Factors affecting the selection of managers of public libraries by using DEMATEL technique: The viewpoints of Librarians in Iran

Milad shabanian gezafroudi
Shahed University, Tehran, Iran

Abstract
Introduction: Nowadays, the majority of organizations inefficiency and lack of organizational goals depends on the choice of incompetent managers. Management in the libraries is one of the necessary specializations, in the field of information science and knowledge that using methods, techniques, professional skills, knowledge and expertise, as well as valuable experience, is supported. Hence factors affecting appointment of managers are the most important and most sensitive issues in the process of every working library. This study aims to provide a quantitative analysis of the factors for choosing Solaris director of librarians in public libraries based on DEMATEL technique.
Methodology: This research is a practical study and uses a descriptive and analytical method. Having studied papers about factors affecting the selection of manager, 6 factors as main factors were determined. In order to verify the factors in public libraries of Iran, a questionnaire was designed and subsequently confirmed by librarians who are experts in this field. These factors include objective factors, management skills, knowledge and expertise, personality characteristic, attitude and insight, and professional credibility. Therefore, to analyze the factors and determine their interactive relations, DEMATEL approach was used and the relations were defined as numbers.
Findings: From the views of experts, the cause criteria based on importance are "knowledge and expertise", "managerial skills" and "attitude and insight"
Results: At the end, taking the DEMATEL approach into account, results show that "knowledge and expertise" were determined as the most impressive criteria, while "management skills" and "attitude and insight" were the most influencing criteria.

Key words: Managers' selection, public libraries, DEMATEL

Received: 31.7.2017 Accepted: 21.11.2017 ISSN 2241-1925

1. Introduction

Among the human resources of the organization, the most important element that is effective for achieving the objectives is "management".Manager as the official representative of the organization for the coordination and effectiveness is at the top and success of the organization to achieve its goals depends on the actions of his administration (Nwokah et al, 2008).Nowadays, the importance of the managers' role as the designers, navigators and administrators of the organizations is well known to everybody (Levenson, 2006). Managers, through coordination and proper use of human and material resources, guide the organization activities in order to achieve the desired objectives. Therefore, managers as the main people facing problems in organizational decision-making, play determining important role in the success or failure of the organization (Rappe, 2007).

Libraries from long ago have daunting task for society culture and science and have always been considered as the core of the community.Among these according to changes in the structure of society, public libraries as information centers can, using appointment of the competent, capable, knowledgeable and expert managers, play important role in the new information environment, in order to achieve the objectives, programs and strategies designed. Thus public libraries as non-profit organizations have a clear societal role. The survival of public libraries has been the focus of a number of recent UK reports calling for new strategic directions to sustain libraries for the future (Capita, 2012). Consequently there has been much discussion on the changes facing libraries (Usherwood, 2010). Public libraries help promote literacy and the pure enjoyment of reading. They are also places where people can go to get information, whether it is for leisure, for study or for work. Management in the libraries is one of the necessary specializations, in the field of information science and knowledge that using methods, techniques, professional skills, knowledge and expertise, as well as valuable experience, is supported. Hence factors affecting appointment of managers are the most important and most sensitive issues in the process of every working library. Several studies have been conducted about public libraries, but research on the factors affecting the selection of managers of these institutions was not found. On the other hand, the use of mathematical quantitative methods in the analysis of organizational issues, in particular management problems, has many applications. Matrix rules, because of presenting easy understanding of the issues, are useful in analyzing various organizational issues. DEMATEL method is one of the most widely used methods based on mathematical methods in operations research. This technique is used to determine the relationship between the evaluation criteria and the establishment of their value structures. This study seeks to review and analyze the factors affecting the selection of managers of public libraries from the perspective of librarians in Iran using DEMATEL approach.

2. Literature review

Like many other organizations, libraries are committed to achieving their objectives. Public library managers play a key role in this process, and, they need certain qualities necessary for the effective performance of their roles. Challenges like the constant changes in technology and environment, the sinking budget and the shortage of human resources obviate the importance of effective performance of library managers. So the appointment of competent managers is one of the most important amplifier actions for proper functioning of the public library. Skills are necessary for effectively carrying out managerial functions that are in turn necessary for the effective and efficient functionality of the organizations (Peterson & Van Fleet, 2004). It is a manger's leadership and management effectiveness that brings a significant impact to library achievement (Mugyabuso & Matovelo, 2000).

