

IMPACT OF PERFORMANCE EVALUATION ON BUSINESS COMPETITIVENESS – ENGINEERING’S CONTRIBUTION

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Abstract

The following article aims to show the contribution of engineering professionals to the impact of performance evaluation on business competitiveness. In this sense is presented a conceptual model. It is intended to promote excellence in education, technology, and science by presenting the contribution of cooperation by engineering professionals towards business development by strengthening the human qualities and technical competences of the business collaborators. The contextualization of the presented problem had as matrix, a review of the literature on the role of engineering in the development process of education, performance evaluation, and business competitiveness. From the literature review, the article establishes that present-day engineering is understood as a source of quality of life for citizens, due to its responsibility face technical and management resources that contribute to sustainable development. Starting with this paradigm, this article is aimed at motivating the interaction between technology, economy, and society and therefore answering to the new social responsibilities of the technical professions.

Keywords: performance evaluation: school vs. enterprise; education, technology, and science; business competitiveness; engineering and the performance operational skills.

1 Introduction

Today, the mission of educational institutions is to offer a public service by endowing all citizens with skills and knowledge that will enable them to explore their abilities and talents, to be part of society, and to contribute to the economic, social, and cultural development of their country. In accordance with Decree-Laws no. 75/2008 of April 22 and no. 137/2012 of July 2, in order to pursue that mission with quality and equity, undergraduate and graduate schools are organized in a strategic way and opened to the outside world.

The new mission of higher education, as per the Bologna Process (Decree-Laws no. 74/2006 of March 24 and no. 107/2008 of June 25), is to develop an educational system based on the improvement of students' skills by considering experimental or project work as critical for the acquisition of soft skills. It is considered that, in this context, education for citizenship, performance management – performance evaluation, in particular – and business competitiveness are instruments that contribute to the development of functional and operational skills of human resources in organizations. Therefore, it is pertinent to ask the following main research question:

In the field of engineering, what kind of skills should be developed by schools, universities, and enterprises so that performance evaluation could contribute to improving business competitiveness?

Bearing this in mind, other research questions shall be asked by this article:

- Do educational institutions – in particular, university – respond to the present needs for the acquisition of skills required for the labour market?
- What is the role of engineering professionals in the acquisition of technological and operational skills?
- Do the new social responsibilities of the technical professions demand that present-day engineering be a source of quality of life of citizens?
- What is the best strategy to connect the technical, social, and economic interdependence between engineering, education, and competitiveness?
- Do vocational training and performance evaluation mobilize workers for a culture of merit and improvement of business competitiveness?
- What are the factors that influence the competitive performance of enterprises?

The study “School versus Enterprise – Evaluation of Performance towards the Improvement of Business Competitiveness” represents the civic and academic concerns, aiming to highlight the connection between education, engineering, and Portuguese businesses. The study’s main goal is to show the impact of education and performance management (with a particular focus on performance evaluation) in the development of soft skills oriented towards business competitiveness. It also seeks to find solutions that help to improve and implement technical procedures that result from the connection between the school and the enterprise. To this aim, knowledge should be understood as the foundation of the productive system that originates new competitive goals, therefore assuring the sustainable development of companies and, consequently, countries. With engineers and industrial managers being responsible for the new challenges faced by economic and social development, it is critical that they make a committed contribution given the new paradigms that mobilize the qualification and creation of value in both education and the economy. For this purpose, engineers should consider and stimulate innovation, continuous education in professional activity, and the ability to improve competitive advantages. In this perspective, the humanist triangle of the modern professional action of engineers will be the challenge of skilfully combining three fundamental pillars of development: education and technology, performance management (with particular attention to performance evaluation), and business competitiveness. This article identifies that the sharing of productivity successes, in projects connected to real life, between educational institutions (university in particular) and the enterprise contributes to economic and social sustainability. The performance evaluation is considered as a contribution to the continuous improvement of effective development of people and as an instrument of mobilization for achieving excellence. In education, the present recommendations from the European Union are suggested, namely the need for education to be present throughout the life-cycle as a source of progress and personal responsibility, which demand competences aimed at collective mobilization [1].

According to Bozorgmanesh et al. [2], the updating of competences allows for a general self-perfectionism, and “an educated and qualified population represents one of the strongest foundations to ensure a strong and healthy economy and an inclusive society”.

