**Military Technical College**
**Kobry El-Kobbah,**
**Cairo, Egypt**

**10th International Conference on Civil and Architecture Engineering**

**ICCAE-10-2014**

# The Best Criteria for the Selection of Consultant Offices Construction Industry in Libya

Y. Alamiri*, S. Mahfouz ‡, N. Amer †

## Abstract

A questionnaire has been designed and presented to determine the most important criteria affecting the choice of the best consulting offices in construction projects in the public sector in Libya. The questionnaire consists of Ninety-nine sub-criterion covering on two main fields. The first field: human resources contain six main criteria and thirty-four sub-criteria. The second field: physical possibilities contain sixteen main criteria and sixty-five sub-criteria. The questionnaire is spreaded over expert engineers, to rate the criteria on likert scale, (1 to 5). The validity and reliability of the questionnaire have been tested to ensure that the collected data is meaningful. In order to ensure the veracity of the internal consistency of the questionnaire, the questionnaire has been distributed over the decision-maker experts to calculate the correlation coefficient Pearson. In the reliability analysis, Cronbach's Alpha coefficient and arithmetic average of results have been determined utilizing the Statistical Package for Social Sciences (SPSS).

Finally, the study shows that there are seven main criteria that mainly control the selection of the consulting office. These criteria are human capabilities, office experience, previous performance level, quality control, office equipment, administrative system, training and development.

## Keywords

Consulting offices selection criteria, validity and reliability, correlation coefficient Pearson, Cranach's Alpha coefficient, Libya construction industry

---

* Libyan Army, Libya. Email: murm2007@yahoo.com

‡ Egyptian Armed Forces, Military Technical College, Egypt

† Egyptian Armed Forces, Military Technical College, Egypt

**Nomenclature**

| | |
|---|---|
| A/E | Architect / Engineer |
| CPC | Consultant Pre-selection Criteria |
| CPE | Consultant's Performance Evaluation |
| DSS | Decision Support System |
| EMR | Experience Modification Rating |
| HVAC | Heating Ventilation Air Conditioning |
| MIS | Management Information Systems |
| OSHA | Occupational Safety and Housing Administration |
| SPSS | Statistical Package Social Sciences |
| r | Correlation coefficient |

## 1. Introduction

The selection of the consulting office is a vital issue for the achieve project's properly. Few researches were carrying out in this research area. For instance, Kasma [1] studied the selection of consulting engineering firms for professional services by clients in a number of ways. Too many times, the client makes the selection on price rather than qualifications. The recommended selection procedure for selecting a consulting engineer involves: (1) Soliciting qualifications of firms (2) conducting an explanatory meeting (3) receiving consultant proposals (4) selecting firms to interview (5) conducting interviews (6) negotiating a contract with the selected firm. Yean [2] certain attributes of an architect or engineer (A/E) that may be used to predict his performance. These attributes may be categorized as "hard" or "soft" attributes. Hard attributes include an AE's cognitive ability, job knowledge, task proficiency, and job experience. Soft attributes include an AE's conscientiousness, initiative, social skills, controllability, and commitment. The purpose of this study is to identify those attributes that affect an AE's .The results of the study reveal that an AE's performance can be predicted using three attributes: AE's problem solving ability and project approach, AE's speed in producing design drawings, and the AE's level of enthusiasm in tackling a difficult assignment. Thomas [3] aimed to devise a more objective framework for evaluating consultants' general capabilities during the pre-selection process. The paper begins by identifying the commonly used criteria for pre-selecting engineering consultants. In order to examine the importance of consultant pre-selection criteria (CPC), a questionnaire survey was conducted with clients who were responsible for pre-selecting their consultants; and consultants being pre-selected by the clients. The findings reveal that the perception of the client and consultant groups on the importance of (CPC) was very consistent. Finally, a multi-criteria model for evaluating consultants' general capabilities during the pre-selection is proposed. Based on each candidate score, clients can determine which engineering consultants should be invited to bid for a consultancy assignment.

