationship between the appropriation of ICT and hospital performance in Cameroon. Thus, the objective of this research is to show the influence of working conditions in the relationship between the appropriation of ICT (through the two dimensions of perceived utility and ease of use) and performance hospital in Cameroon. To achieve this, this article first presents a selective review of the literature followed by the methodology, then the results of the descriptive and inferential analyzes and finally the discussion.

2. Review of the literature

In this section, we will discuss a theoretical and empirical review on the relationship between the perceived usefulness and ease of use of ICT and hospital performance.

2.1. Perceived utility and perceived ease of use as dimensions of ICT appropriation

Pelletier and Moreau (2008) define the appropriation of a technology as the ability of the user to personalize the uses of the technological object for purposes that seem most profitable to him. According to these authors, for the appropriation of a technology by a human agent to be effective, there must be a cognitive and technical mastery of this technology or of the technical device. The human agent must also integrate the use of this technology into his daily experience. Thus, use and adoption become major determinants of ICT ownership and therefore of perceived utility and perceived ease of use. Then, Several authors have mobilized the two concepts as particularly linked to the intention and behavior of the use of ICT (Agarwal and Prasad, 1997 ; Davis and Venkatesh, 1996) ; even if by judging them insufficient Agarwal and Karahanna (2000), then Pelletier and Moreau (2008) associated the dimension of cognitive absorption. According to Davis, Bagozzi and Warshaw (1989), the perceived utility and the perceived ease of use seem sufficient to reflect the appropriation of ICT. Thus, following these authors, only these last two dimensions of appropriation will be studied in this article.

Perceived usefulness is defined as the degree to which a person believes that using a system will improve their performance. Perception of usability refers to the degree to which a person believes that the use of a system will be devoid of particular efforts. According to the theory of reasoned action, the technology acceptance model postulates that the use of an information system is determined by behavioral intention. However, it does stipulate that this intention is determined jointly by the person's attitude towards the use of the system and the perception of utility. Thus, according to Davis, Bagozzi and Warshaw (1989), the general attitude of the individual towards the system is not the only thing that determines usage, but can be based on the impact it will have on his performance. Therefore, even if an employee does not like a system, he is likely to use it if he perceives it to improve his performance at work. Furthermore, the technology acceptance model stipulates a direct link between the perception of usefulness and the perception of ease of use.

Regarding the perception of ease of use, Davis, Bagozzi and Warshaw (1989) believe that it would also significantly influence an individual's attitude, and this through two main mechanisms: self-efficacy and

instrumentality. Indeed, according to the theory of Bandura (1986) cited by Pelletier and Moreau, 2008), the feeling of personal effectiveness with regard to technologies refers to the perception of an individual as to his current and future skills to use. these in the accomplishment of its task. The easier a system is to use, the more self-effective the user will be. Likewise, the ease of use of a tool would also give the user the feeling of having control over what he does (Lepper, 1985). For the author, efficiency is one of the main factors underlying intrinsic motivation and this is what illustrates here the direct link between the perception of ease of use and attitude. Perceived ease of use can also be instrumental in improving performance. Indeed, the effort saved thanks to the ease of use, can be redistributed to accomplish more work with the same effort (Davis, Bagozzi and Warshaw, 1989).

2.2. The concept of hospital performance

The concept of performance management is increasingly shared by managers in organizations. In an even more aggressive environment due to globalization and market integration, performance management is integrated as a culture which aims to ensure the development and sustainability of the organization (Kutche, 2019). According to this author, performance is expressed by three concomitant elements, namely efficiency, which measures the qualitative and quantitative degree of achievement of results ; the efficiency which reflects the optimization of the resources mobilized to achieve the results and the relevance which translates the adequacy between the quantitative and qualitative means implemented to achieve the objectives set. However, it is not always easy to grasp this reality in the hospital sector subject to public service contingencies (Le Pogam, Luangsay-Catelin and Notebaert, 2009). Thus, several models' for assessing hospital performance exist throughout the literature with diversified measurement indicators, notably: one-dimensional models of performance and multi-dimensional models. As part of our study we will focus on multidimensional models' trough four approaches:

The "Performance Assessment Tool for Quality Improvement in Hospitals (PATH)" model is developed by WHO. In a 2008 WHO report, Smith, Mossialos and Papanicolas (2008) recommended a number of measures to improve the performance of health systems including the state of health provided by the health system, the ability to react to the preferences of the population, the financial protection offered by the system and the productivity of the latter.

