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Forms of innovation and human capital: a study conducted in context of small and medium-sized enterprises (SMEs) in Cameroon

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Abstract
The objective of this paper is to analyse the influence of various forms of innovation on the characteristic elements of human capital in SMEs in the Cameroonian context. To achieve the objective of the study, we employed a quantitative research methodology. From this perspective, a questionnaire was administered to 54 SME managers of highly innovative sectors. In addition, the study employed principal component analysis, multiple logistic regression and Chi-square tests to analyse the data of the finding. The outcome of the results shows that the determinants of forms of innovation (technological and non-technological innovation) influence the essential characteristics of human capital within SMEs. Therefore, SMEs should develop innovative capacity in order to be competitive, and hence, enhance the characteristics elements of human capital.

Keyswords: *innovation; human capital; SME*

INTRODUCTION

Faced with the intensification of competition and changes in the business environment, innovation and human capital now occupy an important place in SMEs. Many studies have focused on human capital (Trepanier et al., 2013, Schultz, 1961, Becker, 1964, Edvinsson, 1997, Bontis et al., 1999, Davenport, 1999, 2000; Amara and al., 2008, Hamilton et al., 2014), and on innovation (Akrich et al., 1988;Rothwell R. and Zegveld, 1982; OECD, 2009; Mongo,2013;Varisand Littunen, 2010, Chaudhry and Pawan, 2016; Hoffman et al., 1998; Moore et Garnsey, 1993), but most of these researches havefocused on large firms. SMEs, unlike large firms, are key drivers of innovation and competitiveness and play a key role today in economic growth, job creation, local development and social cohesion. Almost all firms in the OECD community consist of small and medium-sized enterprises, andgenerate about 60% of total employment and 50% to 60% of total employment. In emerging countries, SMEs account for up to 45% of employment total and 33% of GDP. From this perspective, Trepanier et al. (2013) note that innovation in an SME context is becoming a specific concern for managers today. And as such, human capital is a major tool of business development policies.

Few studies have attempted to measure the link between innovation and human capital (Uden et al, 2014), particularly, the effect of forms of innovation on human capital within SMEs. Thus, we propose a new approach based on the analysis of the impact of these forms of innovation on the essential factors of human capital, particularly in SMEs. The question we seek to answer is this: ***what are the determinants of the various forms of innovation thatare likely to influence the characteristic elements of human capital within SMEs?*** This article is structured in four main sections. The first section summarizes the conceptual framework of innovation and human capital. The second section is based on the adopted methodology. In the third section, the results are presented. Meanwhile, the last section is based on the discussion of the results. The article ends conclusive remarks involving, some managerial implications, limits and perspectives for future researches.

1. CONCEPTUAL APPROACH TO INNOVATION AND HUMAN CAPITAL IN SMES

No discovery or invention is possible without man. Man, as the driving force of the company plays a key role in the process of innovation development. However, innovationdevelopment in business concerns as well human capital. We attemptedto review briefly the conceptual framework and then highlight the link between innovation and human capital.

1.1. The notion of innovation

It is important to precise various concepts and highlight the differents determinants of innnovation’s forms.

1.1.1. An overview of the definition of innovation

In general, the notion of innovation has given rise to an intensive literature in recent years (Mairesse and Mohnen, 2010). Today, it is generally accepted that to be competitive, a company must be innovative. But how do we define innovation? Innovation has long been considered as an event resulting from knowledge developed by individual inventors or researchers. Recently, it is rather seen as the result of a process whose success depends on the interactions and exchanges between a multitude of actors in the world (Landry and al., 2002). It is defined as "the implementation of a new or significantly improved product (good or service) or process, a new method of marketing in organizational practices or external relations" (OECD, 2005). Most companies owe their survival to their ability to innovate, that is, to bring something new to the society. It means the resurgence of a hidden need of the market, and involvesan opportunity corresponding to market expectations. Barreyre (2002) emphasized that innovation is original implementation and bringing progress, a discovery; of an invention or simply of a concept.In the same vein, Muller (2005) defined it as the introduction at the market of a new product. As a result, innovation means the introduction of an original/new

product, new technology, etc., which differs from the invention sofar as it aims to enrich knowledge without necessarily having practical application.

