

CAPITALIZATION OF HUMAN SKILLS AND COMPETENCIES – AN EXPLORATORY MODEL

Zahia BOUZIDA University of Tizi-Ouzou, Algeria

Nadir MALEK University of Tizi-Ouzou, Algeria

Souhila GHOMARI^{*} University of Tlemcen, Algeria

Abstract: The paper aims to synthesize the lessons learned from the analysis of the ISO 9001 quality management system standard. The objective is twofold: first, to understand the role of human capital in the conduct and success of an innovation project within a company, and secondly, to explain the simultaneous effect of this dynamic on the emergence of innovative behaviors. An exploratory study is established with the personnel of the first ISO certified company in Algeria and the proposed hypotheses are tested by the partial least squares structural equation modeling (PLS-sem) method. Analysis of the results show that by acting on certain mechanisms, these standards can be assimilated to a catalog of data that can be utilized to encourage and promote the construction and development of skills and competencies. The findings allow us to better understand the nature of the relationship that may exist between skills management and the quality approach.

JEL classification: L15, M59, P23

Keywords: ISO 9000; Human capital; Managerial innovation; PLS approach.

1. Introduction

In today's competitive world where economic actors are more and more interdependent and their relationships are increasingly complex and evolving, companies need to rely on an optimized organization and a strong commitment of their personnel to perform, offer and guarantee quality services to their clients. Competitiveness in companies is now based on three elements: first, the company's ability to bring together human skills, secondly, the administration of the company

^{*}Corresponding author. Address: Bp 226, Faculty of Economics, Management & Commercial Sciences, Tlemcen University, Algeria, Phone: +213 771 757 902, E-mail: souhila.ghomari@univ-tlemcen.dz

and its mode of operation must derive the highest performance from its personnel and third, the company must involve and motivate all its personnel (Diridollou and Vincent, 2001).

It is widely acknowledged that business innovation relies much more on know-how than on material aspects, hence the importance of good management (Sabrina Loufrani-Fedida, 2006). In this case, skills development becomes essential and indispensable. This makes it possible to identify one of the results of the skill-based theory.

Over the past few years, skills management has become one of the most important research axes as it aims to develop a systematic and organized approach, intended to improve a company's ability to mobilize its skills in order to ensure the implementation of its strategy in terms of performance.

In this context, the dissemination of operational excellence initiatives, and in particular the quality approach, within the company, undoubtedly constitutes a means of responding to these major challenges.

However, the implementation of such an approach is henceforth based on a simplified reference system, which in this case is the ISO 9000 system that is oriented towards the added value brought to the organization in general. This system appears to be an alternative that is adopted by a growing number of companies and a response to the issue related to their ability to manage this uncertainty and to control their organization in order to generate competitive advantages and conquer new markets (Khetib and Ghomari, 2010).

This paper constitutes a contribution at several levels in the field of HRM and quality management. In our opinion, this research could be considered as a clarification and an extension of previous work carried out in this direction and will allow us to better understand the nature of the relationship that may exist between human skills and performance.

Our contribution lies in the development of a conceptual model linking some practices of the quality approach and the pillars of competence. This modeling can also constitute an extension of previous work insofar as we have gone beyond the classic view given to the performance, which is no longer financial, but organizational. Indeed, the companies that have implemented this approach bear witness to the benefits obtained in terms of improving their relations, both external (customers) and internal (employees), as well as in terms of efficiently managing their activities. This may be achieved as a result of the new generated skills (Flynn, M. et al, 2003).

From that perspective, the objective assigned to this article is twofold: on the one hand, it is a matter of understanding the role of human capital in the management and success of the innovation project within the company and hence, of improving its performance, and on the other hand, elucidating the simultaneous effect of this dynamic on the emergence of innovative behaviors. For this purpose, it was considered more appropriate to adopt a methodology that consists, first of all, in carrying out a review of the literature on the different elements of our problematic, and, secondly, in considering the possibility of viewing the ISO 9000 standards as the essence of the creation of skills within the company. To this end, a questionnaire survey was carried out with the human component of the first ISO certified company in Algeria, i.e. the National Company of Household Appliance Manufacturing Industries (ENIEM), based on the perception of ISO 9000 standards, and their implications in strengthening human skills within the company, and relying on three essential elements of competence, namely training, communication, and motivation.