Lai and Thomas [4] conducted a survey to unveil the standards for various performance levels which correspond to a list of indicators used for gauging engineering consultants' performance at the design stage. A modified horizontal approach is employed to analyses the data, and the results indicate that engineering consultants should fulfill greater than 90% in most of the aspects relevant to the design stage to qualify for an 'excellent' performance rating. By referring to the expected performance standards, clients can identify which

quantitative indicators at the design stage should deserve much greater attention to minimize the chance of commissioning an incapable engineering consultant. Thomas and Chow [5] improved the transparency and rigorousness of Consultant's Performance Evaluation (CPE) through the establishment of an evaluating framework for gauging the performance of engineering consultants. In this paper, a comprehensive set of evaluation criteria is identified, and the significance of these criteria is discussed through an empirical survey. Then, a multi-criteria model for evaluating the performance of engineering consultants is presented. The results indicate that once an acceptable (CPE) framework is devised, the performance scores can be utilized for various purposes, including monitor and control, incentive and sanction, reselection, technical assessment, and bid evaluation. Al-Khunaizi [6] studied the best professional services in the A/E selection, the quality of the project's specific criteria. These criteria are the financial, technical, managerial capability and competence of each A/E to perform the proposed work. The principles of validity and reliability are fundamental cornerstones of the scientific method.

Many researchers have identified the main criteria for contractor's selection for the public sector of different countries. For instance, Hatush and Skitmore [7] identified the criteria for prequalification and bid evaluation. The findings indicate that the most common criteria considered by procurers during the prequalification and bid process are those pertaining to financial soundness, technical ability, management capability, and the health and safety performance of contractors. The Department of Treasury and Finance [8] introduced guidelines for tender evaluation using weighted criteria for building works and services. Rather than automatically accepting the lowest price, the tender assessment process applies weighting for skills, quality, experience and previous performance in a manner to ensure value for money. Mahdi *et al.* [9] introduced an approach to structuring a Decision Support System (DSS) to select the optimum contractor. The decision criteria include project time duration, past experience record, the use of discounted cash flow technique, quality of performance and project safety.

Reliability and validity is a major issue when it comes to research, indeed failure to assure the validity and/or reliability of the findings may cause the research to be questioned even worse rejected as invalid. Reliability refers to consistency and/or repeatability of the measurement; in other words, consistency can relate here to the questionnaires being clear and well define in order to not confuse the respondents and repeatability here means that if searchers have findings from a group they should be able to repeat the survey and get exactly the same results. Validity encompasses the entire experimental concept and establishes whether the results obtained meet all of the requirements of the scientific research method, their results are statistically analyzed and the test modified to improve the rational validity [10].

This paper outlines the procedure followed to design questionnaire, and analyze its result. The procedure is divided into four steps: identifying the main criteria and sub-criteria that affect selection and prequalification of consulting offices, designing the study questionnaire, collecting data, and finally analyzing results of the respondents that will be used for further study.

## 2. Questionnaire design

In order to identify the most effective criteria that affect the selection of the consulting offices, the following procedures are followed:

(1) From the literature review, the most repeated criteria were chosen.

(2) Semi-structured interviews were conducted with construction experts; see Appendix (A) to select the most important criteria. In these interviews, criteria were listed, then mixed, combined, and finally selected to suit the construction industry in Libya. The experts represent all parties of the construction industry in Libya. Accordingly, the sample consists of the decision-makers (owner, consultant, and contractor). Each group has two divisions: public and private. The public owners include ministries, general authorities, administrations…etc. Private owners include contracting companies.

(3) Based on the literature review and the semi-structured interviews, the final list for the criteria that affects the selection of the consulting offices was determined. All criteria represented in Appendix (B).

The final form of the questionnaire consists of (99) sub-criterions that core two main fields.

- Human resources contains (6) main criteria and (34) sub-criteria.
- Physical possibilities contain (16) main criteria (65) sub-criteria.

## 3. The internal consistency of the questionnaire

In statistics and research, internal consistency is typically a measure based on the correlations between different items on the same test (or the same subscale on a larger test). It measures whether several items that propose to measure the same general construct produce similar scores. Internal consistency can be measured by calculating the correlation coefficient between the questionnaire data. To ensure the veracity of the internal consistency of the questionnaire, questionnaire is spreaded over (35) of experienced engineers, given in Appendix (A), in order to calculate the correlation coefficient between all criteria. This step reflects the meaning of the collected data. Correlation coefficient is a statistical measure of the strength of a monotonic relationship between paired data. In a sample, it is denoted by (r) and is by design constrained as follows: $-1 \leq r \leq +1$ and its interpretation is the closer (r) is to (+1) the stronger the monotonic relationship. For interpreting the correlation coefficient, the rang is assumed as given in Table (1).