1.1.2. The elements determining the forms of innovation in SMEs

Innovation does not concern a particular firm. It concerns all companies whether small, medium or large because its future depends on its innovative capacity. Thus, SMEs must be part of this dynamic change stemming from a rapid changing environment; supposedly, they opt to be competitive. It is sometimes understood as the encounter between a need (real or potential) and the market or even the use of an invention or a discovery. It relies mainly on two angles: - technological (Gallouj, 1991; Gallouj and Savona, 2009) and non-technological (Cordelier, 2009). The determinants of these forms of innovation can be identified by referring to the work of Schumpeter (1912), while keeping in mind that each determinant has distinct characteristics and objectives.

The determinants of perceived forms of technologically innovation are product innovation, process innovation and other determinants. As part of this research, we will limit ourselves to three main components. Firstly, we shall look at product innovation. SMEs owe their sustainability from the ability to innovate. Thus, innovation might capture the attention of customers and encourage them; supposedly, it is done in comformity to their expectations. Moreover, it corresponds to the introduction of either a good or service that is new or significantly improved in terms of its characteristics. For example, Simon and al. (2002) show that the introduction of new products into the market can significantly increase the wealth of its creator in the case of success, or push it to bankruptcy in the event of failure. The second form of innovation is process innovation. It is imperative for SMEs to either implement a new process or significantly improved production or distribution method. In most cases, it is a question of improving either the working method or the process put in place to tackle technological and economic issues. Process innovation refers to the implementation of new techniques or the improvement of techniques for the production of goods or the provision of services. It aims to further improve the productivity of enterprises, especially SMEs. If it is assume that they do not have enough means, SMEs could make technical improvements in the production process, for example, without pretending to acquire a new tool. The objective is to strengthen their productive performance with respect to the challanges of environmental changes. Thus, it includes one of the facets of process innovation. It should be emphasized that we have confined ourselves to these three dimensions of forms of innovation. This choice is justified by the importance they bring to the reconfiguration of the face of SMEs in terms of growth, development and productivity.

The determinants of innovation perceived from a non-technological point of view are mainly based on two components: a new technology and the capacity to innovate. The first so-called "technological" component has become a strategic factor of competitiveness. This is the phase of cognitive capital that the world is currently experiencing. We speak rather of competitive advantage than the comparative advantage. Technology can be defined as "the art of implementing, in a local context for a specific purpose, all the basic sciences, techniques and rules that go into the design of products, the manufacturing processes, the methods management or information systems of the company (Morin, 1985). Technology is the body of technical and scientific knowledge that makes it possible to design products and to manufacture them; it concerns all areas of the company (industrial, commercial...) even at the level of its organization. Thus, to innovate is to implement technologies. This is the case, for example, with the introduction of the multimedia messaging service (mms) on the Cameroonian wireless telephone market. But if the mms made its entry only recently in the practices of the Cameroonian mobile telephony in 2006, it must be said that it is nevertheless based on a few years old technology in Western countries which are fixed to the new standards of the Cameroonian mobile telephony.

Furthermore, the second component is the ability of SMEs to innovate. Initially, the capacity to innovate was defined in terms of activities related to the adoption of new things. Luo et al. (2005) consider that the ability to innovate is the ability of the firm to develop new ideas, new products or processes. In the same vein, Adler and Shenbar (1990) defined the ability to innovate as the ability to develop new products to meet market needs, the ability to apply the appropriate processes to produce these new products; the ability to develop and adopt new products and technological processes to meet future needs, and the ability to react against competitors and respond to the opportunities they create. According to them, the company must develop its creative knowledge through new products or processes. It must be active, proactive, anticipatory, and dynamic. However, it should be noted that there are several determinants of forms of innovation (technological and non-technological). Despite the categorisation of the various forms of innovation as provided by the extant literature, we noted that plethora of previous studies did not measure the impact of these determinants on the esssentials caracteistics of human capital. Therefore, the current study bridges the gap by determining the impact of these forms of innovation on human capital.

1.2. The notion of human capital in SMEs

The wealth of tomorrow is no longer financial, material but rather human. No innovation is possible without the interference of the dimension of human capital.