2. Literature review

2.1 Skills integration challenges

As in many situations, companies are forced to evolve under the pressure of their environment. Indeed, the company operates in a selective environment that characterized by some factors that are external to the industry or sector in question, and by internal factors that are more or less restrictive and demanding.

It is widely admitted that strategic management considers the company as a series of functions or a set of activities connected to each other (Boubaker, 2012). From this perspective, the company can be seen as the central point of a supply system and a set of services that are based on a combination of skills (de La Ville and Grimand, 2001).

To cope with a versatile environment, which depends on responsiveness requirements, companies are constantly looking for new solutions to keep their market share, and to meet the demands of their customers who are becoming more and more demanding. Faced with this situation, companies have to develop new innovative products not only of good quality but also with low costs.

Indeed, the search for performance requires companies to seek more flexibility at the organizational level, a better mastery of technology, but above all, a better appreciation of human skills (Prusak, 2001). Today, it is more and more recognized that the company cannot be financially sustainable if it is not humanly efficient (Collomb et al., 2011). The issue of human capital in general, and skills in particular, then becomes a factor of strategic performance. It should be noted that the question related to human skills is indeed at the center of the problematic of creating some added value in order to develop goods or services that meet the needs of the customer.

Furthermore, in order to be competitive, the company needs first to define the customer orientation as a strategic axis, and then to make this strategy last by acting on the next two essential elements:

- Improvement of structures through process control,
- Development of men's skills (Diridollou and Vincent, 2001).

As previously mentioned, the gradual expansion of the concept of competence and its growing importance as a factor of business performance are closely linked to new competitiveness challenges and current developments in the organization of work.

At first glance, the position of individuals in the company may be viewed as a resource whose quality criterion is competence¹. It is worth indicating that competence is at the heart of multiple theoretical approaches. Indeed, the purpose is to address the issue related to the role of skills in implementing the adopted strategy and to develop competitive advantages for the company. In other words, the emphasis will be on the competency-based approach, which constitutes the main theoretical referent of our research work.

2.2 The competence-based approach

Competency-based theory seems to be a new avenue of research which assesses the company through its capacity of creating knowledge and skills. Indeed, the firm operates in a competitive environment, and its situation depends on its competencies and resources and not only on its position in the market (Chaudey, 2014).

Based on such reasoning, it may be asserted that the main question that comes to our mind is to find the way the company can build competitive advantages that are useful for its performance based on the information, resources and data it possesses.

Therefore, with this approach, the role of the human factor becomes strategic. This factor no longer has the simple function of organizing workstations in a coherent manner with regard to the company's objectives, but also of mobilizing skills in order to execute strategic decisions.

In this context, for Le Boterf Guy, competence is the ability to act through:

• Mobilization and combination of a set of appropriate personal resources, such as knowledge, know-how, behavior, etc., with their environment, like the databases, colleagues, experts, and other professions;

• Management of a set of professional situations;

• Obtaining results (products, services) that satisfy certain performance criteria for a given recipient who can be a customer, patient, user, etc. (Diez and Sarton, 2012).

These same authors have reported that competence lies in the arrangement of resources, as well as in the sequence, combination and completion of an action.

However, this definition specifies that we can only talk about competence in a professional situation and exclude any other life situation outside of this work context.

On the other hand, Plane (2008) proposed a concept of competence that is similar to that of Le Boterf Guy. For Plane J.M., competence is a body of knowledge, and a set of skills and attitudes, theoretical and practical, held by an actor, and implemented while accomplishing his professional activity, in one or more specialties.

For some authors, there is no fundamental difference between this notion and those of aptitude, know-how, skill, expertise or capacity. For others, competence cannot be reduced to knowledge or know-how. To be competent is to be able to mobilize the available resources in carrying out a task.

These two definitions, which are presented here for information only, allow deducing that competence is an arrangement resulting from the combination and activation of a body of knowledge that is acquired over time and implemented in professional situations. This can be the basis for its validation.

Therefore, one may assert that competence represents a link between knowledge, practice (know-how) and behavior (interpersonal skills).

As previously stated, the strategy is thought out and implemented for the sole purpose of guarantying the performance of the company. For Darbelet et al. (2007), the strategy is a process involving reflection (strategic analysis) and action (strategic choices) through which the company makes the necessary changes that allow

maintaining its competitive position. Indeed, the adopted strategy aims to significantly and sustainably consolidate the company's position in its environment and to enable it to develop competitive advantages over its rivals, by providing answers to the following questions: 1) How to be successful in the face of competition? 2) How to flourish? 3) What element (s) should the company rely on in order to develop its activities?