**Table (1) Interpretation of the correlation coefficient (r) [10]**

| No. | The value of (r) | Type of relationship |
|---|---|---|
| | 0.00-0.19 | very weak |
| 2. | 0.20-0.39 | weak |
| 3. | 0.40-0.59 | moderate |
| 4. | 0.60-0.79 | strong |
| 5. | 0.80-1.0 | very weak |

In the current study, the Statistical Package for Social Sciences (SPSS) [11] was used to calculate the correlation coefficients based on Pearson product moment correlation. The results are given in Tables (2), (3). Moreover, arithmetic means are calculated to identify the importance of each criterion of criteria in two fields: i.e. (human resources and physical possibilities).

**Table (2) Correlation coefficient and arithmetic mean for human resources criteria**

| No. | Human resources | (r) | Type of relationship | Arithmetic mean |
|---|---|---|---|---|
| **Capacity to accomplish the work** | | | | |
| 1 | Availability to qualified personnel | 0.802 | very strong | 2.963 |
| 2 | Professional qualification/experience | 0.712 | strong | 2.963 |
| 3 | Present workload | 0.746 | strong | 2.962 |
| **Human capabilities** | | | | |
| 4 | Number of (Engineers) | 0.708 | strong | 2.988 |
| 5 | Experience of (Engineers) | 0.880 | very strong | 2.993 |
| 6 | Training of (Engineers) | 0.789 | strong | 2.986 |
| 7 | Qualification of (Engineers) | 0.842 | very strong | 2.989 |
| 8 | Registry in professional organizations | 0.538 | moderate | 2.986 |
| 9 | Provides disciplines (Engineers) | 0.839 | very strong | 2.986 |
| 10 | Number of. (Technicians ) | 0.625 | strong | 2.989 |
| 11 | Experience of (Technicians) | 0.837 | very strong | 2.986 |
| 12 | Training of (Technicians) | 0.811 | very strong | 2.986 |
| 13 | Qualification of (Technicians) | 0.774 | strong | 2.986 |
| 14 | Registry in professional organizations | 0.535 | moderate | 2.985 |
| 15 | Provides disciplines (Technicians) | 0.810 | very strong | 2.986 |
| **Administrative system** | | | | |
| 16 | Procedures manual | 0.745 | strong | 2.975 |
| 17 | Detailed scheduling for every project | 0.607 | strong | 2.973 |
| 18 | Costs management program | 0.555 | moderate | 2.971 |
| 19 | Risk management program | 0.630 | strong | 2.963 |
| **Technical ability and skills** | | | | |
| 20 | CV`s to be provided | 0.617 | strong | 2.960 |
| 21 | Personnel | 0.710 | strong | 2.959 |
| 22 | Technical expertise of project team | 0.733 | strong | 2.956 |
| 23 | Plant and equipment | 0.806 | very strong | 2.942 |
| **Office experience** | | | | |
| 24 | Years of experience | 0.838 | very strong | 2.984 |
| 25 | Number previous projects in the same field and the task | 0.812 | very strong | 2.982 |
| 26 | The average value of previous projects in the same field and the task 1. | 0.817 | very strong | 2.977 |
| 27 | Number previous projects in the fields and tasks | 0.812 | very strong | 2.981 |
| 28 | The average value of previous projects in the fields and other tasks | 0.640 | strong | 2.981 |
| 29 | The number of previous owners | 0.834 | very strong | 2.979 |
| 30 | Percentage of owners of previous projects | 0.736 | strong | 2.978 |
| 31 | Working with different contract types | 0.586 | moderate | 2.978 |
| **Training and development** | | | | |
| 32 | Staff training | 0.651 | strong | 2.977 |
| 33 | Participate in scientific conferences | 0.844 | very strong | 2.974 |
| 34 | Presence integrated library | 0.803 | very strong | 2.973 |