Nun (1997) in his study entitled "Successful Management" described inattention to the development of management skills of senior academic librarians as a key challenge for the future of libraries.

Roy (2006) expressed that overall and strategic perspective, advancing the roles, image and its position in the organization, instead of providing support to librarians, is more important. Thus, librarians need to gain managerial skills and specialized knowledge, because the lack of it among the librarians is the main reason for their low efficiency and imagination of the respective employers. If librarians equip themselves with professional qualifications (lateral thinking skills, strategic planning abilities, marketing capacity, etc) and deeper and more complete understanding of the organization and related cases found, it is obvious that this notion would change and the situation of the libraries will improve.

Hayati and Barahmand (2012) investigated the extent to which Iranian academic library managers need managerial skills and the influence of their level of seniority on this need. The results revealed that, in general, managers' need for managerial skills is high especially "people related skills" over "analytical and self-related skills" and "task related skills". Analysis of the mean scores of skills across three levels of managers shows that the middle level managers' need for managerial skills is higher than that of the top managers and supervisors. Overall, most respondents ranked "creating organizational climate" as the skill most needed while few said they needed development for "counseling subordinates."

Zhang et al (2013) in their research investigated a framework to examine the social competencies of construction project managers. They developed a model via the use of a structural equation modeling approach. Four dimensions of social competencies for construction project managers were identified, that is, working with others, stakeholder management, leading others, and social awareness. Attention to these attributes will help construction project managers

to develop their social competencies, and could contribute towards a better performance in their workplace which will in turn improve the performance of the organization as a whole.

According to Stewart (1981), "all effective managers have a range of skills which are necessary because of the positions they find themselves in" and there is a direct relationship between the level of skills and the effectiveness of managers (Al-Madhoun&Analoui, 2002).

On the other hand, in recent years, the use of operations research methods for analyzing problems has many applications. DEMATEL technique also, is one of the common quantitative methods in operations research that researchers and analysts have been using in the analysis of various issues. This method was developed based on the matrix rules. DEMATEL method was originally developed between 1972 to 1979 by the Science and Human Affairs Program of the Battelle Memorial Institute of Geneva, with the purpose of studying the complex and intertwined problematic group (Wu, 2008).

It has been widely accepted as one of the best tools to solve the cause and effect relationship among the evaluation criteria to derive interrelationship among factors (Lin and Tzeng, 2009). Unlike the traditional techniques such as analytic hierarchy process with the assumption that elements are independent, this method, one of the structural modeling techniques, can identify the interdependence among the elements of a system through a causal diagram using digraphs to portray the basic concept of contextual relationships and the strengths of influence among the elements (Wu et al, 2010). Some of the applications involving DEMATEL are now quite common in many fields namely: strategic and environmental assessment (Jassbi et al, 2011), marketing (Saeidipour and Ismaeli, 2012), economics and finance (Ho et al, 2011; Altuntas and Dereli, 2015), banking (Wu et al, 2009; ToloieEshlaghy et al, 2011; Jafari-Eskandari et al, 2013) and other fields of humanities and engineering.

Factors influencing the selection of managers examined in this study are six main criteria which include: Objective factors, Managerial skills, Knowledge and expertise, Personality characteristic, Attitude and insight and Professional credibility. The dimensions shape the overall pattern of the development of managers. Subsequently, this study's focus was shifted to analysis of these criteria for selection of public library managers in Iran.

3. Research methodology

The present research is an applied study in terms of goal, and descriptive and analytical in terms of data collection. The study applied DEMATEL approach for analyzing factors affecting the selection of managers of public libraries from the perspective of librarians in Iran. In this study, according to the consensus in the Delphi method, and that the credibility of the Delphi method, not the number of participants in research, the scientific validity of the experts participating in

related research (salek ranjbarzadeh, 2010) and The willingness and availability of 30 persons as members of the group chose Delphi to meet one or more of the following features were:

- Having a PhD degree
- Related work experience libraries.