The article is based on theoretical foundations that represent and articulate education, technology, and science and aims to identify skills in the field of engineering, at school and in enterprises, that could influence performance evaluation and improve business competitiveness. Engineering skills enable the promotion and development of the technical, economic, and social processes of companies with competitive sustainability. Also, the engineer, while being a manager of resources, contributes to business competitiveness, establishing a dynamic propagation of functional and operational skills. It is also considered that, throughout the life-cycle, education ensures the acquisition and renewal of soft skills that contribute to performance improvement and business competitiveness. This paper intends to recognize the importance of engineers in the acquisition of technological and operational skills by business collaborators; to

enhance educational policies, divided between school and enterprise, as a contribution to an equitable and sustainable human development; to state the importance of performance evaluation in the development of operational skills; and to identify factors that contribute to increased business competitiveness.

The article is structured in theoretical foundations and addresses concepts related to engineering, education, performance evaluation, and competitive factors in companies. In this sense is presented a conceptual model. The second section aims to identify the responsibilities of engineering professionals in finding solutions to problems that arise in business; it also seeks to show the action of the engineers with regard to new challenges in the development of competitive business. On the other hand political education shared between the school and the company – the goal is to focus on the importance of the link between the school (the university in particular) and the company with the need for knowledge to develop skills for working life. The main objective of sub-section performance evaluation and operational skills – is to show how performance evaluation contributes to the continuous improvement of the operational skills of company employees and is a key factor in organizational sustainability. In the sub-section – factors that contribute to business competitiveness – the goal is to identify factors that provide for the development of operational and functional professional skills effectively, contributing to the development of competitive business.

2 Background

2.1 Engineers and functional competences in enterprises

The paper assumes a connection between education and enterprises in order to contribute to the improvement of efficiency and effectiveness in individual and collective performance. This paradigm is considered strategic to ensure business competitiveness and also successful globalization. Technological developments in outsourcing and globalization have forced companies to organize themselves and find solutions that involve innovation, differentiation, skill sharing, and qualified human resources. In the scope of their professional function, engineers are considered, through their skill set, to be obligated to identify solutions that will contribute to overcoming some of the problems of companies, ensuring their economic growth.

Alic et al. [3] state that engineering contributes to the economic development of countries, preparing them to face the challenges of competitiveness. They explain that cooperation between higher education facilities and industry is crucial to guarantee the employability of recently graduated engineers.

According to Guo et al. [4] there is a positive relationship between human capital and a successful career. They consider that the measurement of success of a professional career suggests that knowledge involves four dimensions: (i) education, (ii) work experience, (iii) ability to learn, and (iv) the ability to train, with a successful career having internal and external competitiveness depending on organizational and professional satisfaction.

From the point of view of Bayless and Robe [5], the ability to compete and innovate depends on the solutions found by engineers with their leadership skills. Their work shows that the interdependence among the solutions found to technical, social, and economic problems forces engineers to permanently improve their soft skills in order to be able to carry out problem solving with competitive success.

Ngai et al. [6] identify the critical success factors for the implementation of an effective system to support monitoring in an aeroplane engineering company in Hong Kong. The study shows that the following requirements must be met: the creation of strong internal and external motivation for improvement; keeping up with the most recent technology to enable global competitiveness; working to implement transversal organizations; avoiding changes in important procedures; facilitating investment by equipment suppliers; using reusable materials (resources); developing transferable skills; and sharing knowledge between the university and the enterprise.

Sunthonkanokpong [7] has a vision for the future of the engineering teaching which argues that the role of engineers will change due to the following factors: the globalization of industry and the practice of engineering; changing the application of engineering from large companies to small- and medium-sized companies; a growing emphasis on entrepreneurship; the knowledge-based economy; and growing opportunities to use technology in

education and engineering work. Moreover, he states that engineering graduates will only be well prepared in 2020 if they have the following attributes for success: being students throughout their life-cycles; developing the ability to solve social, technical, and operational problems; being dynamic, agile, resistant, and flexible; and possessing high ethical standards, common sense in professionalism, good communication, and leadership skills.

Cao et al. [8] focus on engineering projects oriented for manufacturing processes in companies, based on “simultaneous engineering” and technological engineering. With their study, they argue that it is critical to reduce costs across the life-cycle of the product, with simultaneous engineering contributing to that reduction. This will be possible if they have all the skills related to product engineering and simultaneously manage the operational working conditions.