**Table (3) Correlation coefficient and arithmetic mean for physical possibilities criteria**

| No. | Physical possibilities | (r) | Type of relationship | Arithmetic mean |
|---|---|---|---|---|
| **Firm's background** | | | | |
| 35 | Reputation | 0.476 | moderate | 3.00 |
| 36 | Technical competence /qualification | 0.764 | strong | 2.977 |
| 37 | Experience with similar project | 0.671 | strong | 2.975 |
| **Project approach** | | | | |
| 38 | Approaches to time schedule | 0.473 | moderate | 2.982 |
| 39 | Approaches to quality | 0.542 | moderate | 2.978 |
| 40 | Design approach / methodology | 0.525 | moderate | 2.975 |
| **Financial capability** | | | | |
| 41 | Financial statement | 0.535 | moderate | 2.975 |
| 42 | Financial references | 0.422 | moderate | 2.973 |
| **Cost** | | | | |
| 43 | Tender price | 0.671 | strong | 2.974 |
| 44 | Transportation cost | 0.783 | strong | 2.971 |
| 45 | Consultancy cost | 0.726 | strong | 2.968 |
| **Communication ability** | | | | |
| 46 | Awareness of responsibility | 0.282 | weak | 2.984 |
| 47 | Ability to persuade | 0.388 | weak | 2.963 |
| **Financial soundness** | | | | |
| 48 | Financial stability | 0.585 | moderate | 2.967 |
| 49 | Credit rating | 0.355 | weak | 2.960 |
| 50 | Banking arrangements and bonding | 0.303 | weak | 2.955 |
| 51 | Financial status | 0.333 | weak | 2.951 |
| 52 | Liquidity ratio | 0.374 | weak | 2.944 |
| **Reputation** | | | | |
| 53 | Past failures | 0.542 | moderate | 2.967 |
| 54 | Past owner / consultant relationship | 0.439 | moderate | 2.967 |
| 55 | Length of time in business | 0.261 | weak | 2.940 |
| 56 | Other relationships | 0.356 | weak | 2.938 |
| **Management capability** | | | | |
| 57 | Project management organization | 0.420 | moderate | 2.945 |
| 58 | Experience of technical personnel | 0.806 | very strong | 2.967 |
| 59 | Management knowledge | 0.689 | strong | 2.966 |
| **Health and safety** | | | | |
| 60 | Safety | 0.423 | moderate | 2.944 |
| 61 | Experience modification rating (EMR) | 0.555 | moderate | 2.937 |
| 62 | Health and safety on previous projects | 0.605 | strong | 2.966 |
| 63 | Details of occupational safety and housing administration (OSHA) | 0.396 | weak | 2.937 |
| 64 | Management safety accountability | 0.775 | strong | 2.964 |
| **Relevant experience** | | | | |
| 65 | relevance to the tendered project | 0.688 | strong | 2.963 |
| 66 | Role of the tendered | 0.515 | moderate | 2.921 |
| 67 | Project cost | 0.774 | strong | 2.959 |
| 68 | Duration of the project | 0.515 | moderate | 2.921 |

**Table (3) Continue-correlation coefficient and arithmetic mean for physical possibilities criteria**

| No. | Physical possibilities | (r) | Type of relationship | Arithmetic mean |
|---|---|---|---|---|
| **Management skills and systems** | | | | |
| 69 | Quality system | 0.807 | very strong | 2.958 |
| 70 | Project management tools | 0.792 | strong | 2.952 |
| 71 | Program software | 0.658 | strong | 2.948 |
| 72 | Environmental management system | 0.718 | strong | 2.948 |
| **Methodology** | | | | |
| 73 | program of works | 0.617 | strong | 2.941 |
| 74 | Key performance indicators | 0.710 | strong | 2.907 |
| 75 | Division of work into subcontracts | 0.396 | weak | 2.890 |
| 76 | Innovate procedure | 0.597 | moderate | 2.912 |
| 77 | Reporting and recording systems | 0.687 | strong | 2.840 |
| 78 | Quality plan | 0.725 | strong | 2.840 |
| **Price** | | | | |
| 79 | Fixed capital cost | 0.779 | strong | 2.890 |
| 80 | Variable tender costs during the contract period | 0.515 | moderate | 2.890 |
| 81 | Special adjustments during the contract period | 0.463 | moderate | 2.810 |
| 82 | Maintenance costs | 0.563 | moderate | 2.775 |
| 83 | Operating costs | 0.439 | moderate | 2.773 |
| **Quality control** | | | | |
| 84 | Assurance program and quality control | 0.570 | moderate | 2.981 |
| 85 | Obtain certificates quality | 0.704 | strong | 2.981 |
| Previous performance level | | | | |
| 86 | Quality standards, target performance levels | 0.546 | moderate | 2.840 |
| 87 | Time control | 0.718 | strong | 2.912 |
| 88 | Completion date and extensions of time granted | 0.447 | moderate | 2.912 |
| 89 | Failure to completed contract | 0.436 | moderate | 2.907 |
| 90 | Delay | 0.409 | moderate | 2.892 |
| 91 | Cost overruns | 0.382 | weak | 2.890 |
| 92 | Assess the performance for the previous projects in the same field and the task | 0.708 | strong | 3.00 |
| 93 | Assess Performance of previous projects in the other fields and other tasks | 0.788 | strong | 2.996 |
| 94 | Use of self-assessment methodology for performance | 0.695 | strong | 2.989 |
| 95 | Relationship with insurance companies | 0.759 | strong | 2.890 |
| **Office equipment** | | | | |
| 96 | Office area | 0.623 | strong | 2.981 |
| 97 | Number consultant office the branches | 0.681 | strong | 2.979 |
| 98 | The use of new technologies | 0.673 | strong | 2.979 |
| 99 | Condition and procedures of equipment | 0.237 | weak | 2.810 |