• Strategic competencies in a company

A recent analysis of the importance of competitiveness in companies has highlighted the role of competencies in making strategic decisions and choices. In this context, it was revealed that to be successful, a business must clearly define its mission and strategy; its success should also depend on the compatibility of this strategy with the actions it undertakes, the requirements of the environment, as well as on the level of interaction between the actions it undertakes and the portfolio of its competences (Beirendonck and Leroy, 2001).

It should be noted that the competency-based approach gives a new concept of the company by considering it, not through its activities, products and markets, but mainly through the skills of its personnel. Thus, the strategy no longer appears as a rational exercise of adaptation, but should rather be seen as an architecture that helps to develop skills within the company. From this perspective, it is first and foremost up to the company to identify its resources and skills. Once this has been done, they should then be assessed in the context of their competitive environment.

Finally, the company must create a stimulating and encouraging work climateas often as possible. In this context, Le Boterf Guy (2015) argued that developing a business strategy is one thing, and implementing it is another. It is not enough to have a strategic project; it is also required to have the capacity to implement it.

Experience has shown that taking action depends to a large extent on the skills and motivation of staff. (Malek, N. et al., 2019)

It should be noted that the difficulty may be even more immediate when moving from the strategy itself to more significant action plans, like successfully launching a new innovative product, or even making a successful organizational change. This would require employees to have a great capacity to perform new things using different approaches. It would therefore be tempting to say that most strategies fail due to a lack of sufficiently competent collaborators to implement them effectively.

• Human skills as a source of competitive advantage

A business can only survive if it knows how to define and defend its uniqueness in a market subject to extreme competitive pressures. This should distinguish it from its competitors. It is worth recalling that it is vital for a company to be able to secure a sustainable competitive advantage. Furthermore, the competitive advantage translates into a strategic desire to accomplish collective, permanent and transversal work. It refers to the value that the company is able to create and deliver

to its customers. In business, this advantage lies much more in the enhancement of human skills. On the other hand, the company cannot then be considered as a simple portfolio of activities determined by a technology, such as a product, a price or a market. It is interesting to take the example of Japanese companies which support the idea that successful companies are those that think in terms of skills portfolios and not in terms of business portfolios. Likewise, in a climate of competitiveness, it is essential for a company to have a sustainable competitive advantage over other firms. According to the theory of strategic resources, in order to have a competitive advantage, a resource must have the particularity of being precious, difficult to imitate and not substitutable. It is widely acknowledged that human resources are the real wealth that any company ought to have so the conditions mentioned above can be satisfied. These resources can certainly create a lot of value. Therefore, competence and real team work within a company can certainly help the company to acquire a sustainable competitive advantage. In this context, it is worth citing one of the results of the theory based on the core competency concept, developed by Prahalad and Hamel (1996), which indicates that the detection and arrangement of human resources skills do indeed allow companies to build their business innovation and guarantee their sustainable development.

Nowadays, competence has become one of the pillars of success within any company. Therefore, today's companies are urged to consider competence as a strategic variable, as it is certainly the level and nature of competence that will increasingly highlight the differences between competitive companies et al.

In the skills-based approach, building a competitive advantage must be founded on a higher valorization of the competent personnel of the company. To contribute to the development of a sustainable competitive advantage, skills must be valued, rare, inimitable and non-substitutable (Brulhartet et al., 2015).

The identification of these determinants aims in fact to push the reasoning further to see that the combination and mobilization of skills may create new horizons of value development that the company is supposed to follow in order to outclass its competitors and develop a sustainable competitive advantage.

2.3 ISO 9000 quality management standards and skills development

The ISO 9000 series standards, more particularly ISO 9001, represent a reference framework, a common basis for quality management for any company wishing to set up a quality approach (Ghomari, 2003). This approach is reflected in a management method whose success depends, among other things, on the commitment of human resources. It challenges the mode of organization advocated by Taylor based on the division of tasks, control, etc. In addition, this approach offers a mode of organization where the wealth of the company and the performance of everyone are, to a large extent, founded on the dynamism and competence of its human component. It is widely acknowledged that one of the originalities of the quality management system (QMS) is about respectingpeople and enhancing human potential and skills. This valorization is particularly felt in terms of training, communication and staff involvement.



