

Contribution of Knowledge Management to the Optimization of Healthcare Settings' Performance in Cameroon

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I. INTRODUCTION

Public health issues are priority issues for any government. According to WHO, health is a complete state of mental, physical and social well-being and not just the absence of disease or infirmity. In other words, a person with a balanced combination of mental, physical and social conditions is considered healthy. One of the core challenges of the current modern-day environment is the quality or the shortage of human resources. More than ever, it has stood at the centre of concerns in all countries, albeit with some acuteness in developing countries. However, while healthcare centres and hospitals around the world have striving to have performant human resources, they are expected to do the same in terms of knowledge management and sharing. The sharing of experiences plays a key role in optimizing the performance of health practitioners. And this inevitably entails a structured management of knowledge generated by the daily practice of the various health structures.

Performance remains one of the overarching goals of income-generating enterprises, including healthcare institutions. Given the challenges faced by health information systems, maximizing organizational performance is still an ideal. In the health sector like in other industries, identifying, accumulating and encoding knowledge are efforts that should be followed by a sound knowledge management for informed and improved clinical decision-making.

The aim of this article is to investigate the role of effective knowledge management in selected hospital structures of Yaoundé and even in other areas of Cameroon. To accomplish this goal, we will try to answer the following big question: Can we achieve an optimal level of performance in a hospital structure following a successful practice of knowledge management? To answer this question, our research model, which is based on the models by Darroch[1], Slavković and al.[2] and the model of Theriou and al.[3], was defined and tested. Only constructs were used in our study, but they adequately emphasized the link between the effective practice of knowledge management and organizational performance.

II. THEORETICAL DEVELOPMENT

Druker [4] argued that knowledge is "the only significant resource" in business today. The resource-based enterprise vision has acquired a new dimension in the theory of knowledge. It can be viewed as a strategic asset of an organization that must to be managed [5]. Thus, based on the literature around the theory of knowledge, we defined a structural model made of five concepts for this research: technology capacity, organizational culture, knowledge transfer, process innovation, and organizational performance.

A. TECHNOLOGY CAPABILITY

Researchers such as Davenport and Prusak [6], Gupta and Govindarajan [7] found that computing is a key element for knowledge creation. Indeed, IT is extensively used to connect people with reusable coded knowledge, and it facilitates conversations geared toward creating new knowledge [8]. In this regard, Mills and Smith [9] argue that information technology enables not only the incorporation of information and knowledge into a company, but also the creation, transfer, storage and retention of the company's knowledge asset. A well-developed technology integrates fragmented streams of knowledge, which has the potential of removing obstacles to communication between the different departments of the organization. Therefore, we have formulated the following hypothesis:

H1: Technological capacity positively influences the transfer of knowledge within an healthcare setting.

B. ORGANISATIONAL CULTURE

Culture is defined as the system of beliefs, values, customs, behaviours and artefacts that are used by stakeholders of a humanity to face their world and interact, and which are transmitted from generation to generation through learning. [10]. However, the biggest obstacle to knowledge management may be the organizational culture [11].

Generally, culture enhances knowledge, helps its creation, sharing and application while promoting an open climate for the free flow of ideas [12]. As a result, we set forth the following assumption:

H2: The better the organizational culture within a healthcare setting, the more its staff will be able to transfer knowledge.

C. KNOWLEDGE TRANSFER

Researchers and academics have not yet reached a consensus on the definition of knowledge transfer, as this concept is being interpreted from different perspectives, especially from the perspective of the interaction of knowledge [13]. However, different members of a group with different ideas and experience create new knowledge by communicating and sharing. So knowledge transfer can be viewed as the dissemination of individual knowledge in an organization [14]. Gloet and Terziovski [15] believe that human resources can be considered a strategic lever to create a competitive advantage through the value of knowledge process. It is through the use of knowledge that the assimilated knowledge can be changed from a potential capacity into a achieved capacity that affects organizational performance. [9]. Considering such findings, we make the following assumptions:

H3: Knowledge transfer within a healthcare organization reinforces the process innovation of knowledge.

H4: Knowledge transfer has a positive influence on organizational performance in health care.

D. PROCESS INNOVATION

Process innovations are those that occur in the technical parts of an organization and are directly linked to the main work activity of that organization. They may be a work in progress, or the introduction of new elements into the production or service operations of an organization [16].