The study was performed in the summer of 2014. Data were collected through matrix questionnaire of DEMATEL Method. The DEMATEL approach has been considered as one of the best tools to deal with the importance and causal relationships among the evaluation criteria (Fontela and Gabus, 1974; Chiu et al., 2006; Liouet al., 2007; Tzeng et al., 2007; Wu and Lee, 2007; Lin et al., 2009).

The reason for choosing the DEMATEL application is because of its ability to confirm interdependence among considered factors, and its ability to derive a direct graph showing the interrelationships among factors (Lin et al., 2009). DEMATEL can find key criteria to improve performance and provide decision-making information (Chang et al., 2011). It is a comprehensive tool for building and analyzing structural model involving causal relationships between complex factors (Wu and Lee, 2007). The methodology, according to the characteristics of objective affairs, can confirm the interdependence among the variables/attributes, and restrict the relationship reflecting the characteristic with an essential system and development trend (Hori and Shimizu, 1999; Chiu et al., 2006). The product of the DEMATEL process is a visual representation (that is, an individual map of the mind) that the respondent uses to organize his or her own actions.

3.1. Data Analysis

In the first stage, through investigating the prior researches, number of factors identified in this context including the objective factors, management skills, knowledge and expertise, personality characteristic, attitude and insight, and professional credibility, were confirmed by the opinions of experts. In order to identify the relationships between these factors and to measure their influence and reception, a matrix questionnaire based on the DEMATEL technique was designed . Thus all relationships between factors will be determined, and any factor influencing the elements or is mutually affected by any of the elements will be specified .

3.2. DEMATEL method can be summarized with the following steps (Wu, 2008):

Step 1: Calculating the relative intensity matrix of the direct relations: (M matrix): In this step, using DEMATEL questionnaire, criteria are organized in a matrix; then, respondents are asked to indicate the degree of the direct influence of matrix left-side criteria on upper criteria in a range of 0 to 4 as shown in Table 1 . The left side and upper criteria are the same.

Table 1. 5-point range to measure and identify the relationships between factors

Amount of impact	No impact	very low	Low	High	Very high
Score	0	1	2	3	4

The results of experts' judges are calculated through simple mean arithmetic method. Then results of the calculations from the method, as intensity of relations Matrix (M Matrix), are obtained as shown in Table 2.

Table (2)-Initial direct-relation matrix (M Matrix)

	Objective factors	Managerial skills	Knowledge and expertise	Personality characteristic	Attitude and insight	Professional credibility	SUM of the row
Objective factors		1.9	0.35	0.75	0.95	2.2	6.15
Managerial skills	3.1		3.75	3.3	3.5	3.7	17.35
Knowledge and expertise	3.4	3.6		2.7	2.2	3.35	15.25
Personality characteristic	1.34	2.2	1.25		2.1	2.3	9.19
Attitude and insight	2.75	3.8	1.9	3.1		1.25	12.8
Professional credibility	1.8	0.9	2.1	1.25	1.9		7.95
sum of the column	12.39	12.4	9.35	11.1	10.65	12.8	Max= 17.35

The data in this matrix are derived from the questionnaires by simple mean. The last column of that is row sum and the last row is the column sum of the matrix. Purpose of calculating the sum of each row and column, is determining the biggest sum used to calculate the value of α. α is equal to the inverse of the biggest sum of rows or columns in the M matrix. In this matrix, the biggest row

and column sum is equal to 17.35. Thus α is equal to:

$$\alpha = \frac{1}{17.35}$$

Step 2: Compute normalized initial direct-relation matrix: The formulation to compute normalized matrix (N) is as follows.

$$N = \alpha * M$$

Table (3): $N = \alpha * M$ **Matrix**

	Objective factors	Managerial skills	Knowledge and expertise	Personality characteristic	Attitude and insight	Professional credibility
Objective factors	0	0.10951	0.020173	0.043228	0.054755	0.126801
Managerial skills	0.178674	0	0.216138	0.190202	0.201729	0.213256
Knowledge and expertise	0.195965	0.207493	0	0.15562	0.126801	0.193084
Personality characteristic	0.077233	0.126801	0.072046	0	0.121037	0.132565
Attitude and insight	0.158501	0.21902	0.10951	0.178674	0	0.072046
Professional credibility	0.103746	0.051873	0.121037	0.072046	0.10951	0