Summing up, it can be said that engineering professionals, by using the skills they possess, promote, and develop, are a fundamental and decisive lever in the competitive and sustainable business development process. With the identification of solutions, they boost the growth of functional knowledge with the responsibility to operationalize products and systems applied to the real world. In this context, the engineer, being a manager of human resources and products, must understand concepts such as management, economy, innovation, entrepreneurship, and labour relations and should also assume and promote a general culture with permanent updates in the various areas of technical, cultural, and social knowledge.

The new challenges of economic and social development were treated in the XVIII Congress of the Professional Association of Engineers (PAE) that took place in Aveiro, Portugal, under the theme “Engineering in the 21st Century – Qualification, Innovation and Entrepreneurship”. The main conclusions drawn from this meeting were[9] :

- (i) *“Innovation in real economy lacks a narrow and permanent connection to school and the research, development and innovation establishments. However, it must be focused on the satisfaction of the needs of companies in order to meet market expectations”;*
- (ii) *“Engineering and Engineers have a critical role in the new paradigm of economic development and in the assurance of its sustainability”;*
- (iii) *“The current economic and financial crisis is an opportunity to correct mistakes that have been made, enabling new forms of organization and understanding between the economic players. Engineers, as they have done in the past, have solutions and are up to meeting the challenges that the society in general are facing. It is in difficult situations that great changes start; the future generations will not forgive us if we fail”.*

At the 29th National Congress of the PAE, which took place at the Centro Cultural de Belém in Lisbon in October 2010, with the theme “Society, Territory and Environment”, the following conclusions were drawn [10].

- (i) *“A deeper analysis is needed, both quantitative and qualitative, of the engineering and technology teaching system, in order to identify needs, regulate the supply and consolidate quality. The national interest and the rational application of resources must prevail in an unequivocal manner over interests and sectorial or local particularities”;*
- (ii) *“The PAE enforces its availability to collaborate with the public entities or with movements of the civil society in the search for the best national solutions to the issues of sustainable economic development and of social interest, where planning, engineering and technology have a relevant role”.*

Some of the conclusions indicated in the last two congresses of the PAE were mentioned in this study, bearing in mind that the public development policies must be in agreement with the goals of the economic policy, articulated with the fact that the State delegates decision-making to the Professional Public Associations.

2.2 Educational policies shared between school and the enterprise

The concept of education has changed over time as a result of social and cultural changes. Political and economic concerns have contributed to new conceptions, new knowledge, and new educational practices. Actually the new cultural and civilizational transitions represent a great opportunity for deeper reflections about education, which is assumed to be a project in the full respect for the person and his or her liberty and intellectual and economic independence.

The first stage of education is naturally ensured by the family on an emotional and cognitive level and includes values and norms. Afterward comes integration in the school system from pre-school education up to the following educational levels. However, education is also influenced by the social environment where one lives (religious, political, etc.). According to the Commission on Education in the 21st Century [1] when one enters into the labour world, the enterprise is also a place for education. Therefore, education must perform its role by articulating the dynamics of innovation and development that are established in organizations. In the context of globalization, the new challenges for business management require changes in the training of its collaborators so that competitiveness can result in higher quality and lower cost. It is also strategic to invest in the qualifications of professionals, using all the available means to achieve improvements in their knowledge.

According to Miron [11], in the new age of globalization, with knowledge being considered a competitive advantage, the role of universities must change and they should behave like an enterprise, especially in terms of the optimization of intangible assets. According to this author, the connection between education, training, and innovation is the key to economic development and competitiveness.

From the point of view of Gadotti [12], educational systems cannot yet evaluate the impact of either audiovisual communication or computer technology in the right way. The use of new technologies has created new spaces of knowledge, as people have access to the cyberspace of training and learning, integrating the society of knowledge. In this context, the school should organize a global movement of cultural renewal, taking advantage of this wealth of knowledge. School must not trail behind technological innovations. It needs to be a driver for innovation. We have a tradition of giving little importance to technological education, since it is considered a type of education that starts earlier in children's education.