1.2.1. What is human capital?

Small, medium and large businesses may have to compete with each other. As a result, for innovation to be valued, organization must value, strengthen and develop a dynamic human capital. From an organizational point of view, we can understand dynamic human capital as the combination of qualifications, knowledge and experiences of individually trained and willing to put their skill at the service of an organization for the purpose of being productive, and competitive. We then identify human capital that go beyond an individual to the community. Thus, the human capital of an individual is defined as the set of experiences, knowledge, qualifications that he has acquired from birth making him/her more or less capable of producing goods and services to satisfy specific needs.Human capital was defined by Schutz in 1961 in this term, "while it appears obvious that individuals acquire knowledge, know-how and useful knowledge, it is not so obvious that these know-how and knowledge constitute a form of human capital. According to him, the term human capital has been recognised as a key element in improving assets of companies and employees in order to increase productivity as well as to sustain competitive advantage. It is perceived by Rastogi (2000) as an important input for companies in general and in particular for employees to continually improve their level of knowledge, skills and abilities.

1.2.2. There are three basic characteristic elements of human capital perceived within SMEs

The characteristics of human capital include: - skills, qualifications and learning. As far as skills are concerned, they are understood as the cumulation of knowledge, and appear today in companies as a major concept to face the new challenges of competitiveness. This state of affairs is often noticeable when one is within the framework of family SMEs, where the necessity of competence is sometimes ignored in favor of the ambitions of family belonging. Thus, to be competent is not only to be able to act or to act but also to be able to analyze and explain one's way of doing or acting. Indeed, there is innovation without individuals. The latter plays an important role in the introduction and development of the notion of competence in many social practices, from school to business, and constitutes an unarguable challenge in rehabilitating the attention paid to human activity. Competence is sometimes perceived as a void concept being the subject of very heterogeneous definitions. It refers generally in organizations or at school, especially valued a "static" approach (Coulet, 2011), which is incongruent to envisage objective (Coulet, 2010).

With regard to the qualification of personnel, the development of a highly qualified workforce; particularly, through various education and skills upgrading programs, do not only increase the company's productivity, but also provide it a competitive advantage while introducing new ideas from skills, experiences, qualification, etc. However, Karlsson and Olsson (1998) thinks that it should be remembered that the presence of qualified personnel is not enough if the leader is not "committed" to the success of the innovation. It should be noted that SMEs must absolutely learn, so that it increases their innovativepotentials. It should not only be limited internally, but must go beyond the organization to gain new experiences. Learning is a process of acquiring knowledge, skills, values, and attitudes that can be achieved through study, teaching, or experience. Human learning is defined as a relatively stable change in the behavior of an individual because of experience. Pavitt (1984), in his book “Patterns of technical changes”, identified five forms of learning: practice; use, study, failure and competitors. In fact, learning by study is mainly about experimentation; stimulation and evaluation. Learning by failure is either making changes to a product that has not been successful or learning from that failure. In the end, learning from competitors shows how open the organization is to its environment. So, innovation and human capital today constitute the foundation of development of any company because we can not innovate without the presence of men.

1.3. Link between the determinants of forms of innovation and the factors of human capital in SMEs

The scientific literature agrees that we are in the era of a new competitive environment. Aveni (1994) contend that the new competitive situation resulted to the concept of “hyper-competitition” According to this author, the ability to constantly develop new products, processes or services would be one of the key success factors for companies.

Innovation involves the adoption of an idea that is new to the organization and itsadaptation, such thatnovelty relates to the creation and acquisition of a new product or service (Damanpour and Aravind, 2012). In fact, competence relates in general to an object, to a purpose, and to technological innovation. These are the skills that allow the company to manufacture different products or services from the mix of resources by such skills. According to Im and Workman, (2004), activities such as the development of new products, packaging, advertising, etc. involve the development of creative skills. From this perspective, we find that the relationship between innovation and skills, which is generally explored, is more oriented towards the visionof causal link. Thus, interest in SMEs is not trivial and is explained by the fact that it is essential to innovate since they have fewer resources (human, financial, technological, etc.). It should be noted that a technologically competent company is one that can develop systems and processes that enable it to engage and implement new processes and technical tools and to absorb external technological knowledge (Fowler et al. 2000)

We contend that various forms of internal skills seem to favor innovation more than mobilizing them via external sources. The upsurge of product innovation and process innovation refers to the competence of the players, the cummulationof know-how and their organizational strcuture within the company, particularly in SMEs. It is from this context that we have made the following first hypothesis:

H1: The introduction of a new product or process by an SME depends on the skills of its staff.