The integrative model is based on Parsons' (1977) social system theory and allows adaptation to different contexts, including that of the hospital. This model assumes that for an organization to be efficient, in this case the hospital, it must maintain four functions: i) the function of adaptation to the environment, ii) the function of achieving goals, iii) the function of integrating internal processes to produce. This approach has inspired practitioners of *the global and integral evaluation model of the performance of health services, or EGIPSS model* (Sicotte et al., 1998). According to this model, any organization must perform four essential functions: achieving goals, adapting, producing and maintaining values. According to the author of this theory, these functions coexist at all times and in all human organizations. The performance of the organization would be closely linked with its capacity to maintain a balance between the dynamic tensions presented by the challenges associated with the relationships between each function and the others.

The quality and overall performance model of Donabedian (1985) has the advantage of giving different dimensions to performance, but focusing on the quality of care, which can be defined by technical quality, but also by interpersonal quality between the caregiver and the neat. The author proposes four levels of evaluation : the quality of care provided by the nursing staff (evaluated from its technical and relational angles), the quality of the patient's reception infrastructure, the benefit provided to patients and their families and the quality of the care service at the level of a territory (accessibility, continuity, coordination).

These different models of hospital performance assessment will give rise to a proliferation of performance measurement indicators throughout the literature.: Williams et al. (2016) for example, used data from the Society for Health Management Information Systems and the Center for Medicare and Medicaid to assess 1,039 hospitals. They used indicators of quality measurement, hospital readmission and mortality rate. In their study on the evaluation of the performance of social security hospitals through the PATH, Asefzadeh et al. (2018) prioritized the dimensions of safety, patient-centered, clinical effectiveness, responsible governance, staff and efficiency. According to the results of their study, only 20% of the indicators in the PATH framework are evaluated and these indicators are linked to clinical performance and the clinical efficiency of hospital operations.

Cinaroglu and Baser (2018) explored the relationship between effectiveness and health outcome indicators with regard to the level of development and geographic region of 81 provinces in Turkey using the PATH framework. In their study, the number of hospitals and doctors is used as an indicator of accessibility to health services, while the average length of stay and the number of surgical operations are used as indicators of use. Life expectancy and overall satisfaction with health services are determined as outcome measures.

More recently, to assess the effectiveness of hospitals, Hatefi and Haeri (2019) combined the balanced scorecard to determine performance indicators in hospitals and the data envelopment analysis to assess the efficiency score of hospitals. hospitals. The results of their study showed that the use of dashboard measures in four dimensions: customer, finance, internal processes, growth and innovation reflects the general strategic objectives of hospitals in the performance evaluation process. In addition, the application of BSC methods and data envelopment analysis provides a comprehensive tool for assessing hospital performance and helps decision makers to obtain more precise planning to increase the capacity of health services and minimize the resources.

As can be seen, two categories of indicators for measuring hospital performance have been identified in the literature. These are clinical indicators and non-clinical indicators. Among these indicators, three were chosen in this study: patient satisfaction, staff satisfaction and the quality of clinical services.

2.3. Mediation of working conditions in the link between the appropriation of ICT and hospital performance

The link between ICT appropriation and hospital performance has been the subject of numerous studies. Picard (2007) for example has shown that ICT skills in health are an essential lever on which we must act, to allow the implementation of ICT tools and applications and ensure their proper use within health and medico-social structures. According to him, the considerable development of medical knowledge, which must be accompanied by immediate dissemination to professionals to better care for patients, requires increasing recourse to improving working conditions. This position joins that of Lamy & al. (2013) for whom an employee who perceives the usefulness of a technology and is trained for its use is more efficient when his working conditions are better.