Fig. 1: What are the means and requirements conveyed by this standard in terms of competence?

Source: Diagram developed based on our own research

According to Loukil (2005), the ISO 9001 standard should contribute to building and strengthening skills by favoring the creation and transfer of knowledge.

• The role of communication in skills development

At a time when human resources are recognized as one of the decisive factors for the success of the company, communication becomes a strategic asset for the development of the skills of its personnel. Indeed, communication promotes interactions and enhances the sharing of knowledge and know-how through the organization of meetings or workshops or even through organizational procedures.

Furthermore, communication should be viewed as a means of developing skills. Also, communication directly contributes to improving the productivity of individuals in an overall working environment, facilitates functional relationships, and opens up horizons to enrich and bring new ideas.

Indeed, an objective look at the texts of the ISO 9001: 2008 standard makes it possible to find communication requirements in several paragraphs, in particular in article 5.5 that is about *Responsibility, authority and communication*.

• Quality, practice of training and skills development

The implementation of a quality approach undoubtedly requires competent staff. Indeed, the ISO 9001 standard requires companies to adopt effective training programs, when the need arises.

Furthermore, training constitutes an asset within the company insofar as investing in the training of human resources would certainly help to build a range of skills required to meet new requirements and respond to changes in the world of business.

In addition, it should be noted that training enables companies to create and enhance the skills and productivity of their workforce while improving the quality of their products and services. It is the essential ingredient for improving the quality of work as it helps to develop the skills of employees and also to guarantee competitiveness. In short, it is the key to better develop, improve and use the capacities of their human resources.

• Employee involvement and competence development

The quality approach is a management method that is based on the sustained attention paid to quality by all stakeholders, at all stages of production. It is for this reason that it needs to be accompanied by a participatory approach.

Furthermore, it should be mentioned that this injunction is not without influence on the development of skills within the company Dupuich (2011) and Pigeyre et al. (2002). Indeed, by adopting such a vision, each actor within the company, whatever his function, is called upon to develop his responsiveness and to use his knowledge wisely in complex tasks and situations. Therefore, this type of reasoning promotes and reinforces organizational learning as it allows everyone at the company level to share with others what they are expected to do. Consequently, each individual error becomes an opportunity to progress together, each suggestion becomes a collective wealth, and each piece of information shared allows everyone to do even better than the previous time.

3. Research methodology

This work was built in a way based on assumptions, we adopted a hypothetical-deductive approach which consists in making hypothesis, collecting data, then testing the results obtained to refute or support the assumptions. We made a projection on the first ISO certified company in Algeria, in this case ENIEM.

The figure below, we present the methodology we adopted for the development of our field study.



Fig. 2: General architecture of the case study

Source: Diagram developed based on our own research

3.1 Sample

Thus, in the context of this research, the study population refers to the personnel who make up the different production and management units in the ENIEM Company. The sample included 1656 employees at the end of 2016.

The method of Krejcie and Morgan (1970) was used to determine the sample to be studied.

$$S = X^2 NP(1 - P) \div d^2(N - 1) + X^2 P(1 - P)$$

S = required sample size.

 X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

N = the population size.

P = the population proportion (assumed to be 0.50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (0.05).

On this basis, this sample involved 312 individuals distributed according to the stratified sampling method by considering the socio-professional categories approved by the ENIEM Company. The following table summarizes all of these results.

Socio-professional categories	HR/ SPC		Sample HR/ SPC		
(SPC)	Number	%	Number	%	
Executives	280	17%	53	17%	
Foremen	452	27%	85	27%	
Subordinates	924	56%	174	56%	
Total	1656	100%	312	100%	

Table 1: Sample distribution according to socio-professional categories

Source: From our own work

3.2 Measures

This survey was conducted on the basis of a questionnaire. A pre-test was carried out with the managers surveyed within the company in order to verify that the items are well understood, and to check the relevance in choosing these items

The "skills improvement" measurement model has several dimensions. These are represented by a set of exogenous variables which are 2 in number (reserved for the practices of the quality approach) as well as an endogenous variable which concerns the improvement of skills.