The study of Leiponen (2005) points out that not having a sufficient stock of highly qualified personnel for a firm will affect its innovative potentials; since it will not be able to exploit the new available technologies. According to Romijn and Albaladejo (2002), the inability of a company to recruit talented staff will be a constraint to the growth of the company. As for Abiorwerth (2005), the fact that a company has a skilled workforce will provide higher productivity, allowing it to introduce new technologies and more efficient ways of working. On the other hand, Bartel and Lichtenberg (1987) highlighted the relationship between the human capital of employees and the adoption of new technologies. They found that there is a significant impact, and beside, noted that the higher the level of the qualification of the staff of the company leads to productivity

ushererd by the introduction of new technologies. In fact, several other studies within the company have proven whether the qualified workforce in companies is characterized by a high level of innovation. For Heunks (1998), the entrepreneur's interest in innovation and the experience acquired in managing a start-up business should stimulate innovation. In the same vein, Doms et al (1997) advocate that the development of new technologies stregnthens human capitalcharacterisitcs; especially, when the qualifications of the staff is high. They found that the use of these technologies is positively correlated with the qualification of the staff. From the above analysis, we formulate a second hypothesis:

H2: The more the SME puts into practice a new technology, the higher the level of qualification of its staff.

To remain competitive with a competitor who has followed its progress, and challenge any risk caused by environmental progress; companies must not only improve their level of innovation, but also must achieve and maintain or even develop their ability to innovate. The capacity to innovate has been defined in terms of activities related to the adoption of new things. Luo(2005) consider that the ability to innovate is the ability of the company to develop new ideas, products and new processes.Foray and Mowery (1990); however, rather raise the existing link between innovation and learning because they show that industrial R & D within firms relies mainly on two functions namely: - innovation and learning. Thus, the objective of learning in the course of an activity can be attained in two ways: -by the accumulation of experiences that is realized by the management, the exploitation and the valorization of the experience accumulated during the realization of these activities. As a result, learning plays a very important role in our current context and particularly in SMEs. They need to encourage their staff to learn more in order to gain new knowledge and insights needed to consolidate innovation. Thus, in this context, Toffler (1980)[1] emphasizes that illiterates of the twenty-first century are no longer those who no longer know how to read or write but those who can not learn, unlearn and relearn. Thus, the more the company learns, the more it acquires new ideas, new knowledge that can make it more innovative and more powerful on the market. Hence our third hypothesis:

H3: The more innovative the SME, the higher the level of learning of its staff

2. THEORETICAL AND METHODOLOGICAL FRAMEWORK

Our research, which aims to demonstrate the influence of some determinantsof forms of innovation on the characteristic elements of human capital within SMEs, is based on a well-defined theoretical and methodological framework.

From the theoretical point of view, this study is within the framework of the endogenous growth theory (Lucas 1988, Romer 1990) and focuses on two characteristics of the growth process, namely, human capital and innovation. It allows us to develop the microeconomic foundations of SME innovation and human capital behavior so as to measure their macroeconomic impact. For this purpose, the scientific vigor of this research requires us to explain the choice of the methodological approach, which is based on hypothetico-deductive method. We opted for the sample convenience and a questionnaire as the tool to collect data data. It was administered to 54 managers of SME. The data were subjected to statistical tests classified into two categories. We first have the descriptive methods that combine flat sorting, the scores method and the factorial analysis of multiple matches. Next, we have the explanatory methods that contain the chi-square test coupled with measures of association and multiple regression.