In a study carried out in 2010, Falise-Mirat, Alain, Billebot and Le Gloan established a positive link between perceived utility and ease of use and hospital performance. The performance indicators used were: the quality of the service rendered to the population, the responsiveness of organizations and the equity of funding. They conclude their study by indicating that information and communication technologies (ICT) are the preferred instrument, with more major potential to support the transformation of the health system. However, they believe that despite its demonstrated impact on the quality of care and accessibility, this lever remains little used, no doubt because of the difficulty in understanding the economic impact of investments in ICT, in particular the complexity of the distribution the gains generated and the working conditions of the users.

From another point of view, Berbain and Minvielle (2001) have shown that although the use of ICT in care units is a key factor in improving the quality of patient care, several health stakeholders have reservations as to their real contribution in daily work. For these authors, apart from technical failures, it is the ease of use and the ability of ICT to provide a solution to the organization of care which are poorly perceived by health professionals. They therefore recommend, the implementation with healthcare professionals, training mechanisms, with a view to acquiring the skills necessary to use ICT tools and applications in their daily activities. Following in their footsteps, Mukuna (2016) has shown that the appropriation of ICT has a positive impact on the performance of hospitals using ICT in their operations. According to this author, the adoption of a good data management system and better conditions for the use of computers, telephones and internet facilities contribute positively to the performance of hospitals. As for Zedini, Ben Cheikh et al. (2017), they believe that the appropriation of ICTs can only produce the optimal expected impact if employees work in an environment that promotes their full motivation. Based on the theory of two factors of Herzberg (1959), they present the working conditions of hospital staff as a major determinant of their motivation and therefore of their performance. Their study of a sample of 337 paramedics showed that working conditions influence hospital performance

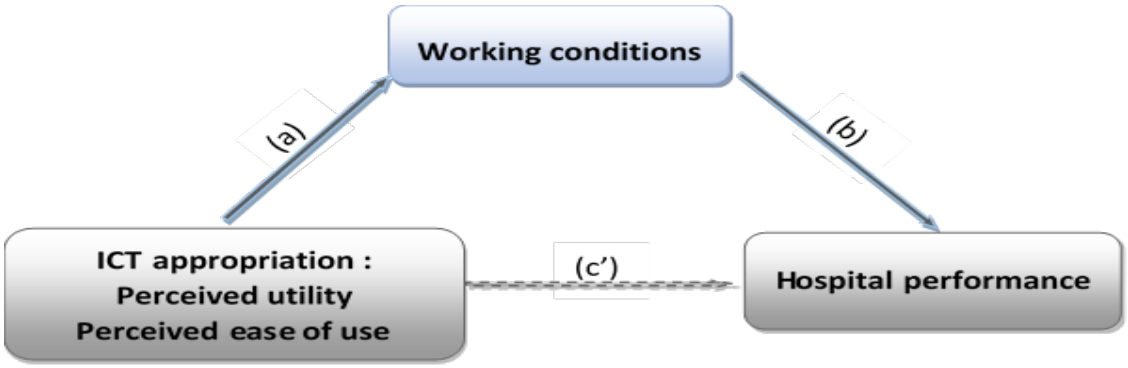
In view of this literature, the general hypothesis of this study is structured as follows: *Working conditions have a mediating role in the relationship between the appropriation of ICT and hospital performance in Cameroon.*

From this general hypothesis, two specific research hypotheses emerge, namely:

- H1: The relationship between the perceived usefulness of ICT and hospital performance in Cameroon is mediated by working conditions

- H2: Working conditions mediate the relationship between the perceived ease of use of ICT and hospital performance in Cameroon

Figure 1: Illustration of the mediation of working conditions



Source: Authors

3. Methodology

This section is devoted to the presentation of the sampling method, the data collection method, the variables and measuring instruments and finally the results analysis tools.