The variables of the model are measured and operationalized using the different items (manifest variables) which are formulated in the form of questions. The items were developed from the literature on the QMS, human skills and business performance. Thus these items were measured through a Likert scale of 5 levels. For each statement, the interviewee is asked to position themselves on a scale ranging from "Totally disagree" to "Totally agree".

The exogenous variables of the research model are 2 in number relating to the quality approach, of which one variable measures the practice of the quality approach via training with 5 items and the other variable relates to the practices of the quality approach via internal communication (4 items) and involvement (4 items). The endogenous variable concerning the improvement and retention of skills was measured by 7 items.

4. Data processing

4.1 Descriptive analysis

The results of the descriptive analysis of the characteristics of the sample elements suggest that the respondents are male and female. The majority of employees surveyed are executives (48%); the rest belong to the other two categories.

Furthermore, 26% of the respondents have more than 10 years of experience. The rest, i.e. 52% of employees, have a seniority ranging from 5 to 10 years. In addition, 20% of ENIEM employees have been within the company for at least one year. Finally, 3% have less than one year of seniority.

4.2 Test of the measurement model

The main purpose of this test is to verify the reliability and validity of the measurement tools. More precisely, in this test, it is a question of evaluating and determining the degree of inter-correlation of the items and to check the potential of each item to determine the others. Table 2 summarizes the reliability results of the measuring instrument used in this research.

ENIEM									
Constructs		CR	AVE	Alpha de Cronbach	Α	в	С		
Α	Quality approach (Training	0,878	0,710	0.891	0,764				
в	Quality approach - Internal communication & Involvement	0,798	0.668	0.818	0,456	0,799			
с	Development and retention of competent personnel	0,894	0.738	0.846	0,354	0,641	0,896		

Table 2: Measurement model test results

Source: Smart PLS V3

With α = Cronbach's alpha, **CR** = Construct reliability, **AVE** = Average shared variance

The data in the above table shows that:

• All the reliability measures recorded in this study are well above the recommended limits². The values of the alpha coefficient vary from 0.818 to 0.899. Moreover, those relating to the composite reliability (CR) index are between 0.798 and 0.920. These results indicate that the internal consistency coefficients are satisfactory, which means that the scale used is quite reliable.

²In practice, it is generally considered that the homogeneity of the instrument is satisfactory when the value of the coefficient is at least equal to 0.6 for the Cronbach's alpha and to 0.7 for the composite reliability index.

• All AVE measurements reach or exceed the threshold value of 0.50, which suggests that the convergent validity conditions are satisfied by our operationalization variables.

• The square roots of the AVEs located on the diagonal are greater than the square roots of the AVEs outside the diagonal, which confirms the discriminant validity of our measurement scales.

4.3 Estimation of the structural model

• Fit test

The fit of the overall model is estimated by calculating the goodness of fit (GOF), which theoretically must be significant if it is greater than 0.36. It is expressed as:

$$GOF = \sqrt{(\overline{AVE}) \times (\overline{R^2})}$$

Where AVE is the average shared variance, and R^2 is the coefficient of determination.

The goodness of fit for ENIEM was calculated (GOF = 0.60) using R² = 0.514 (average of R² of variables presented in the table) and AVE = 0.710 (average of AVE of the variables of the model multiplied by the number of items for each variable). The results obtained for the considered index are within the recommended range.

It is worth indicating that, in view of the tests carried out and according to the most widely accepted standards, the reliability, validity and quality of our model are well confirmed. This therefore allows, at this stage, testing the hypotheses.

Fig 3: Final model after purification and validation of measuring instruments



Source: Smart PLS V3

• Testing the hypotheses

For the purpose of checking the hypotheses, it was decided to use the values given by the student's t-test. According to Urbach and Ahlemann (2010), these values make it possible to test the significance of causal relationships. It should be noted that the coefficients are significant if the Student's t calculated on the average of samples is greater than 1.968.

In the PLS approach, the significance of the Student's t coefficients is calculated using the statistical bootstrap technique³ (500 to 5000 replications), which suggests that the results of the error checking test in the relationships between exogenous variables and endogenous variables (p-Values), for both relationships, should be less than 0.05%. The table below summarizes the coefficients of regression between the latent variables, considering the original sample and using the bootstrap technique.