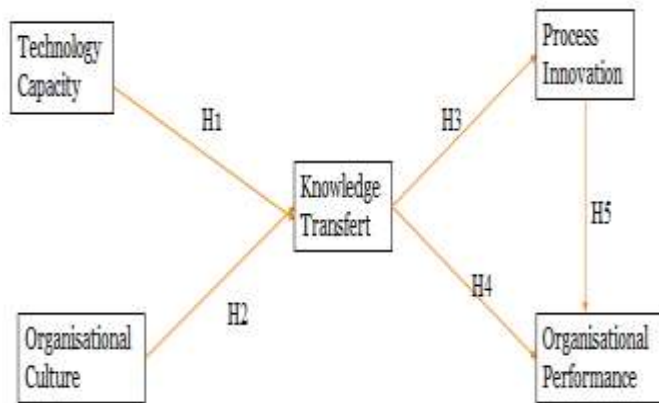


Fig. 1. Research model

Organizational performance is about how every groups is organized to reach its targets and how it manages to achieve them [17]. Literatures reveal that organizational innovation is important for better performance [18]. For Calantone and al.[19], innovation capacity is the most important determinant of a company's performance.[18]. So innovation can cause faster organizational performance in all the areas it agrees with [20]. As a result, we formulate the following hypothesis:

H5: The higher the process innovation capacity of a healthcare structure, the better its performance.

III. METHODOLOGY

To analyse the aforementioned hypotheses, we have opted for a research methodology based on a hypothetico-deductive approach whose process follows a number of steps, including the elaboration of the questionnaire using a seven-level Likert scale, and data collection and analysis (with a choice of the sample size, the administration of the questionnaire, and the collection and processing of data). Regarding the questionnaire development phase and the choice of the sample size, it should be noted that our questionnaire had exactly 78 questions on all the different items of research models. The questionnaire was then adapted to our research environment, and pre-test was carried out by 11 people (10 students from the Management and Information System (MSI) at the Catholic University of Central Africa, and 1 medical staff.) In addition, the software GPower3 and the method of calculation of Hair and AI[21] allowed us to have a clear idea about the minimum sample size to be considered in our work.

The administration of the questionnaire was done using a door-to-door approach and paper forms. A pilot phase consisting in analyzing remarks from 30 medical respondents had been conducted beforehand in order to ensure the reliability of our constructs and the stability of our research model. The 400 administered questionnaires yielded only 131 usable observations, which were collected and recorded on an Excel file to initiate the data processing process. The data processing was conducted by means of ADANCO, version 2.0.1, which is a software application for analysing structural equation models based on the PLS partial least squares method [22]. It should be noted that at the end of this phase of analysis and data processing, we did not record any missing data.

IV. DATA ANALYSIS AND RESULTS

The demographic profile of our 131 respondents is shown in Table 1 below:

TABLE I. DEMOGRAPHIC CHARACTERISTICS OF THE POPULATION

Profile	Description	Number	Frequency
Gender	M	64	48,85%
	F	67	51.15%
Age	Less than 25 years	14	10,68%
	26-30	38	29,01%
	31-40	47	35,87%
	41-50	26	19,84%
	Over 50 years	6	4,60%
Work experience	Less than 5 years	55	41,98%
	5-10	45	34,35%
	11-15	20	15,26%
	16-20	6	04,58%
	Over 20 years	5	03,83%

We note from Table 1 above that our 131 respondents were made up of 64 men and 67 women and that most of them were aged between 31 and 40. In addition, about 65.08% of this population had at least 5 years of work experience.

With regard to the validity of our research hypotheses, the stability of our research model and the quality of our constructs, we would like to recall some theoretical standards. The elimination of overt variables is not a game of chance. Hair and al. [23] point out that overt variables with an outer loading of less than 0.4 should be removed, and that those with an outer loading value between 0.4 and 0.7 should be retained only if they represent a latent variable with an AVE greater than 0.50 and if all manifest variables with an outer loading greater than 0.7 are retained. Moreover, reliability of the constructs and the stability of the research model are being confirmed by the quality of our items, which depends on the values of both the composite reliability and Cronbach alpha being theoretically greater than 0.7 [23].

As indicated in Table 2, the Cronbach's alpha values and the Composite Reliability values are above the 0.7 threshold, thereby suggesting that our constructs are reliable and have good internal consistency. In addition, the Average Variance Extracted (AVE) values are greater than the threshold of 0.5, which is evidence of a convergent validity for the measurement indicators of each construct.