These tests were performed using SPSS software. Varios tools of analysis used are flat sorting, reliability analysis, which allowed to verify the internal coherence of the items used to measure a concept or a variable, the PCA, the chi-square test and linear regression. In the end, the results of the chi-square test and the multiple regressionwere used as a benchmark toeither accept or reject the research hypotheses. It should be noted that the steps used in the purification of the items are contained at the level of Table 1. As a result, we went from 7

[1]ToFFler, A.: The Third Wave, New York, Bantam Books, 1980, p. 23

items to 4 items. Three PCA launches were carried out, of which only the 04 items were retained and all three were extracted in the purification process. It should be noted that variables were subjected to several steps in order to eleminateinsignificant items amongst variables. Indeed, during the first factor analysis carried out on these seven items, the rule of values specific to 1 (Kaiser's criterion) wanted to keep a single factor. Initially, the system consists of 7 variables that were purified using principal component analysis. As shown from from Table 2, after purification, we arrived at 5items. Tables 4 and 5 allowed us to proceed to the methods of scoring.

3. PRESENTATION OF THE RESULTS

The objective of this section is to present and comment later the results of the statistical analyses performed on the variables.

3.1. Results related to the innovation and human capital variables

3.1.1. Results relating to the variables "product / process innovation and staff skills"

The product / process innovation variable is apprehended using a set of seven items, all of which are evaluated on 5-point interval scales. It should be emphasized that the objective is to verify whether the implementation of a new product (product innovation) and the new process (process innovation) by an SME would influence the skill level of its staff. Indicators have been defined for these variables, to which the results obtained are presented in the tables below.

3.1.1.1. Result related to innovation (product or process)

Table 1: Result of factor analysis on innovation items (product or process) after VARIMAX rotation

Items	F1	commonalities
Stand out from competition	0,772	5,96
Improve existing products	0,819	0,672
Introduce new equipment	0,766	0,586
New adopted product	0,657	0,431
Own value	2,285	-
% of variance explained	57,118	-
% cumulative explained variance	57,118	-
α of Cronbach	0 ,743	-

Source: *our surveys*

3.1.1.2 -Profit level result for staff

Table 2: Factor Analysis on Personnel Skill Items (after VARIMAX rotation)

Items	F13	F23	Commonalities
Generate new ideas	0,873		0,762
Strengthen the level of personal experiences	0,775		0,604

Develop the knowledge of the staff	0,785		0,694
Develop the knowledge of the staff		0,816	0.680
Have new knowledge		0,860	0,741
Own values	1,994	1,487	-
Percentage variance explained	39,883	29,735	-
Percentage of cumulative explained variance	39,883	69,617	-
α of Cronbach	0,748	0,63	-

Source: *our surveys*

Table 3: Summary of Regression Results

model	R	chi-square	R^2ajusted	A	Coefficients							
					F	Sig	dl1	dl2	T	Sig	β	
1	0,727	0,528	0,510	$2,410^{E}$-017	28,55	,000	2	51	7,51	0,000	0,722	

Source: *our surveys*

3.2. Results related to contingency variables

3.2.1. New technology and staff qualification

Table 4: Cross-tabulation between increasing the level of qualification and putting the new technology into practice

Modalities		< to the average	> to the average	Total
yes	Effective	12	7	19
	%	22,2%	13%	35,2%
no	Effective	5	30	35
	%	9,3%	55,5%	64,8%
Total	Total Effective	17	37	54
	% total	31,5%	68,5%	100%
Values	X^2 cal =13,63 ddl=1 prob=,000 phi(Φ)= 0,503 c=0,449			

Source: *our surveys*

Table 5: Cross-tabulation between the ability to innovate and learn

Modalities		yes	no	Total
<to the average	Effective	22	9	31
	Percent (%)	40,7%	16,7%	57,4%
>to the avaerage	Effective	5	18	23
	%	9,3%	33,3%	42,6%
Total	total effective	27	27	54
	% total			100%
Values	X^2 cal =12,79 ddl=1 prob=,000 phi(Φ)= 0,49 c=0,44			

Source: *our surveys*

4. DISCUSSION OF THE RESULTS

The outcome of these different tests shows that innovation is linked to human capital and in one way or another influences human capital. From the results of PCA analysis of table 1, a single factor that accounts for 57.118% of the total sample variance was obtained. The output is good (57,118% of variance explained by the factor). In addition, variable V8 has a rather low commonality of 0.431, which is, incidentally, below normal (0.5). We therefore decided to maintain it given the importance it occupies in the component with a value greater than 0.5, ie 0.657. The loading analysis shows that this variable has a good correlation with the selected factor. In addition, in terms of content, this item seems necessary to measure the form of innovation introduced (new product or new process) by the company in the specific context of our research work. So we decided to keep it.