Note that each hypothesis in the model was treated separately in order to simplify the interpretation of the results. As a first step, and in accordance with the formulated hypotheses, the relationship between training and skills development was examined. Analysis of the results showed that there is a positive and significant correlation between training and skills development (T-statistic values exceed 1.96 and p-value <0.05). These findings confirm those found in the literature. It turns out that training is a powerful tool that companies should use in order to improve the skills of their personnel.

ENIEM							
Research hypotheses	Initial sample (O)	Standard deviation (STDEV)	T value STDEV	P Value	Results		
Quality approach (Training) => Development and retention of competent personnel	0,326	0,058	5,610	0.000	Accepted**		
Quality approach - Internal communication & Involvement Development and retention of competent personnel	-0.123	0.151	0.813	0.417	Rejected		

Table 3: Testing hypotheses

Source: Smart PLS V3

³This method consists in assessing the model on a large number of sub-samples randomly within the main sample.

As a second step, the effect of the two variables, namely internal communication and personnel involvement, on the retention of skilled personnel was examined. This procedure helped to show that the interaction between internal communication and employee involvement variables on one side and skills development and skilled personnel retention variables on the other hand positive effect on performance within the Condor Company. Furthermore, it was found that these same variables have weak, or even insignificant, effects on the development and retention of skilled personnel within the ENIEM Company (T-statistic values are less than 1.96 and p-value > 0.05).

5. Discussion of the results

At the end of this analysis, the main results obtained are as follows:

5.1 Perception of integration of a new project - The ISO 9001 certified quality approach

Any change is first and foremost about establishing a new mindset shared by all the personnel. In this context, the quality approach as a dynamic of change is considered above all as a particularly cultural change project, requiring a high degree of involvement of all actors within the organization.

Analysis of the results of the ENIEM survey shows that the personnel lack the culture of quality, which poses the problem of rejection and resistance to change. This must undoubtedly hamper the achievement of some of the objectives set beforehand.

It should be noted that the lack of quality culture observed within the ENIEM Company is mainly due to the lack of user involvement in the management process, to the absence of sufficiently intense communication to justify and explain the actions carried out, and also to the absence of accompanying measures that would facilitate the transition. Indeed, the actors within the company are forced to make a change whose content and implementation methods are completely beyond their control.

This observation has just confirmed once again the results obtained by Arab, A (2016) who concluded that the participants in the quality approach of this company are satisfied only with certification; continuous improvement and performance only come as a last resort. This is due to the absence of an organizational culture oriented towards quality/customer

5.2 Effects of quality approach on human skills

The results of the survey carried out clearly show that quality management and human skills are closely linked. This organizational model is never without consequences on human skills.

Correlation between the practices of the ISO 9001 certified quality approach and skills development

The latent variable of staff training has positive and statistically significant influences on the development of human skills within the surveyed company.

• Correlation between the practices of the ISO 9001 certified quality approach and the retention of skill workers

It was revealed that the staff involvement and internal communication variables have weak, or even insignificant, effects on skills development and retention of skilled personnel within the ENIEM Company.

This leads us to adopt the results of the study carried out by Dhiaf (2007): The "Human Resources" practice has an indirect and largely significant effect on the "Policy and Strategy" practice and the overall Performance defined in the term of internal process. In contrast, with the "internal communication" practice, he had noted the absence of an indirect link with the "Human Resources" practice.

Arab (2016) affirms that the non-capitalization of the learning achieved within the framework of the certification will prevent the company from progressing towards the desired level of competence

At the end of this study, it should be noted that a problem still persists within the ENIEM Company despite the beneficial implications of the quality approach in developing human skills, through various mechanisms. This is probably due to the loss or departure of skilled workers.

6. Conclusion

It is worth recalling that the main objective of the present work is to explain the repercussions of managerial innovation of the Quality Management System type on Human Resources. In this regard, the analysis conducted so far through the approach developed in this study has highlighted the importance of the ISO 9000 standards. It may therefore be asserted that the use of certification involves organizational issues, i.e. a company that decides to start an ISO9001 type certification procedure generally aims to develop skills and present them as new key success factors that must be used to outperform its competitors while producing competitive advantages.

In the skills-based approach, the use of the ISO 9001 standard is then justified by the company's need to create value and ensure a sustainable competitive advantage while optimizing its organization and mobilizing its skilled personnel. From this perspective, this standard may be viewed as the very essence of skills development within the company. Indeed, competent personnel allow the company to create new knowledge and to strengthen learning capacities.

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