TABLE II. CONSTRUCT RELIABILITY AND VALIDITY

Construct	Cronbach's alpha	Composite Reliability (CR)	Average Variance Extracted(AVE)
Technology Capacity	0,8910	0,9138	0,6034
Organisational Culture	0,8884	0,9130	0,6011
Knowledge Transfer	0,8060	0,8732	0,6328
Process Innovation	0,7399	0,8531	0,6616
Organisational Performance	0,8833	0,9072	0,5508

Based on Table 3, we can conclude that there is good discriminant validity of our constructs since all HTMT values are well below the threshold of 0.85 or 0.9. So our assumptions consist of constructs that are distinct from each other. Indeed, the HTMT ratio is an estimate of the correlation between the constructs, its measurement allows us to see whether there is a lack of discriminant validity or not; or more specifically, to know if the constructs are distinct from each other.[24].

TABLE III. HETERO TRAIT-MONOTRAIT RATIO (HTMT)

Construct	Technology Capacity	Organizational Culture	Process Innovation	Knowledge Transfer	Organizational Performance
Technology Capacity					
Organisational	0,5835				

Construct	Technology Capacity	Organizational Culture	Process Innovation	Knowledge Transfer	Organizational Performance
Culture					
Process Innovation	0,7773	0,8140			
Knowledge Transfer	0,5373	0,8134	0,7210		
Organizational Performance	0,6693	0,8253	0,8326	0,7810	

Structural Model. The use of the bootstrapping method enabled us to test the significance of both the relationship between model constructions (through the interpretation of t-statistics) and the correlation between these constructs (by looking deeply at the values of the correlation coefficient). The t-statistic must be greater than 1.96 to express a significance[24]. Table 4 below summarizes these values:

TABLE IV. STRUCTURAL MODEL TESTING HYPOTHESIS USING BOOTSTRAPPING.

Hypothesis	Original coefficient	Standard error	T-value	P-value
Technology Capacity -> Knowledge Transfer	0,1379	0,0670	2,0588*	0,0396
Organisational Culture -> Knowledge Transfer	0,5196	0,0808	6,4295***	0,0000
Process Innovation -> Organisational Performance	0,4185	0,0725	5,7756***	0,0000
Knowledge Transfer -> Process Innovation	0,4474	0,0725	6,1686***	0,0000
Knowledge Transfer -> Organisational Performance	0,393	0,0568	10,2258**	0,0000

***P < 0.001; **P < 0.01; *P < 0.05;

Table 4 above shows results obtained by means the version 2.01 of ADANCO bootstrapping. It clearly appears that all our research hypotheses (H1, H2, H3, H4, and H5) are verified and supported. Table 5 below shows the various results from the testing of hypotheses.

TABLE V. HYPOTHESIS TESTING RESULTS

Hypothesis	P-value	Decision
H1 : Technology Capacity -> Knowledge Transfer	0,0396*	Verified hypothesis
H2 : Organisational Culture -> Knowledge Transfer	0,0000***	Verified hypothesis
H3 : Knowledge Transfer -> Process Innovation	0,0000***	Verified hypothesis
H4 : Knowledge Transfer -> Organisational Performance	0,0000***	Verified hypothesis

Hypothesis	P-value	Decision
H5 : Process Innovation >Organisational Performance	- 0,0000***	Verified hypothesis

***P < 0.001; **P < 0.01; *P < 0.05;

As indicated in this table, the different influences between our constructs are analyzed as follows:

- THE INFLUENCE OF TECHNOLOGICAL CAPACITY

From the results obtained, following the analysis of the data and those contained in the table above, we observe that for a level of significance equal to 99.9%, the technological capacity does not have a significant influence on the transfer of knowledge. This could mean that managers or leaders of urban Cameroonian health centers or hospitals do not necessarily have to invest heavily in technological capacity for efficient knowledge transfer. This result is also consistent with that highlighted by researchers such as N. Theriou, D. Maditinos, and G. Theriou [3], who demonstrated that technological capacity plays a minor role in the effectiveness of knowledge management and does not significantly influence it.