For Dowbor [13], school stops being "a teacher" and becomes a "manager of knowledge", becoming crucial for development. The role of school is to build the future. The enterprise should assume an important role of educational and social responsibility that ensures its workers receive training in the human qualities manifested in interpersonal relationships at work, such as "know how to work collectively, have initiative, know how to communicate, know how to solve conflicts [and] have emotional stability".

Valette and Savourie [14] state that education must be presented as a global system and not as a succession of independent modules. In their study, they indicate that the present industrial context must develop innovative products that are cheaper and more competitive. For that, companies need qualified employees who can immediately perform operational tasks. They show that the Department of Production and Mechanical Engineering of the Polytechnic Angers-Chalet, in France, proposes educational solutions with concrete projects in the first years, in accordance with the official programme, and they establish strategies to encourage curiosity and innovation in their student population. Each project is a multidisciplinary project; namely, it considers conception, manufacturing, management control, and communication in the English language.

According to the Commission on Education for the 21st Century, it is the mission of higher education to assume the monitoring of economic growth in modern societies, since it is the keeper and creator of knowledge. It is, therefore, the fundamental tool in "transmitting the cultural and scientific experience accumulated by mankind" and is considered to be the main centre of education throughout life since "due to innovation and technological progress, the economies demand increasingly more competent professionals, skilled and with higher education degrees". Furthermore, there is more appreciation of the cognitive resources responsible for development, "a set of traditional functions associated with progress and knowledge transfer: research, innovation, teaching and training, permanent education (...) and the international cooperation" [1].

These and other functions contribute to sustainable development and thereby higher education institutions have the scientific, civic, and moral responsibility to help societies to overcome their local problems. In order to improve the quality provided by the higher education institutions, they "must open their doors to teachers that come from the economic sector, as well as from other sectors of society, in order to facilitate the transfer of knowledge between these sectors and the education sector" [1].

Higher education follows the evolution of the labour market and is trying to respond constantly to society's needs through new courses. The mission of universities is to play an active role in the transformation processes of

society through debates about the internationalization of research, conceptions, activities, behaviours, and technology. In this way, they create the conditions that enable underdeveloped countries to reach higher levels of development more quickly.

In Portugal, the new organizational model of higher education is based on the Bologna Process (Decree-Law no. 74/2006, of March 24, and Decree-Law no. 107/2008, of June 25), which is understood as an opportunity to motivate attendance in higher education and to improve the quality and relevance of the training programmes offered in order to encourage students and graduates for mobility and internationalization of training programmes.

The new organizational model of higher education takes into consideration the following issues:

- Creation of opportunities for all citizens to gain access to learning across their life-cycles;
- Organization of higher education in three cycles;
- Changing the teaching paradigm from a passive model to a model based on skill development;
- Ensuring conditions of equity in the training, programmes, and professional integration of students;
- Differentiation of goals between polytechnics and universities, in a context of equal dignity and rigour but with different vocations;
- Establishment of international partnerships that generate synergies between institutions (in “Preamble of the Decree-Law no. 74/2006”).

It must be stressed that the role of education in the European Union, which brings together various countries for the fulfillment of the Bologna Process, is operationalizing great changes in higher education. According to Decree-Law no. 107/2008, one of the goals of the Bologna Process is “the transition of an education system based in the transmission of knowledge to a system based on the development of student skills, in which the experimental work or project components, among others, and the acquisition of soft skills must perform a decisive role”.

Due to this paradigm, it could be stated that the new societies assume that schools and enterprises have a social responsibility to develop skills oriented for professional life.

Considering education as a collective asset, education policies have an obligation to define the best strategy to achieve teaching with equity, quality, efficiency, and effectiveness and that respects the principle of equal opportunities. With this educational matrix, a contribution to a culture where the skills and knowledge of human resources walk hand-in-hand with a strong economic performance and with the necessary business competitiveness is established.

2.3 Performance evaluation and operational skills

This study seeks to demonstrate that the evaluation and improvement of the performance of an organization’s collaborators is fundamental for businesses and countries to achieve competitiveness. It aims to improve the efficiency and effectiveness of the performance evaluation process, which reflects the effort of continuous improvement by collaborators in order to obtain value creation by organizations. After the literature review on this topic, it can be stated that qualified human resources represent an excellent way for organizations to gain competitive advantages in the long term.