Step 3: Compute total-influence matrix (matrix T). The formulation to compute matrix T is given as follows:

$$T = N \times (I - N)^{-1}$$

Where:

N= normalized matrix: $N = \alpha * M$

I = identity matrix

Therefore calculation is done as follows:

Table (4): Identity matrix

	Objective factors	Managerial skills	Knowledge and expertise	Personality characteristic	Attitude and insight	Professional credibility
Objective factors	1	0	0	0	0	0
Managerial skills	0	1	0	0	0	0
Knowledge and expertise	0	0	1	0	0	0
Personality characteristic	0	0	0	1	0	0
Attitude and insight	0	0	0	0	1	0
Professional credibility	0	0	0	0	0	1

Table (5): I-N Matrix

	Objective factors	Managerial skills	Knowledge and expertise	Personality characteristic	Attitude and insight	Professional credibility
Objective factors	1	-0.10951	-0.02017	-0.04323	-0.05476	-0.1268
Managerial skills	-0.17867	1	-0.21614	-0.1902	-0.20173	-0.21326
Knowledge and expertise	-0.19597	-0.20749	1	-0.15562	-0.1268	-0.19308
Personality characteristic	-0.07723	-0.1268	-0.07205	1	-0.12104	-0.13256

Attitude and insight	-0.1585	-0.21902	-0.10951	-0.17867	1	-0.07205
Professional credibility	-0.10375	-0.05187	-0.12104	-0.07205	-0.10951	1

Table (6): (I-N) $^{-1}$ **Matrix**

	Objective factors	Managerial skills	Knowledge and expertise	Personality characteristic	Attitude and insight	Professional credibility
Objective factors	1.13025	0.221257	0.130862	0.15958	0.169714	0.249151
Managerial skills	0.491346	1.33564	0.447439	0.466555	0.467485	0.529059
Knowledge and expertise	0.467044	0.467085	1.238848	0.403892	0.378207	0.478822
Personality characteristic	0.267052	0.303563	0.22526	1.177643	0.281842	0.318513
Attitude and insight	0.404558	0.448826	0.311737	0.397833	1.238613	0.349181
Professional credibility	0.26282	0.219795	0.237101	0.218055	0.243581	1.172434

Finally, the **total impact matrix (**matrix T) can be obtained as shown in Table 7.

Table (7)-Total impact matrix ($T = N \times \left(I - N \right)^{-1}$**)**

	Objective factors	Managerial skills	Knowledge and expertise	Personality characteristic	Attitude and insight	Professional credibility
Objective factors	0.13025	0.221257	0.130862	0.15958	0.169714	0.249151

Managerial skills	0.491346	0.33564	0.447439	0.466555	0.467485	0.529059
Knowledge and expertise	0.467044	0.467085	0.238848	0.403892	0.378207	0.478822
Personality characteristic	0.267052	0.303563	0.22526	0.177643	0.281842	0.318513
Attitude and insight	0.404558	0.448826	0.311737	0.397833	0.238613	0.349181
Professional credibility	0.26282	0.219795	0.237101	0.218055	0.243581	0.172434
Threshold value= Total impact matrix average						**0.314184**

Step 4: Compute C, R, R + C, and R - C values and also set threshold value to obtain digraph of showing causal relations among the criteria (network relation map "NRM"): The basic notations to conduct this step are given as follows:

- **Total impact matrix comparison:**

R = sum of row of the matrix T, r_i represents direct and indirect effects given by factor i to the other factor.

C = sum of column of the matrix T, c_j represents direct and indirect effects on factor j by the other factors.

$r_i + c_j$ = the importance of factor i. If $r_i + c_j$is higher, this criterion will have more interaction with other criteria.

$r_i \_ c_j$ = the net effect of factor i. Generally, if r_i-$c_j$is positive, the criterion is certainly an effective variable and if it is negative, the criterion is affected by others.