3.1. Sample and data collection

The simple random sampling method is used. The methodological approach being based on quantitative research, the data were collected through questionnaires designed on the Likert model with 5 intensity levels (from : strongly disagree (1) to totally agree (5)). According to information produced by the Ministry of Health as part of the development of the sectoral health strategy, the number of health personnel in 2019 was estimated at around 38,207 individuals, including 25,183 in the public (66%) and 13,024 (34%) in the private sector. The minimum sample size was found using Survey Monkey 2019 software, with a chosen confidence level of 95% and a margin of error of 5% as it is usually practiced in studies in management sciences. The result gives a minimum size of 381 individuals. Out of a total of 540 questionnaires distributed in 13 public hospitals of the first and second category and assimilated (3 in Douala, 9 in Yaoundé and 1 in Sangmélima) and 17 private hospitals (1 in Sangmélima, 6 in Douala and 10 in Yaoundé), 512 questionnaires are returned filled at a rate of 94.81%. The flat sorting made it possible to purify these questionnaires by rejecting those whose all questions were not answered as well as those whose certain pages were non-existent or illegible. Finally, the number of valid questionnaires retained is 479, representing a satisfactory response rate of 88.70%.

3.2. Data analysis method

The frequency analysis and the hypothesis test are preceded by an analysis of the internal reliability and the quality of the measurement scales. Internal consistency is analyzed using the Cronbach's Alpha test (α). To have a satisfactory internal consistency, we have retained the minimum threshold of 0.7. The Factor Analysis of Multiple Correspondences (AFCM) is used to determine the factor axes with good psychometric properties. The average of the total variance represented is particularly observed and the factors retained are those whose average is at least equal to 50%. Frequency analysis is used to measure the level of perception of the perceived usefulness and usability of ICT by hospital staff, as well as the level of hospital performance perceived by users and patients. Items with an average rating of less than four (4), representing the rating "agree" on the Likert scale, will be considered to be precocious. The same procedure will be used to measure the level of hospital performance. Items with an average response frequency less than or equal to 4 on the Likert scale indicate an

insufficient level of performance while means greater than or equal to 4 indicate a satisfactory level of performance. The inferential analysis will be done through simple linear regression.

The mediator effect is measured using multiple linear regression. The approach used is that of Baron and Kenny (1986), which has the advantage of being clear and rigorous. It comprises a series of four successive tests to test the mediating effect of a variable XM in the process of impact of the independent variable XP on the dependent variable Y (Figure 1).

Step 1 : Show that the link between the independent variable XP on the dependent variable Y is significant in order to ensure the existence of an impact to be publicized. In the regression of Y on XP, the regression coefficient (c) must therefore be significant (Student's Test $t > 1.96$; $p = 0.05$).
Step 2 : Show that the independent variable XP has a significant impact on the mediating variable XM then considered as a variable to be explained in a regression analysis of XM on XP. The regression coefficient (a) must be significant.
Step 3 : Show that the link between the mediating variable XM and the dependent variable Y is significant. It's a regression of Y on both XM and XP. When controlling XP, the regression coefficient (b) between XM and Y must remain significant.
Step 4 : To establish the existence of complete mediation by XM, the coefficient (c ') linking XP and Y become zero, by controlling XM. It is a question of verifying that c '= 0 in the presence of XM, otherwise the mediation is partial. In order to ensure the significance of the mediating effect and to verify that the coefficients (a) and (b), Kenny et al. (1998) recommend the use of the Sobel test (1996).

3.3. Study variables and measurement instruments

Perceived usefulness is apprehended using 5 items inspired by the adjusted scale of Belanche et al. (2012), Tsoni (2015), and Alharbi and Drew (2014). The factorial structure after cleaning the scales under SPSS 23 shows that 4 items have satisfactory psychometric qualities and capture 69.55% of the average of the total variance represented (Using the HIS to perform my task increased my productivity, The use of SIH optimizes the achievement in my tasks, The use of SIH improves my efficiency in my daily work, I found in the use of SIH, an answer to my professional needs). The internal consistency is very satisfactory with a meritorious Cronbach's Alpha coefficient $\alpha = 0.85$).

Perceived usability is measured using a total of 5 items inspired by the scales of Melas et al. (2011) and Tsoni (2015). The factorial structure after purification made it possible to retain the 4 items which capture 70.94% of the average of the total variance represented (Overall, I found that the HIS was easy to use to perform my task, The HIS is easy to operate / execute: My interaction with the HIS to perform my task was clear and understandable, Learning to use the HIS to perform my task was easy). Internal reliability is satisfactory with a meritorious Cronbach's Alpha coefficient $\alpha = 0.86$).