The results confirm that the questionnaire has a high degree of internal consistency. Table (2) shows that the study sample answers in human resources when choosing consulting office is very high, reaching the highest value of the arithmetic average (2.993). For the human capabilities criterion / experience engineer and architect. The lowest value of the arithmetic average (2.942) is obtained, for the technical ability and skills criterion / plant and equipment. From the results given in table (3), it is shown that the study sample answers in Physical possibilities when choosing consulting office is very high. It can be seen that the highest value of the arithmetic average is (3.00) for the level of previous performance / assess the performance during the previous projects. The lowest value of the arithmetic average is (2.773) for the price criterion / operating costs. Seven criteria have been identified as a result of their highest value of the arithmetic average, and therefore, considered the most important criteria for the selection of consulting offices in contracts for construction projects in Libya. Figure (1) summarizes the basic criteria for the selection of consulting offices in construction projects in Libya. The validity of the questionnaire has been carried between each of the two fields as given in the table (4). It can be shown that a correlation between each area of the questionnaire with a total score of the questionnaire. This confirms that the questionnaire has a high degree of internal consistency.

**Table (4) Correlation coefficient to every fields of the questionnaire**

| The field | The value of (r) | Type of relationship |
|---|---|---|
| Human resources | 0.897 | very strong |
| Physical possibilities | 0.844 | very strong |

## 4. Reliability analysis of the questionnaire

The idea behind reliability [10] is that any significant results must be more than a one-off finding and be inherently repeatable. This will reinforce the findings and ensure that the wider scientific community will accept the hypothesis. Without this replication of statistically significant results, the experiment and research have not fulfilled all of the requirements of testability. This prerequisite is essential to a hypothesis establishing itself as an accepted scientific truth. The SPSS is used to calculate Cronbach's Alpha Coefficient. Table (5) displays the results obtained. Overall the Cronbach's Alpha Coefficient for the questionnaire results is (0.985), which is very high and indicates a strong internal consistency.

**Table (5) Statistical results for reliability analysis (Cronbach's Alpha)**

| The field | No. of items | Cronbach's Alpha |
|---|---|---|
| Human resources | 34 | 0.974 |
| Physical possibilities | 65 | 0.973 |
| Total of items questionnaire | 99 | 0.985 |

## 5. Conclusion

The current study shows that there are seven main criteria that mainly control the selection of the consulting office in Libya. These criteria are human capabilities, office experience, previous performance level, quality control, office equipment, administrative system, training

and development. These seven main criteria consists of (31) sub-criterion for the design stage, and (31) sub-criterion for the supervision stage as shown in Figure 1

## 6. References

[1] Kasma, D.”Consultant Selection” J. Manage. Eng., 1987

[2] Ling, Y. "Model for Predicting Performance of Architects and Engineers" Journal of Construction Engineering and Management, 2002

[3] S. Thomas Ng, Lai-Kit Chow, "Evaluating engineering consultants' general capabilities during the pre-selection process a Hong Kong study" Engineering, Construction and Architectural Management, 2004