As for the consistency of these items presented in Table 1, we note that Cronbach's coefficient is 0.743. This coefficient is satisfactory (since it is greater than 0.6). As for the interpretation of the factor retained the analysis of factorial scores after rotation VARIMAX shows that the 7 items reduced to 4 items are strongly correlated with this factor. Therefore, this component (F1-3) can be defined as a representation of the product innovation variable and / or process. The factor F1-3 thus presented is recorded in the data structure under the name Fac1.

From table 2, we noted that the results are globally satisfactory. Both factors account for 69.617% of total sample variance. The items after an analysis of the PCA, all have a strong correlation with both factors. The result obtained after varimax rotation analysis retains two factors including F1 and F2. F13 is correlated with 3items and F23 is correlated with 2 items. It should be noted that all measurement indicators all have communal values greater than 0.5 (so after purification, we went from 7items to 3 items for F13 and 2 items for F23). For this purpose, we calculated the Cronbach coefficient pour for each factor. It is 0, 748 for F13 and 0.63 For F23, these factors may be considered satisfactory since the minimum recommended value is 0.6. From loading s table (after VARIMAX rotation), we found that items V21, V22, V23 are correlated with the first factor (f1) and weakly correlated with the other factor. Overall, these items express the perception of companies to develop skills.

This first factor can be interpreted as staff skills. Thereby, the second factor (F2) groups the items V18, V19, V20 (respectively 0, 873, 0.775 and 0.785) which is strongly correlated with values greater than 0.5. These factors correspond to the knowledge / skills dimension. These factors are automatically integrated into the data block and become a new variable that will be noted F1 and F2 respectively corresponding to Fac 1-3 and Fac2-3.

In fact, with regard to these two preceeding tables, table 3 presents the correlation results between the variables (product / process innovation and skills). We believe that the fitness of this regression model (for these two variables) is generally good. In fact, the values of the correlation coefficient R (0.727) and of determination R2 (0.528) are all satisfactory since they are well above 0.5. The robustness test of this regression model reveals a Fisher value of 28.55 at the significance level of 0.000 for 2 at 51 degrees of freedom. We note that this calculated significance threshold is significantly lower than 0.05. Moreover, the student's t-value for the variable introduced in the regression model is satisfactory (ie 7.55 at the P = 0.000 threshold which is greater than 2). As a result, hypothesis H1 is validated.

We accepted our hypothesis and confirm that the engagement of SMEs to develop an innovation policy oriented towards the implementation of new things or new processes influences the skills of its staff. We join Im and Workman (2004), in the sense that activities such as the development of new products, packaging etc. involve the development of creative skills. The regression equation can be written in the following way: Y = 2, 41OF2-3 + 0.722 with Y: the dependent variable and F2-3: second factor of the 3rd principal component analysis. However, the choice done on this factor is based on its value of t-student, which is very significant at the threshold 0,000 with a value> 2. Hypothesis H1 is confirmed: the introduction of a new product or process by an SME depends on the skills of its staff

Table 4 presents the cross-sectional result between the increase in qualification level and the new technology. We find that 12 out of the 54 SMEs'managers (22.2%) have opted for the introduction of a new technology to increase or even increase the level of experience of SMEs, against 5 who did not opt for. On the other hand, in the above-average portion of the calculated score value, 7 SMEs corresponding to 13% say they have introduced a new technology and 55.5% of SMEs recognize to have implemented a new technology. We then note that a total of 19 SMEs, that is a percentage of 35.2, responded affirmatively in both groups. For this purpose, the one-degree chi-square test (1ddl) of freedom gives an observed value (X2 cal = (13.63)). This value is greater than the theoretical value (3.841, $\alpha = 0.05$). Since X2cal> X2 is therefore 13.63> 3.841, which enables us to reject the null hypothesis (Ho); therefore, the technological news and the level of aptitudes and / or experiences are independents. There is interdependence between the introduction of a new technology by SME and its level of skills and / or experience. Bartel and Lichtenberg (1987) highlighted the relationship between the human capital of employees and the adoption of new technologies. They found that there is a significant impact, and noted that the higher the level of qualification of the staff of a company the better the results gained in productivity caused by the introduction of new technologies.