The measurement of hospital performance takes into account the 18 items recommended by Cleven et al. (2016), Deniz et al. (2017) and Shaukat et al. (2013). The factor analysis made it possible after three (3) iterations, to retain 8 items with sufficient psychometric qualities to express the overall hospital performance. These items capture 66.57% of the average of the total variance represented. (Our hospital has short wait times ; Our hospital has a short stay; Our patients feel sufficiently informed about their treatment process; Our patients appreciate the simple processes / procedures and the short wait times in our hospital ; Our hospital has a higher level of patient satisfaction; staff satisfaction is high; The level of organizational commitment of staff is high; I believe I am achieving the desired results). The internal reliability of the items on this scale is indicated by a meritorious Cronbach's Alpha of 0.92.

To measure living conditions at work, a total of 18 items inspired by the diagnostic method of ANACT (2002), Bouville (2009) and Kutche (2019) were used. The factor structure after purification made it possible to retain three (03) items for the physical workload (My work is physically strenuous; My workload is enormous; The work rate is very high), three (03) for the load mental work (I have the pressure of the objectives; My relations with the hierarchy are good; My work is very risky) and four (04) for the work environment (My work environment is comfortable; My work environment is pleasant; I am safe in my work; I have at my disposal the essentials to be comfortable). All of these items capture 67.32% of the total variance represented and show good internal consistency with a Cronbach's Alpha of 0.82.

Table 1: AFCM summary of measurements of the different variables

Variables	Number of items	% of average of total variance represented	Cronbach's Alpha
Perceived usability	4	70,94	0,86
Perceived usefulness	4	69,55	0,85
Hospital performance	8	66,57	0,92

4. Results

This section contains the results of the descriptive analysis on the one hand and those of the inferential analysis on the other.

4.1. Testing the level of appropriation of ICT and the level of performance perceived by hospital staff

Descriptive analyzes indicate that, in general, the level of appropriation of ICT in the hospital structures concerned by the study is quite low in Cameroon, as is the level of hospital performance.

Table 2 : Results of the descriptive analysis of ICT appropriation and Hospital performance

		Perceived usability	Perceived usefulness	Hospital performance
N	Valid	479	479	479
	Missing	13	13	13
Average		3,80	3,58	3,7521
Standar deviation		,490	,644	,60274
Variance		,240	,415	,363
Sum		1820	1715	1797,25

When we observe this Table 2, we can see that on the Likert scale with 5 modalities ranging from strongly disagree to totally agree, the frequency of responses is 3.81 for the perceived ease of use with a standard deviation of 0.474. The perceived utility has an average frequency of 2.98 and the standard deviation of 0.649. Hospital performance indicates an average frequency of 3.75 and standard deviation of 0.602. All these frequencies are below 4 on the likert scale and reflect a poor perception of ICT appropriation and hospital performance. Hospital staff therefore do not seem to see the usefulness of ICT well, but they also seem to have difficulty using it. The level of hospital performance below 4 seems to reflect a level of satisfaction of staff and patients as well as a clinical quality still very low

4.2. The mediating role of working conditions

The mediating role of working conditions is verified according to the four stages recommended by Baron and Kenny (1986). Simple linear regression is used for the first two steps while multiple regression is used for the last two.

Step 1 : Test of the effect of ICT appropriation on hospital performance

The results of this first analysis indicate that each of the two dimensions of ICT appropriation positively and significantly influences hospital performance.

Table 3 : Model Summary of ICT appropriation regression on Hospital performance

Model Summary[c]

Model	R	R Square	Adjusted R square	Std Error of the Estimate	Change Statistiques					Durbin-Watson
					R Square Change	F Change	dl1	dl2	Sig. F Change	
1	,676[a]	,457	,456	,44468	,457	401,197	1	477	,000	1,794
2	,656[a]	,430	,429	,45548	,430	360,042	1	477	,000	2,274

a. Predictors : (Constante), Perceived utility
b. Predictors : (Constante), Perceived easy of use
c. Dependant Variable : Hospital performance

