

Contractors to Identify and Evaluate Methods: Classification and Literature Review

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Abstract. Given the different methods of identifying and evaluating contractors by employers, in this study, we sought to identify ways that we can review and evaluate contractors. Therefore, more than 60 articles were evaluated and results showed that there are three ways to identify contractors who are 1) Public recall 2) Using one – by – one marketing (1by1 marketing) 3) Choosing department and subsidiary's company from investment-taking, and There are three methods to evaluate the contractors and that these three methods are 1) Statistical methods 2) fuzzy methods 3) Business Intelligence methods. And classified papers show the most widely used method for identifying contractors in the use of marketing methods used individually and most are affiliated to the Choosing department and subsidiary's company from investment-taking As well as the most widely used statistical methods to evaluate contractors And the least used, is using business intelligence methods. This study would be a guide for researchers for future studies.

Keywords: one Identification and evaluation of contractors, statistical methods, fuzzy methods, methods of business intelligence, marketing

1. Introduction

Having Contractors have a vital and important role in any project .so proper selection of a contractor in making a project successful is much important such tendency Is in stake of suitable method of recognizing and also post – appraisal stage of contractor.[27]For identifying contractors , incumbent contractors must consider marketing method of for delivering project and select / choose the best method due to time and place field and conditions , , it uses for identifying contractors and introducing projects for appraisal of contractors , there has been different methods but all these methods believe that for contractor's appraisal , first a series of vital and important criterion either the previous project or the same project should be identified .[26][58]and then by weighting criterion or by analysing them and their relationship with contractors , the contractors who are Capable to do such criterion based on absolute standards , should be identified and allocated the project to them[36][2][58]. The necessity of identifying contractors within the most proper marketing method contains especial importance, because the contractors could economize in time and expenditure by choosing the proper method of marketing. After identifying contractors due to growth of contractor and differentiation of performance quality should appraising contractors to choose the proper contractors or contractors for establishing projects.[3] Due to the project's limit in the field of identifying and contractors appraisal, it has not yet done any project by using different methods to give various methods for contractor's identification and appraisal. So this study seeks to give the following strategies for those researchers who act in the field of contractors' identification and appraisal. 1-Existence of research based on helping to researchers in this specific field.2-Helping contractors for better understanding of the project marketing method and the contractors' identification.3-Help to the researchers

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for better understanding of methods of contractors' appraisal.4-Identifying the most applied and typical methods in the field of identifying and typical method in the field of identifying and appraising contractors.

2. Research method

The main considered research between the time periods of 1993 to 2011 is related to the journals and magazine that in the online basis as follow: Springer link, Ingentconnect, Search .mite, Emeraldinsight, Science direct, IEEE, ebookee, muse.jhu Management help, Acn, Journals marketing power.

The literature include identifying and appraising the contractors that after review and study all articles 62 articles have been choose , reviewed and analyzed. The criterion for choosing articles includes:1- Only some articles have been choose that obviously that obviously take identifying and appraising contractors in the various industries.2- The choosing journal to the extent of more identifying in the field of marketing and the extend of appraising in the field of statistic, fuzzy and business intelligent methods. 3-Each article was reviewed carefully and it was 3 especial appraising extents and 3 main methods for appraising contractors that showed in the Figure