- THE INFLUENCE OF ORGANIZATIONAL CULTURE

Our study shows that organizational culture significantly influences the transfer of knowledge. This may mean that governments or hospital officials need to increase investment in education and cultural change in this sector. This influence holds true for researchers such as N. Theriou, D. Maditinos, and G. Theriou [3], who studied the influence of organizational culture on the effectiveness of knowledge management and concluded that the organizational culture reinforces and encourages knowledge and knowledge creation, sharing, and application, while promoting an open climate for the free flow of ideas.

- THE INFLUENCE OF KNOWLEDGE TRANSFER

Our study shows that knowledge transfer significantly influences organizational performance and has a direct and positive effect on innovation. As a result, it could mean that any improvement on knowledge management processes (such as knowledge transfer) also encourages innovation and implies that investing in this process in health care could lead to a significantly improved organizational performance in the health sector. This result has been proved by several other researchers, including M. Slavković and V. Babić [2], Darroch [25], N. Theriou, D. Maditinos, and G. Theriou [3].

- THE INFLUENCE OF INNOVATION

Based on the results obtained, it is clear that although innovation may be a partial mediating effect in the relationship between knowledge transfer and organizational performance, it has a significant influence on organizational performance in the public health domain.

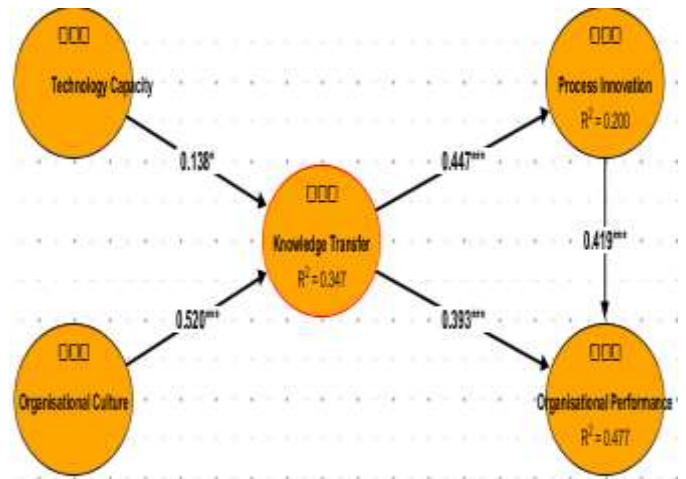


Fig. 2. Research model obtained by ADANCO 2.0.1

It would therefore be wiser for decision-makers to invest heavily in their ability to develop industry processes as well as for the quality of care provided in their field of competence, for highly improved health care performance. This result is in contradiction with the one obtained by Darroch [25], but remains very strong in the literature, including studies by M. Slavković and V. Babić [2], N. Theriou, D. Maditinos, and G. Theriou [3].

V. CONCLUSION, DISCUSSIONS AND LIMITATIONS

This work aimed at demonstrating the major impact of knowledge management through knowledge sharing on the organizational performance of health structures; it appears that all the assumptions made have been verified. This indicates how interesting our research model may be in terms of contribution to an effective and formal practice of knowledge management in the health structures of Cameroon. Indeed, our study shows that organizational culture significantly influences knowledge sharing. This may mean that governments or hospital officials need to increase investment in education and cultural change in this sector. Because this influence remains true for researchers like N. Theriou, D. Maditinos, and G. Theriou [3] who, in studying the influence of organizational culture on the effectiveness of knowledge management, have shown that organizational culture enhances knowledge, encourages its creation, sharing, application and promotes an open climate for the free movement of ideas and knowledge.

This study shows that knowledge sharing significantly influences organizational performance and has a direct and positive effect on process innovation. This could mean that any improvement in knowledge-sharing processes also encourages innovation and implies that investing in the development of knowledge management in health care can lead to improved organizational performance in the health sector. It is clear that process innovation is a partial mediator of the relationship between knowledge sharing and organizational performance, but it significantly influences organizational performance in the public health domain. It would therefore be wise for decision-makers in hospital structures to invest heavily in capacity building, non-retention and proper dissemination of knowledge, so as to improve the quality of care provided while maximizing their chances for sustained organizational

performance. In addition, although technological capacity positively influences knowledge sharing, it remains a success factor for knowledge management and knowledge sharing. Yet our results showed that it is less important than organizational culture in the Cameroonian context.

Our work has had two main limitations: on the one hand, the absence of a qualitative study of the phenomenon, which could not enrich our study through obtaining richer and more elaborate results. On the other hand, the survey that was conducted targeted only the city of Yaoundé and better still, could not even cover of all the hospitals of the area.

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