Table (8). Total impact matrix comparison

Criteria	**Symbol**	R	C	R+C	R-C	Type of criteria (Cause / Effect)	Rank based on R-c
Objective factors	A	1.060813	2.02307	3.083883	-0.96226	Effect	6

Managerial skills	B	2.737524	1.996165	4.733689	0.741359	Cause	2
Knowledge and expertise	C	2.433898	1.591246	4.025144	0.842652	Cause	1
Personality characteristic	D	1.573873	1.823558	3.397431	-0.24969	Effect	4
Attitude and insight	E	2.150748	1.779442	3.930189	0.371306	Cause	3
Professional credibility	F	1.353786	2.09716	3.450946	-0.74337	Effect	5

- **Computing the threshold value and direct impact matrix**

The threshold value should be calculated to determine the network relation map (NRM). With this method, the partial relations can be discarded and the notable network of relations can be drawn. Only relations that their values in the matrix T are larger than the threshold value will be displayed in NRM (Tzeng et al, 2007).

In this study, the threshold value for the judgment of dimension correlation is set at **0.314184**, which is the average value of the total impact matrix (Table 7), after rounding off. After determining the threshold value, all values of matrix T that are less than the threshold become zero, that is, the causal relationship is not considered, it is specified as zero (0) in Table 9. Values above the threshold value are also in the direct impact matrix as the main importance relations (Table 9).

Table (9)- Direct impact matrix

	Objective factors	Managerial skills	Knowledge and expertise	Personality characteristic	Attitude and insight	Professional credibility
Objective factors	0	0	0	0	0	0
Managerial skills	0.491346	0	0.447439	0.466555	0.467485	0.529059
Knowledge and expertise	0.467044	0.467085	0	0.403892	0.378207	0.478822

Personality characteristic	0	0	0	0	0	0.318513
Attitude and insight	0.404558	0.448826	0	0	0	0.349181
Professional credibility	0	0	0	0	0	0

- **Drawing the cause-effect diagram (network relation map (NRM)):**

The structural correlation impact diagram can be determined using the (***R*** − ***C***) and (***R*** + ***C***) values of the Total Impact Matrix comparison (Table 9). Correlation among dimensions is shown in the direct impact matrix (Table 10). Finally, a Cartesian coordinate system is drawn. In this system, X-axis is R+C and Y-axis is based on R-C. The position of each factor is given by a point (R + C, R - C) in the system. Therefore, a graphical diagram will be also obtained. The network relation map is depicted subsequently. The direction of each vector represents the influence of source factor on the destination factor.

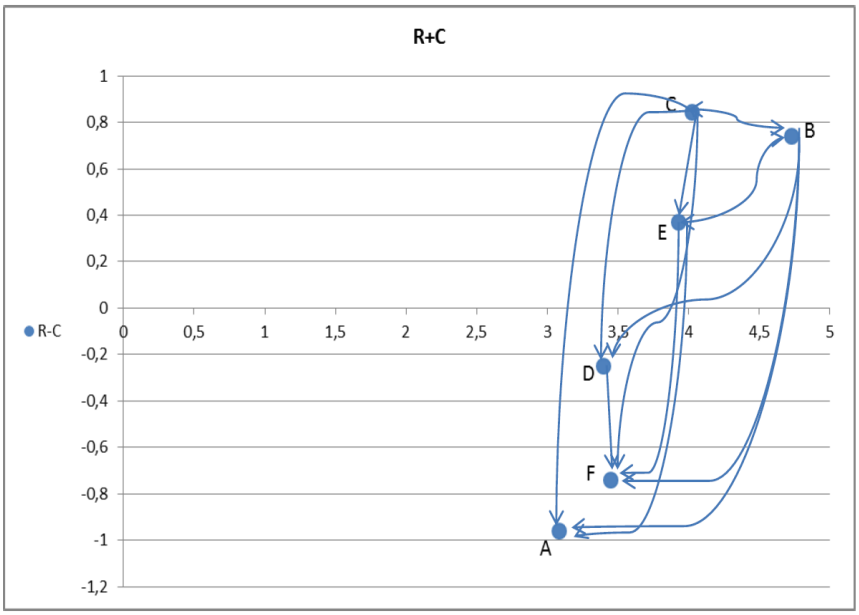

Diagram 1. Network relations map (cause and effect diagram)