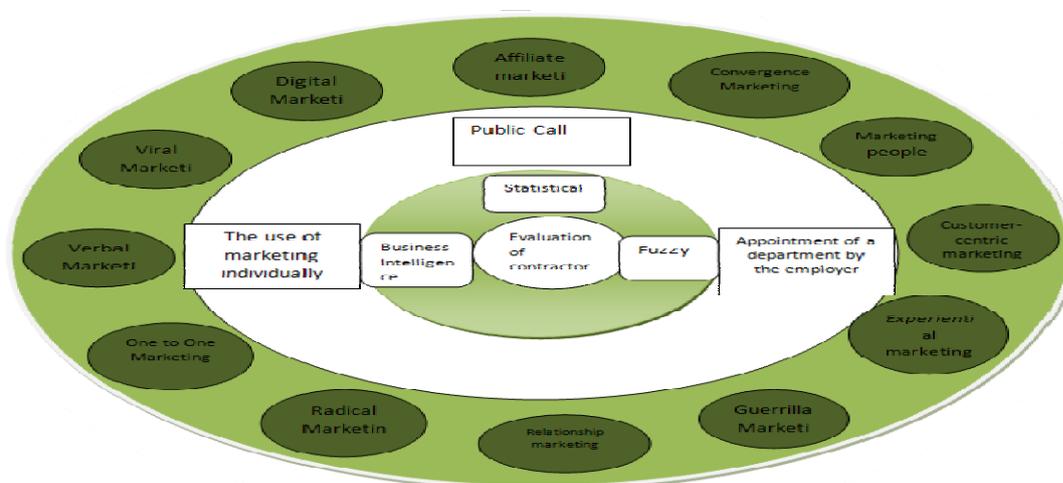


Fig. 1. Within the classification techniques to identify and evaluate contractors

3. Classifying Method of Articles

In the review of done research about various method of marketing, 12 main extents should be considered: [26] [18]

(1)Depended marketing, (2) virus marketing, (3) communication marketing, (4) convergence marketing, (5) digital marketing (6) people marketing , (7) clients-loosely marketing , 8(partisan marketing, 9) one – by – one marketing, (10) tie marketing , (11) experienced marketing, (12) radical marketing [4] [9] [12][29][31][37][41][54].

Due to increasing marketing method and its variation in the extent of contractors identification , 3 kinds of marketing is of typical and the most applying such 3 kinds are as follow:

(1) Choosing department and subsidiary's company from investment – taking (depended marketing) (2) Using one – by – one marketing (1 by 1 marketing)(3)Public recall (digital & depended marketing)

It should be expressed that nearly all researches in the field of appraising contractors occurred through 3 methods of satirical, fuzzy, business intelligence.

As showed in figure 1, a framework for graphical and 2nd stage for appraising the contractors that in which the contractors identification was 12.

Extent and finally get to 3 extent and the contractors appraisal generally occurred in3 extend of statistical, fuzzy and business intelligence.

3.1. Framework for Identifying the Contractors Extent

Due to the expressed kinds of marketing, the common activities for marketing to devote the project to the contractors including public. Recall (digital and dependent marketing). Use of 1-by-1 marketing (1 by 1 marketing), choosing subsidiary company from invert- taking company.

- Choosing department and subsidiary company from invert

taking company to educate in the project extent or giving mission to the subsidiary company lehtimaki , for contractor s identification and marketing activities , divided a project identification , before tender , after marking contract and he said that one of way of contractor s identification is that in the identification stage , a contractor should be identified give him the necessity trains to do projects of course , this method is applied more in the contract projects but about investors , take – invest company could make a department or a company account for identifying the investor until the investors could identify the investor s by this company[28].

- Using 1 by 1 marketing

Having the information bank bearing the active contractor s information in the field of our project that invest taking company get to its result of information through surveying but because the lack of integrated system and inattention , It has not any application in Iran [10][33][15]. chin used 1-by-1 marketing method to identify the clients from data basis that include identification of main project , marketing and surveying the available data in the data basis , identifying the indicators and the effective variables and finally choosing and identifying specific contractor [10].

- Public recall

The common method for recall is that project could be defined and introduced to the contractors through much – edited newspaper or the other site and typical methods. Top cu, by using public recall in OACIAL newspaper , contractor s selection based on tender is divided into 2 stage , contractors selection and identifying the lowest proposal among contractors appraising based on capability criterion for implementing the project on time , the company s profession , the accessibility to an experienced technique , Mohammad for identifying contractors from public recall and then using behavioral model of contractors for measuring [39][52].

3.2. The Contractors Appraising Technique Framework

Based on 62 articles that the most important is research that [3][15][36] was done . The investment contractors appraising method is divided into 3 groups:

- Statistic as a scientific topic .include some concepts and methods that in all projects required couching the data by a survey process, observing and concluding by the data analysis.

Indeed , the statistic stage include determining the purpose , collecting information , data analysis and expressing the clear finding s that statistic applies in the stage of collecting data , the guidance statistic of researcher in choosing or information collecting . In the after stage of data collecting, the statistic method is more needed.