[4] Chow, L. and Ng, S. "Delineating the performance standards of engineering consultants at design stage" Construction Management and Economics, 2010

[5] Thomas Ng, S. and Chow, L.”Framework for Evaluating the Performance of Engineering Consultants”, 2004

[6] M.A.M. Al-Khunaizi, a Conceptual Model for Consultant Selection in Saudi Arabia, construction contracting, 2004

[7] Hatush, Z. and Skitmore, M. , Criteria for contractor selection, Construction Management and Economics, 1997

[8] Department of Treasury and Finance, Australia, Tender Evaluation Using Weighted Criteria for Building Works and Services, Tasmania, 1999

[9] Mahdi, I., Fereig, S. and Riley, M., Knowledge-Based Expert System for Selecting the Optimum Contractor, 1999

[10] William. M.K. T., www.socialresearchmethods.net, Reliability and Validity, 2006

[11] Altman D.G, Practical Statistics for Medical Research, Chapman and Hall, 1991

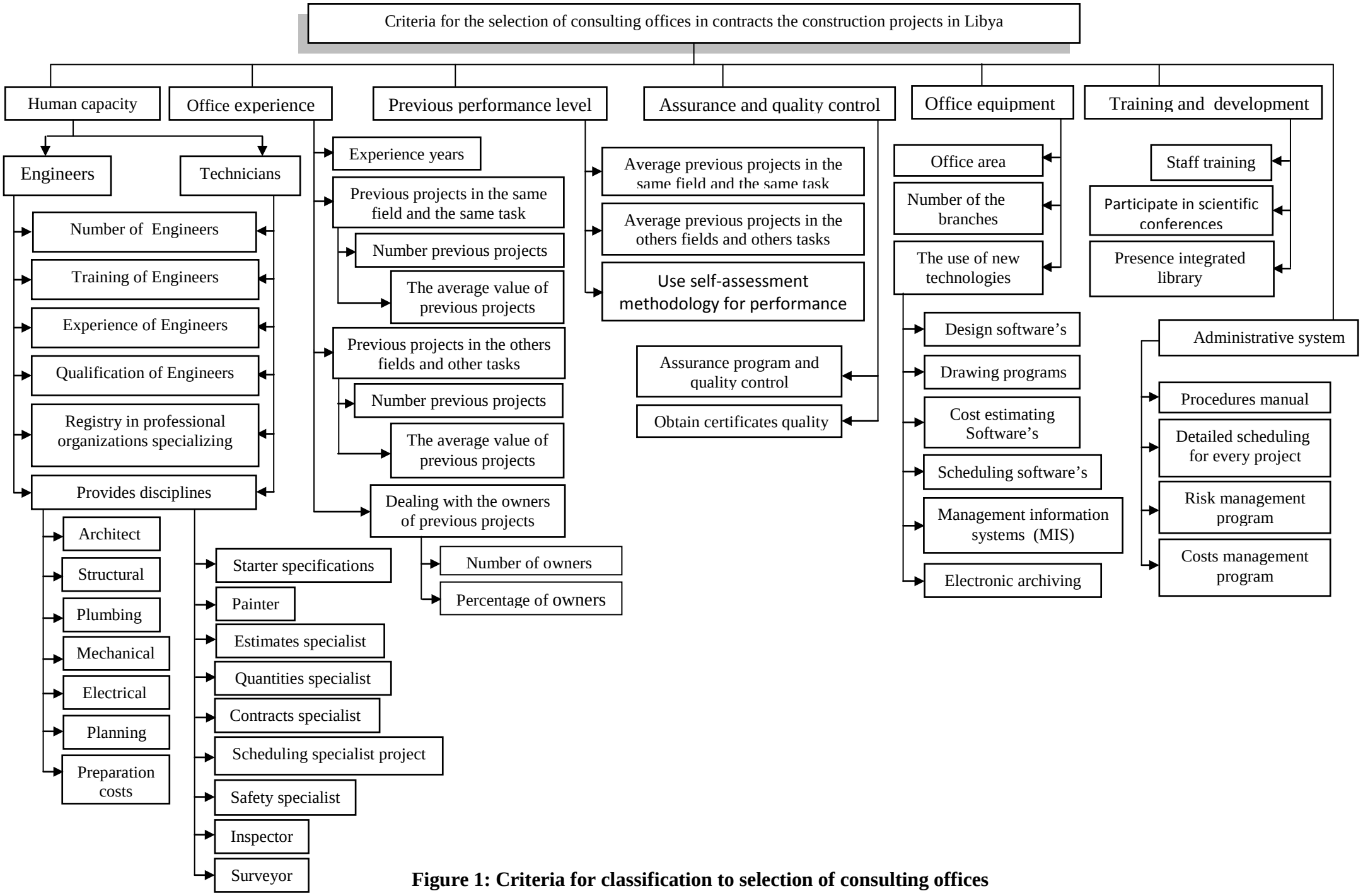


**Figure 1: Criteria for classification to selection of consulting offices**

**Appendix A: List of chosen experts in Libya Consulting offices/contracting companies**

| No. | Expert | Contact information |
|---|---|---|
| 1. | Alatkan for Engineering Consulting and Contractor | www.upa.org.ly |
| 2. | SARAYA Engineering Consultants | www.sarycons.com |
| 3. | Alasass Consultant Engineers | www.tagecoly.com |
| 4. | AL-WAHA for Engineering and Technical | www.nomadiacompany.com |
| 5. | EHAF Consulting Engineer | www.ehaf.com |
| 6. | ALEMARA OFFICE of Engineering Consultant | www.alemara.ly |
| 7. | ECOU (Engineering and Consulting Office) | (+218) 21444 9184 |
| 8. | Dar Tripoli Engineering Consultants | (+218)91 4269212 |
| 9. | Al Aman office to Engineering Consultancy | (+218) 913210678 |
| 10. | EL AFIFI Expertise House of Engineering Consultant | www.elfifconsultint.com |