4. Conclusions

Selection of proper manager is one of the most important factors affecting the success of organizations. Public Library as one of the nonprofit organizations is not exempted of this rule. The study aimed to analyze the factors affecting the selection of managers of public libraries in Iran. For this purpose, first by reviewing research literature, the most important criteria were identified. Then analyses were performed using DEMATEL. Unlike the traditional multiple criteria decision-making techniques which typically assume that the criteria are mutually independent, DEMATEL method does not require this assumption but further helps the decision makers in identifying the casual relationships among criteria, that is, by applying DEMATEL method, the importance of the six criteria can be determined and the causal relations among the criteria can be constructed. After data analysis, the results were obtained as follows: from the experts' views, based on R-C scale, "Knowledge and expertise" and "Managerial skills" were the most important criteria. Also, the results specify the criteria under study as two groups: cause and effect. The cause criteria based on importance are "Knowledge and expertise", "Managerial skills" and "Attitude and insight", whereas the criteria named "Personality characteristic", "Professional credibility" and "Objective factors" are the affected criteria.

The proposed study of this paper reviewed the literature and gathered various experts' viewpoints and identified influencing factors. In order to analyze the identified criteria, DEMATEL method was used and a causal model of the relationships among the criteria was developed. DEMATEL is a sophisticated method, which could analyze complex relationships among elements of a subject. A collection of effective variables on a system is structured in a diagram of cause and effect. By exploiting DEMATEL results, researchers, managers of libraries and relevant governmental agencies are able to get complete perception of relationships among factors affecting the selection of managers in Iran.

Public libraries' managers in Iran should pay special attention to the, "Knowledge and expertise" and "Managerial skills" criteria. Due to advances in technology and based on the urgent need of the public libraries for modern knowledge, "Knowledge and expertise" criterion was identified as the most important factor in choosing managers of public libraries in Iran. Thus one of the factors contributing to their effectiveness is developing their managerial skills. Identifying the managerial skills necessary for the effective performance of Iranian public library managers and measuring the extent to which they need these skills are the primary purposes of the present study.

Also they should be made to extend the results of this study and the proposed approach. For example, the DEMATEL method can be used to identify the impact of the other factors affective on organization productivity. In addition, the DEMATEL method can be used to find the relationship among criteria and in extracting their weight by using additional methods such as AHP, ANP, Viktor, Topsis, etc.

References

Al-Madhoun, M., & Analoui, F. (2002). Developing managerial skills in Palestine. EducationþTraining, 44(8/9), 431e442.

Altuntas, S., & Dereli, T. (2015). A novel approach based on DEMATEL method and patent citation analysis for prioritizing a portfolio of investment projects. Expert systems with Applications, 42(3), 1003-1012.

Capita. (2012). Protecting Library Services: White paper. Birmingham, UK: Capita.

Chang, B., Chang, C.W., Wu, C.H. (2011). Fuzzy DEMATEL method for developing supplier selection criteria. Expert Syst. Appl. 38, 1850e1858.

Chiu, Y.J., Chen, H.C., Tzeng, G.H., Shyu, J.Z. (2006). Marketing strategy based on customer behavior for the LCD-TV. Int. J. Manag. Decis. Mak 7 (2/3), 143e165.

Fontela, E., Gabus, A. (1974). DEMATEL, Innovative Methods, Report No. 2 Structural Analysis of the World Problematique. Battelle Geneva Research Institute.

Wu, H. H., Chen, H. K., & Shieh, J. I. (2010). Evaluating performance criteria of Employment Service Outreach Program personnel by DEMATEL method. Expert Systems with Applications, 37(7), 5219-5223.

Hayati, Z., & Barahmand, N. (2012). Managerial skills needed for academic library managers: The case of Iran. The International Information & Library Review, 44(2), 53-64.

Ho, W. R. J., Tsai, C. L., Tzeng, G. H., & Fang, S. K. (2011). Combined DEMATEL technique with a novel MCDM model for exploring portfolio selection based on CAPM. Expert Systems with Applications, 38(1), 16-25.