The most important statistics methods in research are: 1-Multi – variable analysis 2-Regression [58] 3-Variance analysis [3]

- Fuzzy methods

Fuzzy logic given by Dr. Ali Askarzadeh (1965) who was a professor of computer science in the California, Berkley University. Conceptually , Fuzzy logic is multi calve and allow to define the values between 2 valves such as (True / false) and (yes / no) or (top / down) . the concepts such as relatively , mostly and ... which are the typical basis of human thought and logic can all be as mathematic to be understandable by computer language and make some computer program that are more near to human s thought and logic Generally , in the fuzzy logic , 3 following parts are needed

The hierarchical process of fuzzy analysis, the weighting methods to the criterion by using Fuzzy numbers [14].

- Business Intelligence methods

Business intelligence is defined as a regular and systematic process that the organization disseminate the necessitate information of inside and outside sources for implementing business activities as well as deciding,

gaining, analyzing. The other definition Business intelligence include an extensive Spectrum of analytic software and the solution for collecting , recording , analyzing and giving to the information that is supposed to make better decision of business by allowing that organization s user[11]

The technology and applied program that are provided interestedly and provide the system function management such as functional management program, applied program and data.

The most important statistical method in the researchers is.1-The Data mining methods [47][20] 2-Deciding supportive system[6]

By considering studies about appraisal methods using business intelligence methods, the most researches in this field use surveying data mining that the most important methods are: 1- Classifying methods [21]2- Logistic regression [55]3-Nervous net 4-Genetic algorithm [47]

Due to the above mentioned texts in the previous research, the work tendency for choosing the contractor s is summarized in 2 following stage: first stage: choosing proper marketing method for identifying the contractor

Second stage: getting contractors information from 1st stage and choosing a proper appraisal method due to data kinds and finally choosing proper contractor and the project allocation there to.

3.3. The Process of Classifying Articles

For reviewing articles, adjust to research purpose 4 steps have been used:

- Searching the inline data basic by 2 concepts of marketing and identifying contractors and appraising contractors function.
- The first classifying of researches adjusts to marketing and identifying the contractors.
- The 2nd classifying of research adjusts to contractor’s appraisal.
- 4-Due to given texts, the process of research implementation has been showed in figure 2