For this purpose, this dependence is being intense, and is confirmed by the coefficients phi ($\Phi = 0.503$) and contingency (c = 0.449) that shows a link of association between the two variables whose probability of significance is 0.000 (very significant). The positive sign of phi probably indicates that the relationship between these variables is statistically significantly. Thus, hypothesis H2 is verified. It implies that, the more the SME puts into practice a new technology, the higher the level of qualification of its personnel will be.

In addition, Table 5 presents a cross-tabulation of the ability to innovate and learn. We find that out of the 54 companies surveyed in our sample, 22 (40.70%) companies with below-average value have a high level of innovation capacity and attempt to develop their capacity to innovate. After using a scoring method to calculate the scores; we note that 05 companies either 9.3% have a value above average also answer in the affirmative against 17 SMEs which opted for the negative.

But, the chi-square test with one degree of freedom (1dll) gives an observed value (X2 cal = 12,799). This value is greater than the theoretical value (3, 841, $\alpha = 0.05$), which enables us to reject the null hypothesis (Ho). Thus, the capacity to innovate a company and the ability to learn staff are independent and accept the alternative hypothesis which shows that there is a dependency between the two variables. The present result is in line with Foray and Mowery's (1990) attesting that there is a link between innovation and learning.

According to these authors, industrial R &D within firms is mainly on two functions namely innovation and learning. This intensity dependence is confirmed by the coefficients phi (Φ = 0.487) and contingency (c = 0.438) with a probability of significance of 0.000. According to this result, the link between these two variables is very high and the coefficient of phi tends towards 1. The very positive sign of phi reflects the relationship between the two variables. For this purpose, hypothesis H3 is confirmed. Therefore, the more innovative SMEs, the higher is to the level of learning of its staff.

In a nutshell, we can conclude that the hypotheses formulated as part of this research were confirmed by the statistical tools used, in particular the PCA, the regression and the chi-square test, which subdued certain variables to the scores method. The empirical test results of our hypotheses are summarized in the table below:

Table 6: Summary of the research hypotheses

Hypothesis	Formulations	decisions
H1	The introduction of a new product or process by an SME depends on the skills of its staff.	accepted
H2	The more the SME puts into practice a new technology, the higher the level of qualification of its staff.	accepted
H3	The more innovative SME, the higher is to the level of learning of its staff	accepted

Source: *by the autor*

CONCLUSION

From the aforementioned test results, it emerges that forms of innovation influence the factors of human capital within SMEs in the Cameroonian context. These results align with some previous studies that focused in explaining the link between innovation and human capital. But, it should be noted that this study has some limts that should be revealed. Firstly, at the level of the methodology, the study encountered limit at the contextual levelinvolving the size of the sample. Indeed, SMEs consist of 95% of entreprises operating in the economy of Cameroon. In other words, they dominate the economic fabric of Cameroon.Thus, only SMEs constitute the sample framework for this study. Meanwhile, taking into account large companies will also be important. Secondly, we chose in our research work the method of convenience that is often unrepresentative; however, certainly did not question the quality of our results. Thirdly, we noted a limit related to the size of the sample (54 SMEs) as well, which is statistically acceptable, since it is greater than the required size (> 30). Fourthly, we also encountered challenges during field work; especially, when administrating the questionnaire. Explicitly, the relunctance of some SMEs'managers to provide answers to the questions (a total of 100 questionnaires were administred, but only 54 were returned) accounts for the major obstacle to the study. The percentage of non responses is a reliableevidence of the reticence of SMEs to provide informationfor scientific research purpose.Nonetheless, such a limit is insignificant in questioning the quality of the results obtained in the study.However, the aforementioned limits intend to pavethe ways to further research reflexions. Conclusively, theses findings open not only interesting perspectives for future researches but also aim to enable companies, organizations of any size to define a true policy of development of innovation and human capital to cope with the current tough competition. Indeed, the study can be oriented in the same pattern; however, researchers will also be able to study the impact that innovation praticeshave either on the factors of human capital or on performance in the context of SMEs.

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