Table 3 presents a coefficient of determination R^2 of 0.457 for the regression of the perceived utility on hospital performance, 0.459 for the regression of the perceived ease of use on hospital performance, i.e. a contribution of these variables to the explanation variability in hospital performance of 45.7% and 45.9%. The variation of F associated with R^2 is very significant for the two models with $p \leq 0.001$. The analysis of the coefficients also shows that each dimension of ICT appropriation has a positive and significant effect on hospital performance (standardized beta of 0.676 and 0.677 respectively). Student's t test associated with the beta coefficient is positive and very significant for each of the two regression models with $p \leq 0.001$. Based on these results, it can be concluded that the perceived usefulness and ease of use of ICT by hospital staff has a positive and significant effect on hospital performance.

Step 2 : Test of the influence of ICT appropriation on working conditions

The results of this second analysis indicate that each independent variable positively and significantly influences working conditions. The coefficient of determination R^2 is 0.507 for the regression of the perceived utility on working conditions and 0.449 for the regression of the perceived ease of use on working conditions, i.e. a contribution of these variables to the explanation of variability in hospital performance of 50.7% and 44.9% respectively. The variation of F associated with R^2 is very significant for all three models with $p \leq 0.001$. Analysis of the beta regression coefficients shows that each dimension of ICT appropriation has a positive and significant effect with hospital performance (standardized beta = 0.676 and 0.677 respectively). The Student's t test associated with the Beta coefficient is positive and very significant for each of the two regression models ($p \leq 0.001$). Based on these results, it can be concluded that the perceived usefulness and ease of use of ICT in hospital staff has a positive and significant effect on the working conditions of hospital staff.

Step 3 : Test of the effect of working conditions on the relationship between ICT appropriation and hospital performance

Step 3 of Baron and Kenny's (1986) approach tests the link between the perceived usefulness and ease of use of ICT and hospital performance by associating the mediating variable (working conditions) with it. For clarity, it was preferred, the presentation of the results according to the two research hypotheses.

- ✓ ***Mediating role of working conditions in the relationship between the perceived usefulness of ICT and hospital performance (Hypothesis HR1)***

The results obtained (Table 4) show that perceived utility positively and significantly influences hospital performance when working conditions are associated with it (Beta = 0.136; Student's T = 4.092). Similarly, working conditions have an effect on hospital performance when perceived utility is controlled (Beta = 0.759; Student's T = 22.838).

Table 4 : Parameters of the regression model of perceived utility on hospital performance

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	t	Sig..
		B	Std. Error	Beta		
1	(Constant)	,438	,092		4,769	,000
	Perceived utility	,127	,031	,136	4,092	,000
	Working conditions	,781	,034	,759	22,838	,000

a. Dependant variable : Hospital performance

Furthermore, the model's adjustment indices are very satisfactory with R = 0.861, for R^2 = 0.741 and a very significant variation in F at $p \leq 0.001$. On the basis of these results, it can be concluded that working conditions do play a mediating role in the relationship between perceived usefulness and hospital performance and the HR1 hypothesis is verified.

- ✓ ***Mediating role of working conditions in the relationship between the perceived ease of use of ICT and hospital performance (Hypothesis HR2)***

The results presented in Table 5 shows that the perceived ease of use positively influences hospital performance when it is associated with working conditions (Beta = 0.189; Student's T = 6.147).

Table 5 : Parameters of the regression model of perceived easy of use on hospital performance

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,122	,109		1,117	,265
	Perceived easy of use	,233	,038	,189	6,147	,000
	Working conditions	,750	,032	,729	23,671	,000

a. Dependant variable : Hospital performance

Similarly, working conditions in turn influence hospital performance when the perceived ease of use is controlled (Beta = 0.729; Student's T = 23.67). On the other hand, the model adjustment indices are very satisfactory with R = 0.867, for R^2 = 0.751 and a very significant variation in F ($p \leq 0.001$). Based on these results, it can be concluded that working conditions have a mediating role in the relationship between perceived ease of use and hospital performance. Thus, hypothesis HR2 is verified.

