

For a modernization of the Arab and African consulting engineering

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1. Stakes and context

The stakes of the Arab and African consulting engineering are deeply renewed today.

1.1. Increasingly integrated projects and to be appropriate by the recipients

The nature and the definition of the projects changed these last years. The orders are not limited any more to the realization of a structure or a given infrastructure but extend to the socio-economic sphere while seeking so that the work is at the origin of a project of local or regional development. The sectoral approaches must leave the place to more global and transverse solutions. The extent of the mission of the originator goes beyond the delivery of the work but is interested more and more in " the life " of the work by prospecting the conditions of its appropriation by the recipients and by conceiving as a preliminary the mode of its exploitation. Other aspects such as the participative approach became quasi-systematic in the studies of projects, since the preliminary stage of the diagnosis until the realization even of the work which must often associate beneficiary and bordering inhabitants (e.g.: Labour Intensive works). Leading the design then the implementation of projects requires thus more and more involvement of engineers and experts of diversified specialities. An engineering consultancy office must include several specialities among its operational personnel or, at least, ensure that its engineers are opened and initiated with other disciplines. In the same way working in network became essential, implying more than one organization at the same time. The direction of the teams of engineers and experts involved in a project and the coordination between those constitute from now on themselves a " trade " well distinguished from the others, calling upon new profiles of project managers " back-stoppers ", rather far away from the traditional profile of mono-disciplinary Consulting engineer.

1.2. Globalisation reaches the sector of the services

The liberalization of the services was already the major work of the transition between the 20th to the 21st centuries, started in 1994 by GATS Agreement. The world trade of services had represented already in 1998-99 the fifth of total international trade, unceasingly increasing share for twenty years. The services, which are from their nature even transnational, erect certainly much less obstacles than the goods to being liberalized.

Engineering and consulting, especially implying human resources and relatively few material resources, are in first line of this globalisation. Consulting engineering offices operate right now in a situation where are almost removed rights of customs, tariff barriers and all other national protections. This situation appears first of all handicapping for the Arab and African organizations of consulting engineering; but it contains true prospects and new tracks for their development, if ever they become aware of it and they re-deploy consequently.

¹ Federation of Consultants from Islamic Countries.

1.3. Need for joining e-Business and e-Commerce

The AEC sector in general can adhere well to e-Business and e-Commerce as illustrated by the successful use of electronic collaborative and commerce platforms by some AEC operators. However, recent studies showed that the successful and adequate applications are much less deployed within AEC sector².

Nevertheless, the tendency to organize itself in network of production should involve a broader deployment of sophisticated e-platforms within the community of engineering and construction whose networks are reputed to be very dynamic. In addition, several acquisitions of services relating to projects with international financing (the World Bank) or multilateral (EU) are done from now on by electronic way exclusively. The question is: Why the consulting engineering does not use more largely adequate e-platforms for work and commerce?

It proves that inhibition is to be sought side of internal factors of the profession. Indeed and generally, the likeliness and readiness for an organization to engage in any IT development are strongly related to its internal characteristics. The report of relative delay was made by the above mentioned studies for the whole AEC sector and in particular that of the developed Western world. All the more so, and will further be examined, the determinant intern factors are even less favourable within the African and Arabic sphere.

2. Potential of the Arab and African consulting engineering

In the Arab and African countries, the profession of consulting engineer has certainly weaknesses but also has assets not to be neglected.

2.1. Assets

- **Proximity**

Our engineering and design offices are closest to the ground object of the development projects interesting our countries. This proximity results in a good knowledge of the Administration and of the business milieu in general in these countries. Compared to firms of consulting engineering external with this area of the world, the engineering and design offices of Africa and Arab World thus have the advantage of a better reactivity to the needs and complaints expressed by the public and private clients.

- **Knowledge of national and local specificities**

The increased complexity of the projects and the requirement of transverse approaches require a good knowledge of specificities of the populations and territories. However who better apprehends these specificities than the consulting engineers native of -or at least close to- these milieu? If the perimeter of realization of a project can rather be well known by an engineer coming from abroad in return for more or less usual field investigations, sometimes the survey of the impact of a project overflows largely of this perimeter of realization, concerning other zones / areas of the country located apart from the field of the concerned investigations. Often also the habits of the population of the territory object of a given project are among the determinant

² Cf. “An assessment Methodology fore-Business and e-Commerce in the AEC sector” of A. Grilo, P. Malo & R. Jardim-Gonçalves, in EWork and EBusiness in Architecture, Engineering and Construction de Raimar Scherer et Attila Dikbas, 2004.

factors of its success; our engineering and design offices are surely containing among their key personnel people knowing languages and uses of the targeted local populations.

- **The youth of human resources**

As the populations of our countries, human resources of Arab and African consulting engineering firms are young. The comparative advantages are the dynamism, the mobility and the potential of progression of the personnel.