| 11. | Consulting Office for Architecture | (+218) 619091807 |
| 12. | Office of the Arab city for Consulting Engineers | www.arabcity-ly.com |
| 13. | Office Mimar / Engineering Consultancy | (+218) 913129846 |
| 14. | The bridges Office of Engineering Consulting | (+218) 912101032 |
| 15. | ECG engineering consulting group | www.ecgsa.com |
| 16. | Sabbour Associates | www.sabbour.com |
| 17. | Experience House Office for Engineering Consultancy | (+218) 913796921 |
| 18. | CEGMAN Consulting Engineering Group | www.cegman.com |
| 19. | AL-AMED ENGINEERING Consultants | www.al-amed.com |
| 20. | Africa Bureau Consulting Engineers | (+218) 925480620 |
| 21. | Company Al- Aman for Plastic manufacturing. | www.pwct.ly |
| 22. | Majdal Contraction & Construction | www.railroads.org.ly |
| 23. | National Union Consultants | www.nuc.ly |
| 24. | Immar Tripoli Libya Construction | www.aucc.ly |
| 25. | Arab Union Contracting Co. | www.raba.ly |
| 26. | Motelet construction co. | www.acacos.ly |
| 27. | Nomadia for general construction & electrical works | www.najmat-eleemar |
| 28. | The national real estate for investment & construction | www.arabcont.com |
| 29. | Afwag Pre-Engineered Building Co. | www.afwag.com |
| 30. | SAMA General Construction Company | www.sama-ly.com |
| 31. | Arasam Contracting and Real Estate Investment | www.arasam.com.ly |
| 32. | AL-EBHAR general construction & real estate | www.alebhar.com |
| 33. | Aracekhoon General Contracting co. | www.aracekhoon.com |
| 34. | New Tripoli's Contracting and Real Estate Investment | www.expoarabia.com |
| 35. | (F.E.S.C) FESSATO for Engineering Services | www.fessato.org.ly |

## Appendix B: Questionnaire

**Identify the importance of each criterion in the selection of consulting offices**

(1) unimportant (2) less important (3) importance medium
(4) important (5) very important