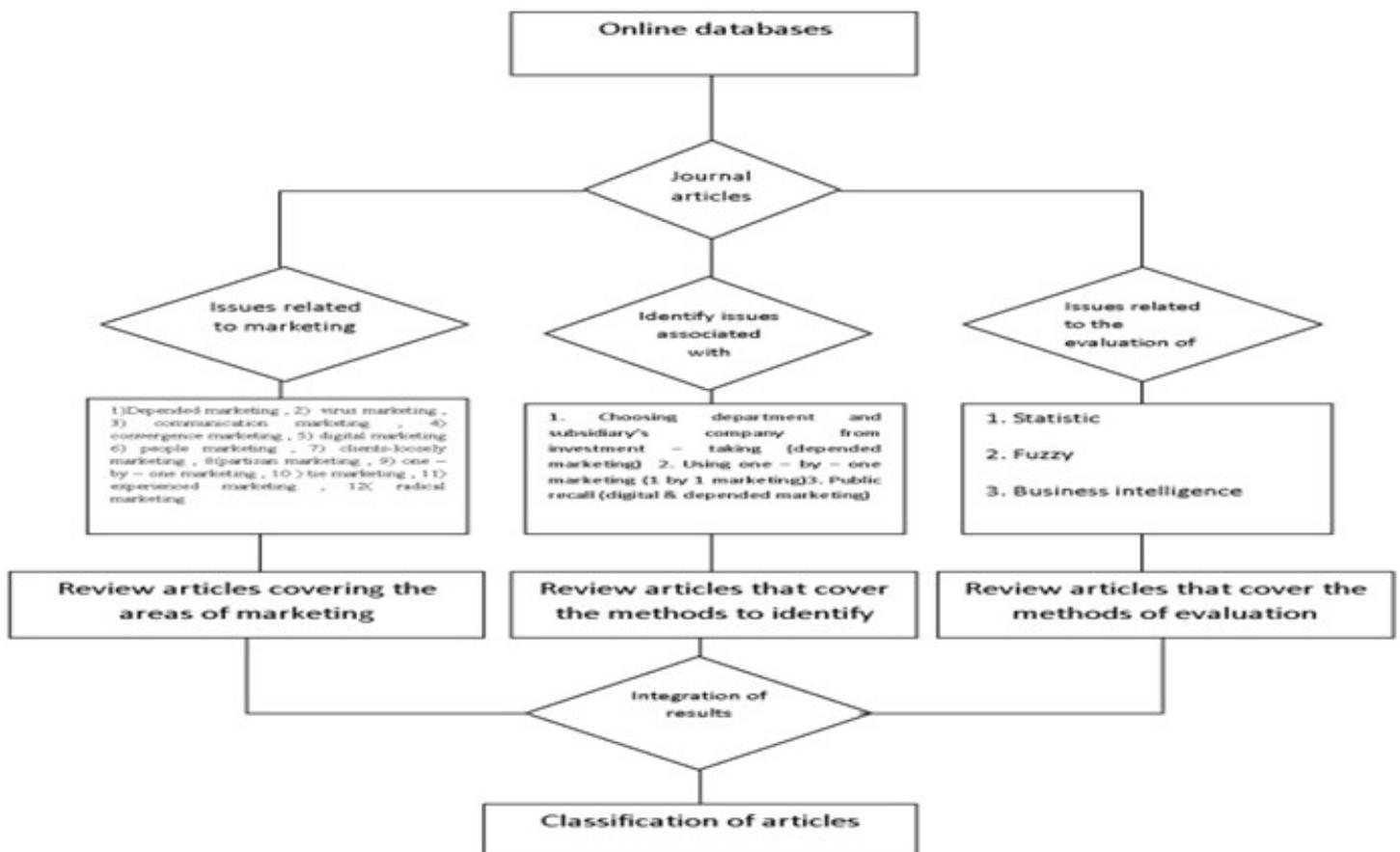


Fig. 2. Classification of articles

4. Article s Review

The detailed classifying that showed in table 1 in which the extent of working of identification and appraise of contractors.

Table 1. Review articles and evaluation methods to identify contractor

Contractors to identify areas	Evaluation methods contractors	Resources
Public recall	Statistical	[22][7][55][42][36][16][52][13][39][15][34]
	Fuzzy	[27][30]
	Business Intelligence	[17]
Using one – by – one marketing(1by1 marketing)	Statistical	[23][21][1][19][57][60][17][51][53][40][59][58][47][49][32][5][3]
	Fuzzy	[25][33][50][35][20][53][48][44]
	Business Intelligence	[56][8][46][43][62][10][61][24][38]
Choosing department and subsidiary's company from investment-taking	Statistical	[45]
	Business Intelligence	[28]

4.1. Article's Distribution Due to the Extents of Identifying and Appraising Contractors and Using Variables:

Due to 3 extents of contractor's identification was realized in total articles. In each identification extents, there are different appraisal methods and consequently, 3 appraisal extents would be covered

- Reviewing the appraisal methods in the 1 – by – 1 marketing district and usable variables: As it showed in table 1, the distribution of articles among contractor's identification indicate that the researcher put 1-by-1 marketing in their agenda such as 66% of articles by using 1-by-1 marketing this meant that by having the data basis of contractor's information, they analyse them. In these 3 extents, 3 appraising methods have been used and we cover it in the follow.1- Statistical method: 36% of articles used this method and the usable variables are as: The contractor's behavioural, Economic, political factors, natural fact and cost fluctuation, The price factor of invest environment and the currency rate, the employer and contractor's satisfaction and using secondary contractor's ,The investor commitment against taking invest, related act of cost contract.2- Fuzzy method: 16% of articles used this method and its variables are: the contractor's technical ability and fame contractor's project function.3- the business intelligence method: 14% of articles used this method and its variables are: the contractor's behavioural variables, based on 2 indicators of Return on Investment rate for investing and it risk. , the outside environment features of project, economizing in the costs, responsibility among people and the organization's stuffs, work division.