- **Competitive cost**

It is obvious that the costs of the services of African and Arab consulting engineers are relatively less than those their colleagues of Europe or North America. What offers to us a certain economic advantage for contracts allotted on the basis of budget or quality and cost at the same time (QCBS). This advantage with respect to our Northern colleagues can also interest them if they are contracting markets in our countries, because to resort to services of engineers and local specialists costs always less than in the expatriate personnel.

2.2. Weaknesses

- **Structures of reduced size...**

African engineering offices are of small size, being often limited to only one senior mono-disciplinary engineer employing a staff of technical and administrative assistants. The structures employing several senior engineers are the exception and not the rule, especially established in RSA and some countries of North Africa (Egypt, Morocco, Tunisia) and East Africa (Kenya). One meets even less "Partners companies" where senior engineers control the capital and the decision-making power.

The situation is somewhat different in certain Arab countries (Jordan, Lebanon, Saudi Arabia) but the reduced size is the dominant one among the offices of national consulting engineers in the Middle-East. This characteristic is a handicap for the development of integrated and multidisciplinary services and for the deployment of efficient working methods.

- **.. without strategy of development**

In this kind of structures, the strategy of the development is often absent, if not is not clearly expressed by the leading authority nor assimilated / appropriate by the employees. However all and sundry have a crucial need to know where their company goes and which will be its positioning on the market, visibility without which their proper personal project will not take, at least sufficiently, the same way as that of the professional project in which they are activated. There will not be, for example, plans of career for the employees if the company is not projected in the long term. In other words, it goes there from the perenniality of the company and the sustainability of its development. In addition and among the determinant factors of the readiness and the promptitude of a consulting engineering company to develop the use of IT in its work, the above mentioned studies place at the first rank Strategy, Organisation and Processes of the company.

- **Processes often badly identified**

A *process* can be schematized as a block box which transforms *elements of entry* into *elements of fate* by using *resources*. The process can be subdivided in several *stages*, with each one of them being associated the resources –especially human- charged with its realization. Within a company, the judicious use of the resources –i.e. with relevance and without redundancy- passes by a clear identification of the processes and a definition of their interactions within a framework which includes all the functions of the company. For the consulting engineering offices, carrying on an activity increasingly competing and releasing narrow margins, the requirement of the efficient use of the resources is even more imperative and even vital. However, force is to note that with the Afro-Arabic consulting engineering structures, the dominant characteristics are: processes not clearly identified, procedures and instructions of work often not written... the result is that "everyone being done the work of everyone " or –what comes to the same " nobody does the work which must be affected for him ".

- **Inadequate IT Strategy, Infrastructure and Resources**

In the today professional world in general and for our profession in particular, the firms with a low level of automation and integration between data-processing applications, with obsolete information processing systems and using " non-web " applications, can face major difficulties. Availability of IT resources, either internal or out-contracted, became important, especially that cost of implementation became significantly low nowadays. It is also crucial to have a qualified personnel in these new technologies.

The activity of consulting engineering can draw a great benefit from e-Business and e-Commerce and this by benefiting fully from their three functions: information, transaction and collaboration. But the structures of the profession can make it only if the internal factors hereafter are joined together as pre-requisite:

- Strategy, Organization and Processes of the company are well defined;
- IT Strategy, Infrastructure and Resources are adequate.

As already evoked above, for the majority of the population of African and Arab consulting engineering offices these pre-necessary is still far from being acquired.

3. Ambition and strategy of modernization

Our ambition is to promote a private consulting engineering partner of the development of our countries, lever of implementation and in coherence with the sectoral policies of our States, vector of promotion and valorization of human resources and of “trades” serving our national economies.

Who better than the African and Arab consulting engineers can offer this “citizen behaviour” in the exercise of the profession within the framework of projects carried out in our part of the world? However, this engagement must be offered in addition to provision of services of quality and with the satisfaction of promoters of these projects, because it would not replace nor to even compensate any non-quality. It is thus necessary to sit the bases of a " levelling " of our consulting engineering in order to offer same competences as competitors coming from other horizons; so that the primacy which a client could grant to us on the basis of our " national " asset is initially founded on competences at least equal to those offered by our non-regional competitors.

Today, certain offices of consulting engineering among us already reached levels of professionalism enabling them to compete advantageously with non-regional structures. Our ambition is to multiply the number of Arab and African consulting engineers having reached a modern level of exercise of the profession.

4. A priority Action Plan

The review above made it possible to identify the pre-requisites necessary to a modern functioning of consulting engineering companies. A project of modernization of the African and Arab structures of consulting engineering must thus be directed towards actions tending to ensure the acquisition of these pre-necessary which can be summarized as follows:

- To provide the company with a Strategic Plan;
- To define Organisation Chart and Processes of the company;
- To implement a System of Management of Quality;
- To adopt an IT Strategy ;
- To define a policy of vocational training for human resources;
- To set up an adequate data-processing and IT infrastructure.