Despite the subjectivity associated with the organizational performance concept, the performance is related to the results or outputs obtained when compared to the patterns and goals that correspond to the creation of value in a given time period (Lebas and Euske [15]). According to Seixo [16] the individual or group performance represents the way it is done and when it is done and what is expected to be done”, as it is not worthwhile for people to use their time to perform tasks that they find important but that add little value to the organization. For Lorino [17], the performance is strictly related to the variables that contribute to the strategic goals achievement by the company”.

According to Vroom (in Mitchell [18]), performance results from the interaction between the abilities/skills of the individual and his or her motivation. He admits that with one of the factors being null, the performance will also be

null. Therefore, a weak performance may result from motivated people with a lack of skills or people who are over-skilled but without motivation. Schmidt and Hunter [19] have concluded that the general intellectual capabilities are the best forecaster of the functional performance.

Caetano [20] shows that the evaluation of professional performance has been the subject of scientific research through time, focusing, in the last decades, on *managing people and their performance*, considering it as the phenomenon that most perturbs the way organization works. He argues that individual performance depends, to a great extent, on *the organizational and work systems* (systemic or contextual factors), *regardless of personal or individual factors*. According to the same author, organizations establish the performance evaluation, aiming for the existence of a contribution “to improve performance and economic and social sustainability of the organization”.

Lebas and Euske [15] state that there are relevant performance tasks, and that the effectiveness of performance depends on the contribution of *behaviours* and *results* to the achievement of the goals of the organization, as well as the organizational and technological context, as factors driving performance levels. They also consider that, with performance being a dynamic concept, it should be defined and monitored at individual organization level and the appropriate indicators should be chosen.

Alves [21] states in his book that the evaluation, more than just finding guilty parties and punishing them, must lead to the correct determination of the deviations found and define the actions needed to correct them and prevent them from happening in the future.

Bozorgmanesh et al. [2] state that learning across the life-cycle demands a continuous construction of abilities and knowledge that occur in an individual through formal (training, monitoring, tutoring, guidance, learning, and higher education) or informal (experiences, situations) experiences.

He considers that, in this way, one improves social inclusion, active citizenship, competitiveness, and employability. Miranda and Pavon [21] mention that the importance of selecting people who are suitable for the constitution of a successful work team requires a support model for the decision-making in the choice of potential members of the team. They also mention that trust in the company collaborators influences the performance at individual and collective level.

Considering the performance as a dynamic and simultaneous relationship between actions, its result, and the creation of value originating from the interaction between school and enterprise, Gibbings and Brodie [22] presented an article that focuses on operational aspects of an evaluation strategy for the engineering of learning based on problems. To that effect, they created a course at their university (Queensland, Australia) which initially involved an audit of skills in students to facilitate their placement in balanced teams, therefore enabling an easy and effective monitoring within and among the teams. Students developed an individual portfolio of undertakings that can be extended into their study programmes and professional lives. The strategy offers flexibility to the equitable evaluation of students with different initial skills and abilities. This example leads to the conclusion that investment in the knowledge of human resources influences the economic performance, and maybe the teacher training programmes have the main responsibility for the reform to be developed in teaching systems focused on science, engineering, and businesses.

By analysing several opinions about the process of performance evaluation of collaborators in organizations, it is stated that enterprises need to recognize the performance evaluation as a fundamental factor for their sustainability. This evaluation creates reliable information on the analysis of expected results, and also allows the success of the deployed strategy to be assessed with all the operational skills needed for each situation.

2.4 Factors that contribute to business competitiveness

Competitiveness is a complex concept, as it results from various causes. To compete means to dispute another in the same goal. Authors like Porter, Mintzberg, Buckley, Pass, Prescott, Kupfer, and others have focused on the concept of competitiveness. All of them associate competitiveness with the ability of organizations to fulfill their mission with more success than their direct competitors and to satisfy their customers' needs. According to Kupfer [23], competitiveness is the result of performance and efficiency; however, in line with Buckley, Pass, and Prescott [24], competitiveness is a process that involves competitive performance, competitive potential, and business management.

Although the enterprise is more connected with the concept of competitiveness because it is an agent of wealth creation, all systems in which economic activity is developed must be equally competitive (e.g., public administration, educational systems, financial systems, scientific systems, unions, etc.). In this section, we seek to undertake a systemic analysis of the factors that contribute to competitiveness, leading to sustainability of enterprises with productive profitability, which are targeted for the development of operational and functional professional skills.