Step 4 : Verification of the partial or complete nature of the mediation of working conditions and Sobel test

This last step in Baron and Kenny's approach makes it possible to verify the partial or complete nature of mediation by examining the significance of the direct links between the appropriation of ICT and hospital performance. However, it is necessary to ensure the significance of the mediating effect of working conditions through the Sobel test.

- ✓ ***Partial or complete nature of the mediation of working conditions in the relationship between perceived usefulness and hospital performance***

Table 4 shows that the predictive power of perceived utility on hospital performance is weak although still significant (Beta = 0.136; $p \leq 0.001$) after the introduction of the mediator variable when it was very strong during the first step in Baron and Kenny's approach (Beta was 0.676). Thus, the mediating role of working conditions in the relationship between perceived usefulness and hospital performance is partial. The Sobel test was carried out to test the significance of this mediating effect. Using the regression coefficients and the error terms, the test results indicate that the mediating effect of working conditions is statistically significant for the link between perceived utility and hospital performance (Z = 20.215; $p \leq 0.001$).

- ✓ ***Partial or complete nature of the mediation of working conditions in the relationship between ease of use and hospital performance***

Table 5 shows that the predictive power of the perceived ease of use on hospital performance is weak although still very significant (Beta = 0.189; $p \leq 0.001$) after the introduction of the mediator variable when it was very strong during the first stage of Baron and Kenny's approach (Beta was 0.677). Thus, the mediating role of working conditions in the relationship between perceived ease of use and hospital performance is partial. Sobel's test indicates that the mediating effect of working conditions is statistically very significant for the link between perceived ease of use and hospital performance ($Z = 14,853$; $p \leq 0.001$).

5. Discussion

Following the results of this study we will organize the discussion from two angles. On the one hand, at the level of descriptive analysis and, on the other hand at the level of inferential analysis.

5.1. Discussion of the results of the descriptive analysis

This study aimed to assess the mediating role of working conditions in the relationship between perceived usefulness and ease of use of ICT and hospital performance. To achieve this, descriptive analyzes were carried out, showing that the level of perception of the usefulness and ease of use of ICT in hospitals is below expectation with an average frequency of around 3.6 out of l Likert scale. These conclusions are in line with those of Bagayoko (2010) who in a study on ICT in hospital structures in French-speaking Africa noted that their level of appropriation is still low and is limited to simple office automation in Burkina Faso and Cameroon.

These same findings corroborate those revealed in the report by Ndongo et al. (2010) entitled "Strengthening the Health Information System to accelerate the Viabilisation of the Health District" where, after a mid-term evaluation of the sectoral health strategy (SSS) 2001-2010 found that the HIS in Cameroon is still inoperative, fragmented, not integrated and does not provide the health card with the needs and level of satisfaction of the users. According to this report, the level of acceptance and use of ICT as a whole is still very low due to human contingencies such as resistance to change ; financial and material contingencies and a perceived utility that is still weak for all decision-makers in the hospital sector. They recommend raising awareness and strengthening user training (user staff in particular and decision-making executives) in the use of ICT in all of Cameroon's health districts. However, it should be noted that between 2010 and 2020, there were some significant advances, even if the level is still below expectations.

5.2. Discussion of the results of the inferential analysis

The hypotheses were tested using the proven four-step approach of Baron and Kenny (1986). These steps allowed us to confirm the hypothesis that working conditions represent a mediating variable in the relationship between the perceived usefulness and ease of use of ICT and hospital performance in Cameroon, although this mediation is partial for the set of two independent variables studied.

Our results go in the same direction as those of Cheikho (2015), Colombier (2007), Mukuna (2016) and Picard (2007) who showed that working conditions are an important determinant in the relationship between the use of ICT and hospital performance. Colombier (2007) for example has shown that ICT has an impact on the working conditions of employees and that these influence their satisfaction and the quality of service.