It is well seen that the majority of the concerned actions (five out of six) come within the non-material sphere. However the Arab and African entrepreneur, in general, tend to grant little importance to the non-material investment, wrongly judged not generating assets for their enterprise. The tendency is accentuated within the consulting engineers whose relatively weak resources are often directed towards acquisition of hardware equipment or logistics.

The implementation of the actions above will require especially the recourse to consultants in management, quality systems and IT. Their mission will be to advise the companies of consulting engineers and to accompany them in the definition and the installation of the various management tools definite above.

5. Examples of initiatives of modernization

We will quote two examples which come from our Arab and African world. First was born from the initiative of a corporatist association of professionals, whereas second is due on the initiative of a governmental authority.

5.1. The " Seal of Excellence " program of FCIC

The Federation of Consultants of Islamic Countries (FCIC) gathers nearly one hundred consulting engineering offices of Islamic Conference Organisation Member States. The size of the adherent structures with FCIC is very diversified, ranging from the individual Consulting engineer to the multinational firm having several sites of production in more than one country. FCIC started in 2007 its own program of labelling called " Seal of Excellence ". This initiative consisted in encouraging its members to modernize their approach of their occupation, by installing management tools enabling them to reach better levels. Among the criteria required to a member in order to receive the label, are in the forefront:

- Ü have a Quality Management System ;
- Ü have an internal administrative and financial structure ;
- Ü have a strategic vision / plan for the company.

In parallel, FCIC organizes seminars for its members to vulgarize the contents and the utility of management tools related to the implementation of pre-necessary criteria listed above.

5.2. The " Up-grading program " in Tunisia

The Tunisian government launched in 1996 the "Program of up-grading" (PMN³) in order to help the Tunisian companies with better preparing with the opening of the Tunisian market in preparation for the entry into force of partnership and free trade with the European Union. Targeting industry initially, the PMN extended as of 2000 with the sector of services to which the consulting engineering companies belong. Are eligible the companies having a growth potential, in activity for at least two years and which are not in economic difficulty. The advantages, in the form of premiums to the investment, are granted on the basis of a study comprising diagnosis of the company and a Plan for its up-grading. The diagnosis must cover all the functions of the company by taking into account the international context and the changes in progress, in order to identify the forces and the weaknesses of the company to set up its strategic orientations and to establish its up-grading Plan. A diagram of financing of this Plan must be also presented; it must be buckled except premium, either by the means of own capital stocks (of which new issue of capital in cash) or by the contribution of backers, or by a combination of the two means.

The premiums are 70% of the non-material capital cost including the study of diagnosis and 10 to 20% for the material investments. Thus the actions are favoured tending to equip the company with a strategic vision, with better organizing it and structuring it, to provide it with data-processing / IT tools and applications modernizing its functions and to engage it in the Quality behaviour step⁴. Thereafter, a corollary of PMN called " ITP⁵ " came to support the effort of modernization of the production equipment of the companies and in particular the data-processing equipment and applications, but always with same pre-eminence for the non-material investments.

For all the Services sector⁶, the statistics show that nearly 200 firms adhered until March 2008, the average investment of a company was of 380 000 US\$ and the premiums of about 120 000 US\$. Until the same date, nearly 2700 companies had profited from the advantages of ITP Program, with an average investment of 35 000 US\$ and premiums of about 16 000 US\$ per company.

An investigation of follow-up of the impact of the PMN near managers of adherent companies showed that:

- Ü for more than 95% this Program brought " a change " within their company, change considered to be " radical " for 55% of them;
- Ü the non-material investment is perceived like " a factor of significant development " by more than 88% among surveyed, development leading in particular to export.

³ French abbreviation of "Programme de Mise à Niveau".

⁴ The implementation of a QMS is indeed among eligible non-material actions.

⁵ French abbreviation of Priority Technological Investments.

⁶ Statistics are held for the whole sector without sharing out by professional sub-sectors.

6. Conclusion

Even if support and sponsoring from governmental programs and / or donors could have a gearing effect on development of Consulting Engineering in our countries, this will never stand in for the first ranked condition in precedence: it is essential, indeed, that the profession have to initiate its own modernization and that its components have to adhere to an enhancement project. Most of pre-requisites mentioned above are of non-material origin and related to strategic planning. It is then the duty of the managers of our consultancy units to draw it up and to engage their firms on the track leading to achieve it.

Investments could be cost-estimated at the further step and, as it could be seen from the Tunisian PMN case above, costs could be reasonable and not prohibitive, matched for SME size of consultancy firms.

Armed with such vision for generalized modernization, our profession in African and Arab countries will certainly be able to meet higher levels of requisite standards in AEC projects. Thus, our contribution will be more and more effective in success of development operations initiated in our countries. This the aim sought by Governments and donors, BADEA being first ranked amongst them in our region. We have capabilities to be up to coping with that aim.