| No. | The main criteria | The sub-criteria | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|---|---|
| 1. | Firm's background | 1-Reputation | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 2-Technical competence /qualification | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 3-Experience with similar project | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. | Capacity to accomplish the work | 4-Present workload | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 5-Availability to qualified personnel | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 6-Professional qualification/experience | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. | Project approach | 7-Approaches to time schedule | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 8-Approaches to quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 9-Design approach / methodology | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. | Financial capability | 10-Financial statement | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 11-Financial references | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. | Cost | 12-Tender price | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 13-Transportation cost | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 14-Consultancy cost | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. | Technical ability and skills | 15-CV`s to be provided. | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 16-Personnel | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 17-Plant and equipment. | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 18-Technical expertise of project team. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. | Assurance and quality control | 19- Assurance program and quality control | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 20- Obtain certificates quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. | Human capabilities | 21- Number of (Engineers) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 22- Experience of (Engineers) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 23- Training of (Engineers) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 24- Qualification of (Engineers) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 25- Registry in professional organizations | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 26- Provides disciplines (Engineers) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 27- Number of. (Technicians ) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 28- Experience of (Technicians) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 29- Training of (Technicians) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 30- Qualification of (Technicians) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 31- Registry in professional organizations | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 32- Provides disciplines (Technicians) | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9. | Financial soundness | 33-Financial stability | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 34-Credit rating | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 35-Banking arrangements and bonding | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 36-Financial status | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 37-Liquidity ratio | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10. | Communication ability | 38-Awareness of responsibility | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 39-Ability to persuade | ☐ | ☐ | ☐ | ☐ | ☐ |
| 11. | Health and safety | 40-Safety | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 41-Experience modification rating (EMR) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 42-Health and safety on previous projects | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 43-Details of (OSHA) | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 44-Management safety accountability | ☐ | ☐ | ☐ | ☐ | ☐ |
| 12. | Relevant experience | 45-Relevance to the project tendered | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 46-Role of the tendered | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 47-Project cost | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 48-Duration of the project | ☐ | ☐ | ☐ | ☐ | ☐ |
| 13. | Training and development | 49-Staff training | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 50-Participate in scientific conferences | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 51-Presence integrated library | ☐ | ☐ | ☐ | ☐ | ☐ |

| No. | The main criteria | The sub-criteria | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|---|---|
| 14. | Methodology | 52-program of works | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 53-Key performance indicators | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 54-Division of work into subcontracts | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 55-Innovate procedure to be used | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 56-Reporting and recording systems | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 57-Quality plan | ☐ | ☐ | ☐ | ☐ | ☐ |
| 15. | Administrative system | 58-Procedures manual | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 59-Detailed scheduling for every project | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 60-Risk management program | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 61-Costs management program | ☐ | ☐ | ☐ | ☐ | ☐ |
| 16. | Management skills and systems | 62-Quality system | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 63-Project management tools | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 64-Program software | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 65-Environmental management system | ☐ | ☐ | ☐ | ☐ | ☐ |
| 17. | Reputation | 66-Past failures | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 67-Length of time in business | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 68-Past owner/contractor relationship | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 69-Other relationships | ☐ | ☐ | ☐ | ☐ | ☐ |
| 18. | Office equipment | 70-Office area | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 71-Number consultant office the branches | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 72-The use of new technologies | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 73-Condition of equipment | ☐ | ☐ | ☐ | ☐ | ☐ |
| 19. | Previous performance level | 74-Quality standards, performance levels | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 75-Time control | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 76-Completion date and extensions | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 77-Failure to completed contract | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 78-Delay | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 79-Cost overruns | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 80-Relationship with insurance companies | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 81-Assess performance for the previous projects in the same field and the task | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 82-Assess performance of previous projects in the other fields and other tasks | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 83-Use of self-assessment methodology after the completion | ☐ | ☐ | ☐ | ☐ | ☐ |
| 20. | Office experience | 84-Years of experience | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 85-Number of previous projects in the same field and the task | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 86- The average size of previous projects in the same field and the task | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 87-Number and size of previous projects in the fields and other tasks | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 88- The average value or size of previous projects in the fields and other tasks | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 89-The number of previous owners | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 90-Percentage of previous owners | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 91-Working with different contract types | ☐ | ☐ | ☐ | ☐ | ☐ |
| 21. | Price | 92-Fixed capital cost | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 93-Variable tender costs during the contract period | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 94- Adjustments during the contract period | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 95-Maintenance costs | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 96-Operating costs | ☐ | ☐ | ☐ | ☐ | ☐ |
| 22. | Management capability | 97-Project management organization | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 98-Experience of technical personnel | ☐ | ☐ | ☐ | ☐ | ☐ |
| | | 99-Management knowledge | ☐ | ☐ | ☐ | ☐ | ☐ |