Although all approaches agree on the factors that influence competitiveness, according to Ferraz and Coutinho [25], competitiveness is determined by systemic factors, structural factors, and internal factors. However, authors who have investigated the subject have indicated other ways of classifying the factors that influence competitiveness. Porter (1993), mentioned by Silva [26], analyses competitiveness through the competitive advantages of industry and nations, considering strategies and innovations in the first case and the constraints of the country towards alliances and strategic innovation in the second.

In line with Carvalho [27], business competitiveness is linked to the components quality, productivity, and innovation. He understands quality as a cultural component of the enterprise, involving the workers in ensuring the best performance in their tasks, with the workers and the organization sharing common goals. He defines productivity as the rational component of the enterprise, aiming to improve efficiency and effectiveness simultaneously. He establishes that innovation is the component of permanent adaptation to the emergent technological context. He also considers as factors in competitiveness the technology, know-how, and competence (professional “know-know”, “know-to-do”, and “know-to-be”).

According to Silva and Anjos (2000: 3, cit. by Silva [26]) it is from the interaction between companies that a pattern of competitiveness is established, by determining a minimum threshold for the action of companies in the industry. The interaction also acts in the economic structure, provoking adjustments and changes at the base where competition is seen. The existence of a minimum pattern for competitiveness establishes a pattern of behaviour of the market. The competitive capacity of the company is ensured by its ability to conduct the reading of that pattern and to define strategies that allow for the achievement of a new pattern that surpasses the current one, considering the goals of the company. Meanwhile, such capacity is only confirmed at the moment or after the interaction of the firm’s strategies with the market. It is understood here that the competition process implies the understanding of the degree of relativity of the concept of competitiveness.

Since each market and each enterprise has its own characteristics, it can be said that there are no magical solutions for success in competitiveness. However, it must be considered that the use of effective management instruments enables the strengthening of competitiveness. Only a few factors that result from the revision of the literature already mentioned and the sensitivity acquired in business life are indicated, such as:

- i) soft skills of leaders;
- ii) stability and reputation of companies;
- iii) highly qualified labour forces;
- iv) very high academic standards;
- v) continuity of leadership;
- vi) simplicity of the fiscal system;
- vii) speed in solving disputes;
- viii) capability and expedience in decision-making;
- ix) innovation and differentiation;
- x) waste from bureaucracy;
- xi) availability of resources and infrastructures;
- xii) competence, efficiency, effectiveness, and performance of the collaborators;
- xiii) technology and management practice; productivity, quality, and know-how.

These thoughts lead us to guess that the identification of the most relevant factors that influence competitiveness must come from dynamics and the recognition of the market, seeking to be conceived in accordance with the elements that affect their costs or their chain of value.

The competitiveness of enterprises forces a major transformation of the production processes and of scientific and technological progress monitoring in order to optimize the different synergies for the achievement of real successes of competitive productivity.

As a corollary of the structure presented, the need to understand education as an industry socially responsible for mobilizing citizens in improving “functional literacy” in business is evident. The literature review also allows it to be stated that the assessment of performance helps to develop functional and operational skills of workers with a progressive learning towards the merits, quality, and development of professionals. It also refers to the fact that competitiveness in professional practice requires a serious commitment to high standards by all workers to achieve success in the literacy discipline, growth, innovation, quality, and social cohesion. To this end, education should promote continuing training and creative energy that values high performance and competitive effort of all citizens to build a more competitive economic model. In this context, engineering professionals, due to the technical skills they possess, have an obligation to contribute assiduously to identifying the factors that enable competitive advantage assertive, permanently adapted to the context and labour market.

Figure 1 shows the conceptual model, which is focused on a triangle establishing a driving force for development and technical education. Education as a social industry is the cupola of this triangle in which all synergies constantly seeking operational excellence and combating functional illiteracy intersect.

The model shows how education and technology, performance evaluation, and business competitiveness, in order to yielding concomitantly improve the environment in the acquisition of functional and operational competencies of employees. Those competencies geared towards professional life have the help of professional engineering in implementation, creation, and improvement of structural technical measures focused on competitive factors.