Hori, S., & Shimizu, Y. (1999). Designing methods of human interface for supervisory control systems. Control engineering practice, 7(11), 1413-1419.

Jafari-Eskandari, M., Roudabr, N., & Kamfiroozi, M. H. (2013). BANKS'PERFORMANCE EVALUATION MODEL BASED ON THE BALANCED SCORE CARD APPROACH, FUZZY DEMATEL AND ANALYTIC NETWORK PROCESS. International Journal of Information, Security and Systems Management, 2(2), 191-200.

Jassbi, J., Mohamadnejad, F., &Nasrollahzadeh, H. (2011). A fuzzy DEMATEL framework for modeling cause and effect relationships of strategy map. *ExpertSystems with Applications*, vol. 38, no. 5, pp. 5967-5973.

Levenson, A. (2006). Measuring the Relationship Between Managerial Competencies and Performance. *Journal of management*. 32 (3), 360-380.

Lin, C. W., Chen, S. H., & Tzeng, G. H. (2009). Constructing a cognition map of alternative fuel vehicles using the DEMATEL method. Journal of Multi-Criteria Decision Analysis, 16(1-2), 5-19.

Liou, J. J., Tzeng, G. H., & Chang, H. C. (2007). Airline safety measurement using a hybrid model. Journal of air transport management, 13(4), 243-249.

Mugyabuso, J. F. L., & Matovelo, D. S. (2000). Effective library management: issues for managers and subordinates. New Library World, 101(1158), 263e258.

Nwokah, N. Gladson, Ahiauzu, Augustine I. (2008). Managerial competencies and marketing effectiveness in corporate organizations in Nigeria. *Journal of Management Development*. 27(8), 858-878.

Noon, patrik. (1997). *Managing for success*. *Librarian career development*. V:5, no:4,pp:128-135.

Peterson, Tim O., & Van Fleet, David D. (2004). The ongoing legacy of Katz: an updated typology of management skills. *Management Decision*, 24(10), 1297e1308.

Rappe, C. Zwick, T. (2007). Developing Leadership Competence of Production unit managers. *Journal of Management Development.* 26(4), 312-330.

Rooi, Hazelvan. (2006). Librarians knowledge management. *Aslib proceeding: New informatian perspecctive*. Vol:58, no:3, p:261-271

Saeidipour, B., & Ismaeli, S. (2012). A study of how to implement a successful CRM by identifying challenges using DEMATEL method: An empirical study on small to medium business units. Management Science Letters, 2(1), 363-368.

Salek ranjbarzadeh, Fariba. (2010). *How to submit a proposal Research in Education*. Tabriz. Ark.

Stewart, V. (1981). Training for managerial skills. *Journal of European Industrial Training*, 5(1), veviii.

Eshlaghy, A. T., Kazemi, M. A., Radfar, R., & Abdolmohammadi, N. (2011). Causal analysis of customer needs in the banking system by applying fuzzy group decision making. African Journal of Business Management, 5(21), 8417.

Tzeng, G. H., Chiang, C. H., & Li, C. W. (2007). Evaluating intertwined effects in e-learning programs: A novel hybrid MCDM model based on factor analysis and DEMATEL. Expert systems with Applications, 32(4), 1028-1044.

Usherwood, B. (2010). The public library. Journal of Librarianship and Information Science, 42(1), 76-77.

Wu, W. W. (2008). Choosing knowledge management strategies by using a combined ANP and DEMATEL approach. Expert Systems with Applications, 35(3), 828-835.

Wu, H. Y., Tzeng, G. H., & Chen, Y. H. (2009). A fuzzy MCDM approach for evaluating banking performance based on Balanced Scorecard. Expert Systems with Applications, vol. 36, no. 6, pp. 10135-10147.

Wu, W. W., & Lee, Y. T. (2007). Developing global managers' competencies using the fuzzy DEMATEL method. Expert systems with applications, 32(2), 499-507.

Zhang, Feng & Zuo, Jian & Zillante, George. (2013). Identification and evaluation of the key social competencies for Chinese construction project managers. *International Journal of Project Management*. 31(5),748-759.