The conclusions of this study have important theoretical and practical implications. On a theoretical level, the study enriches current knowledge on the link between the appropriation of ICT and hospital performance. Most studies on the issue have not often incorporated the contingent factor of users' working conditions. Thus, the results of the study suggest going beyond the theoretical models often mentioned to highlight the conditions for effective appropriation of ICTs and their impact on performance : the reasoned action theory (RAT) of Fishbein and Ajzen (2010), Ajzen's theory of planned action (1985), the theory of interpersonal behavior of Triandis (1980) and finally the technology acceptance model (MAT) of Davis, Bagozzi and Warshaw (1989). Most of these models are limited to identifying certain determinants of the intentions making it possible to explain and predict the behavior of individuals in the face of the use of technologies. However, this study shows that if we combine the perceived usefulness and ease of use of technology with the best working conditions, we would

obtain a much better performance. In other words, hospital staff may well accept the technology, but not be able to implement it in a way that effectively achieves the expected objectives if their working conditions are not favorable. This is why, while recognizing the contributions of these theories, it would be wise to combine the psychology approach developed by the School of Human Relations (Elton Mayo, 1949 ; Emery and Trist, 1968 ; Herzberg, 1959) and which show that employee well-being is a major determinant of organizational performance. To this end, Venkatraman and Camillus (1984) postulate that performance can only be obtained through the adaptation of work situations to human characteristics (physiological, psychological, cognitive or social) through a clinical process of understanding work organization and its challenges. Applied in the hospital sector, the impact of perceived usefulness and ease of use of ICT would only be important if the working conditions of hospital staff promote their well-being.

On a practical level, this study suggests that hospitals have every interest in worrying about the working conditions of their employees if they wish to significantly improve their performance. This appears to be necessary both for perceived utility and for perceived ease of use. For example, it will involve examining the content of employees' work, the adequacy of this work and their capacities to perform it, the quality of relations with the hierarchy, the comfort and physical security of workers and finally their remuneration. . Ergonomics research has indeed demonstrated the importance of adapting the workstation to the physiological needs of the employee: noise, lighting, quality of machines, comfort of seats and desks, would have a direct effect on the quality of work. In addition, we must ensure the cohesion of the work team as suggested by Elton Mayo (1949). The work of researchers like Emery and Trist (1968) shows that the employee to be effective must have a good psychological balance. To this end, they suggest varying the tasks, defining the nature and the objectives to be achieved, valuing the worker and involving him in decision-making and finally granting him economic and non-monetary rewards. Ultimately, the results of this study corroborate the fact that hospital performance is based not only on the capacity for appropriation of ICT (through perceived usefulness and ease of use) by hospital staff, but more on the working conditions in which these personnel are deployed. In this perspective, the heads of hospital structures have every interest in ensuring the physical and psychological well-being of their employees.

6. Conclusion

This study made it possible to examine two dimensions of the appropriation of ICT (perceived usefulness and ease of use of ICT) on hospital performance in Cameroon, by highlighting the mediating role of working conditions. Frequency analysis has shown that the level of perception of the usefulness and ease of use of ICT is still insufficient despite the significant investments made in this area. Similarly, the performance of hospitals due to the use of ICT remains mixed.

The results of the inferential analysis through multiple linear regression show that the working conditions of hospital staff play a mediating role in the relationship between perceived utility and ease of use and hospital performance. It therefore seems that any investment in ICT that does not take into account the working conditions of users, would not produce the optimal performance that one would expect. These conclusions are in line with the recommendations of thinkers from the school of human relations who make employee well-being one of the major conditions for the performance of organizations. As a result, managers of hospital structures should be more sensitive to the physical arduousness of hospital work, the mental suffering of staff as well as the improvement of the physical work environment.

This study enriches current knowledge on the links between ICT appropriation and hospital performance, in a context where, concerning Africa in general and Cameroon in particular, the morbidity rate in hospitals remains very high and the quality health services always questioned. These conclusions bring up to date the need to strengthen research on the subject by focusing on the working conditions of health personnel, which determines the quality of clinical service, operational efficiency and patient satisfaction. Despite the contributions of this study, it has a number of limits which deserve to be noted : we have not highlighted the determinants of ICT appropriation nor the control variables such as the geographic location of the hospitals concerned by investigation. Likewise, some aspects of hospital performance such as the economic or financial profitability of ICT projects were not mentioned. However, these limits open avenues of research for future studies that could integrate financial and economic aspects into the study of hospital performance.

7. References

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