- Public recall and usable variables: after 1-by-1 marketing , using recall was public that 15% articles , 30% used it to identify the contractor's and the method is that a from should be designed along with recall ads and the method is in a way that it recalls contractors in the much edited newspapers or in the sites by advertising . This form contains some questions about information of contractors and the project that filled by contractors and finally, contractors would be choosed by its analysis, 3 appraisal method have been used in this field and follow these 3 method1-Statistic method: 24% of articles used this method that are: the contractor's ability and fame Immune health and bio-environment, the cost of function quality and time. The behavioural variables, the convention regulation of designation quality and the access to needed budget.2- Fuzzy method: 4% of articles used this method and the variables are: human force and management variables, the contractor's technical and qualitative variables.3-Business intelligence method: 2% of articles used this method and the variables are: financial veracity, management and technical ability, health immunity and function of contractor's.

- reviewing appraisal method in the extent of using department or subsidiary's company by the employment and usable variables: Only 4% of articles cover to identify the contractor's by department or subsidiary's company. This is not meant that this method is not as much as good because this is not new and

it's not taken the contractor's attention into account. But it would be usable at the close future. 2 appraisal methods have been used and we cover them at the follow.1- Statistical method: 2% of articles used this method and its usable variable is the technical ability and fame of contractor's.2- Business Intelligence method: 2% of articles used this method and its usable variables are identification of project features before and after contract and along with the project implementation.

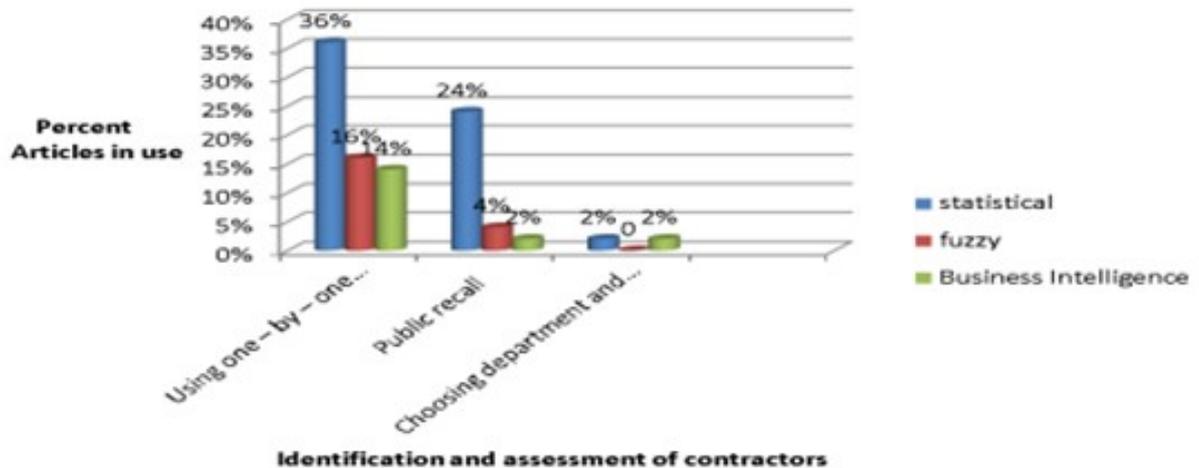


Fig.3: Percent Papers used in the identification and evaluation of contractors

4.2. Summary of Results

Figure 3 shows the distribution of articles by considering the contractor's appraisal and identification.

It can be concluded that: 1- Among contractor's methods of identifying, one – be – one marketing method has been common among the employers for contractor's identification. 2- Using department or subsidiary's company by employer has the least application 4% for employers to identify the contractors. 3- Using statistic method in total appraisal method of contractors is of most application (62%). 4-Using Business intelligence methods in total least application (18%).5- 20% of total research used by fuzzy methods.6- 30% of research takes public recall method for identifying contractors.

5. Summaries

Depending on the importance of successfully implementing the projects by the contractors, choosing the proper contractor by employer would be important and critical and ensure that identifying and evaluating the contractor and finally choosing the proper contractor for making the project be successful. So, 62 articles and journals were considered. First, marketing methods were considered , 12 marketing methods has been exploited and 3 methods of identifying contractor were identified that included the public recall , single by single marketing , using the department or subsidiary company. After identifying, evaluating methods of contractors was viewed and 3 commonly method of fuzzy, statistic, business intelligence has been identified. And the final result is that the most applied method for identifying and evaluating the contractor is single by single and using statistic methods respectively and the least applied method of identifying and evaluating the contractors is using either department or subsidiary company and business intelligence method.

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