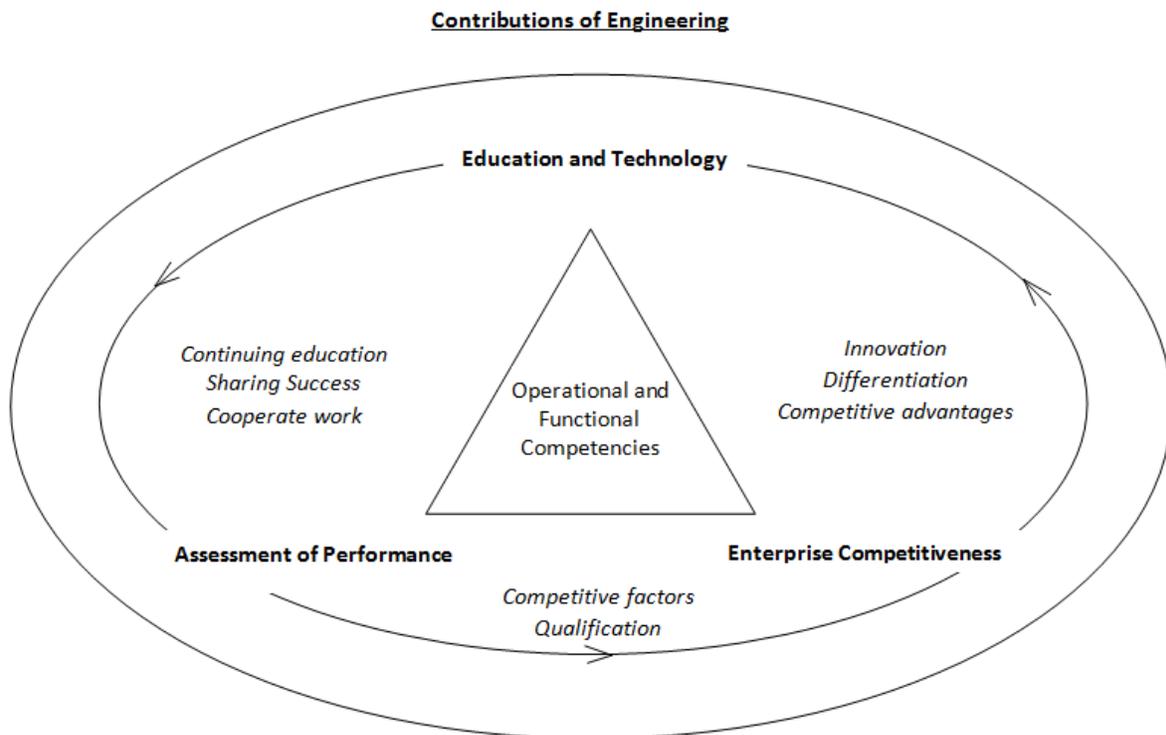


Figure 1 – Contributions of Engineering: Conceptual Model

3 Conclusion

This article has sought to approach the problem of the engineer's contribution so that performance evaluation has a positive influence on business competitiveness in accordance with educational, economic, social, and political perspectives. It has strengthened the importance of quality education in the competitive labour force. It intended to connect competitiveness with performance evaluation, planning of human resources, incentives systems, and business motivation. It focused on the importance of the present action of engineers as entities responsible for the mobilization of competitive advantages such as innovation, continuous training, qualifications, and the creation of value in education, the economy, and global development.

It formulated a theoretical argumentative structure to show that engineering professionals make a strong contribution to the impact of performance evaluation, improving the collaborators' performance, in the leveraging of business competitiveness. It showed some factors that contribute to the progressive improvement of competitiveness, not losing sensibility for that the quality of higher education, the rise of companies, and the macroeconomic stability allow for better competitive investment results.

In this context, education, science, and work are understood as agents of progress and economic growth adjusted to a development model that respects the nature and rhythm of the person, stimulates initiative and teamwork, takes into consideration the local resources, arouse for self-employment, and creates an entrepreneurial spirit. This article has researched the theoretical knowledge of the reality of school and enterprise, seeking to reconcile the dynamics of the literature review with the vitality of business life and supplying recommendations and reflections for society, namely academics, entrepreneurs, collaborators, and politicians.

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List of Figures:

Figure 1 – Contributions of Engineering: Conceptual Model

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