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Review Article

Analysis of Software Selection in law Industry

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Abstract *- This study attempts to applythe TOPSIS method of Multi-Criteria Decision Making (MCDM) forthe software selection process in the law industry. The paucity of literature on Software selection in the law firms in the Indian Context is one of the reasons behind selecting the area, which is one of the growing industries in today's context. Primary data was collected from interviewing 50 Indian law firmsfor optimal selection of softwareout of 3 alternatives in the practicing Industry. The results are based on the analysis of their responses. The findings can likely be used as a baseline for an organization to strategize software selection activities. Finally, the main findings are about the selection of software by giving proper weight s to the criteria and score based on some selected criteria.*

Keywords *- TOPSIS, Law Firms, Software*

I. INTRODUCTION

Software selection is pivotal in the modern practice of the procurement divisionof the law firm. Generally, the decision of softwareselection depends upon a various number of criteria. Mainly, the cost is the foremost criteria considered while choosing software, others such as the variety of case analysis, content, citation, and searchquality of the software also playa vital role. In today's fast digital scenario, it is also important to develop user-friendly interfacesbetween law practitioners and the software. A careful assessment of three prominentsoftware with comparable attributes is used to rank lawyers' preferences on the basis of price (S_1), Case Analysis (S_2),Citation (S_3), Content (S_4), Search (S_5), and user interface (S_6). Right software selection can reduce the firm's cost of purchasing hardcovers, decrease the risk of hard copy inventory, and have fasteraccess to multiple resources at the same time. Therefore, the right software can be pivotal in ensuringthe right functioning of the law firm.

A. Software selection

The software sector is playing a crucial role in shapingthe evolving high-tech economy of a country. The competition of software selection is quite intense, with multiple options available to customers of similar attributes. According to Lewin and Irwin (1943), the selection of software plays a prominent role in reflecting the purchasing decisions of the customers to develop a competitive supply chain. Law practice management software assists the lawyers and the law firms in managing their cases, keeping records of the client's records and documents, profile,billing as well as bookkeeping. It facilitates the legal Practitioners to perform their work smoothly with accuracy. The price of the software (S_1), along with Case management (S_2), is an important factor for determining the client base. Case Analysis (S_3) requires appropriate databases, checking conflicts of interest and statutes of limitation.Legal citation refers to authoritative documents and sourcesthat cite the court decisions, regulations, government documents, treaties, and scholarly writing. A strong legal content (S_4) helps the clients understand the legal issues comprehensively along with the consequences. The format of the content should be exceptionally user-friendly, relevant, and original so that it attracts clients. The search engine (S_5) and user interface (S_6) facilitate providing such information to the customers in a convenient way.

II. LITERATURE REVIEW

The Selection of appropriate software for any firm demands insightful attention. Hwang and Yoon [1] developed the TOPSIS (Technique for order preference by similarity to ideal solution) method to solve Multi-criteria decision-making problems. The notion behind the technique is that the positive ideal solution has the shortest distance while the negative ideal solution has the farthest distance. Another paper [2] compared different methods of selecting suitable assessment systems for software and found that for an optimal solution,the TOPSIS method performs a better result than others.The application of the Analytical hierarchy process (AHP) and TOPSIS is testedfor five ETL software in the study "Application of an integrated multi-criteria decision making AHP-TOPSIS methodology for ETL software selection" by Mohamed et al. [3],and finally, a software prototype for demonstrating both methods was implemented.Kambiz[4] developed a methodology to evaluate the suppliers in the Iran Auto supply chain cycle based on TOPSIS in the paper "Application of TOPSIS method to supplier selection in Iran Auto Supply chain'.In a research study by RanaBasu[5] on "An Approach to identify issues affecting ERP implementation in Indian SMEs,"factors leading to successful implementation have been identified, which included Cost of package and user involvement.User involvement refers to the utility value to the user, which is

an important parameter for the implementation of any software. Past researchers have also identified User interface as one of the key areas to determine the success of implementation. Laurie McLeod[6].Provided a synthesized view of the factors influencing the software development system in the study "Factors that affect software systems development Project outcomes: A survey of research". Project content was found to be one of the factors influencing the outcome of the software.

III. OBJECTIVES

- Evaluating the relative importance of the weight of criteria influencing the selection of the software
- Ranking the law software in order of preference of the lawyers and Law firms

IV. RESEARCH METHODOLOGY

TOPSIS strategy is the most regular method of multi-attribution Decision Making (MADM) models [1, 7]. "Technique for Order Preference by Similarity to Ideal Solution (TOPSIS)" is a technique for multi-criteria choice investigation, and this strategy was presented by Hwang and Yoon [1]. TOPSIS rationale is sound and reasonable. It picks the elective which has the briefest geometric separation from the perfect positive arrangement and thinks about an arrangement of options by distinguishing weights for every basis, standardizes the scores for every paradigm, and ascertains the geometric separation between every option and the perfect option with a specific end goal to give the best score for every foundation. TOPSIS strategy picks the correct providers with a different limited number of criteria. To select the best software from the options available, law firms need a decision tool. MCDM (Multi-Criteria Decision Making) Model is one of the decisions making toolsthatare widely used not only in operation research but also in other businesses. It evaluates the different alternatives through ranking on the basis of certain criteria of importance. TOPSIS is one of the methods of MCDM [1].For a law firm that wants to select software from the options available, the most important criteria are price (S_1), Case Analysis (S_2), Citation (S_3), Content (S_4), Search (S_5), and user interface (S_6).According to the popular literature on MCDM, the process of decision-making follow the following steps: define the problem, establish goals, identify alternatives, define criteria, decide a decision-making tool and evaluate alternatives. TOPSIS is one of the methods of MCDM in which ranking the alternativesby assigning weights is done on the basis of determining criteria.The weights in the paper are determined through the Rank order centroid method. The steps followed by TOPSIS are:

1) The data is normalized to convert the attributes in a different dimension to the same dimension in order to compare the criteria

$$\mathbf{r_{ij} = a_{ij} / (\Sigma\, a_{ij}^2)^{1/2}}$$

a_{ij} represents the ranking given to the software which was selected for analysis.'i' stands forsoftware (L1,L2, L3), and 'j' refers to the criteria (S_1, S_2 S_3 S_4 S_5 S_6).The normalized matrix r_{ij} is determined using the above formula.

2) Weighted Normalised decision matrix is constructed by using formula

$$\mathbf{v_{ij} = w_j r_{ij}}$$

Where W_j is the set of weights for each criterion

$$\sum_{j=1}^{n} w_j = 1 \text{ for } j = 1,\ldots n.$$

3) Weight is determined through Rank order centroid (ROC) [8]

$$w'_j(ROC) = \frac{1}{n}\sum_{k=j}^{n}\frac{1}{r_k} \quad \ldots\ldots\ldots\ldots\ldots (1)$$

Where n= number of criteria

r = Rank given to the criteria

4) Positive ideal and the negative solution is determined

Positive Ideal solution:

$A^* = \{V_1^*, \ldots\ldots V_n^*\}$,where $V_j^* = \{\max(V_{ij}), \text{if } j \epsilon J \ ; \ \min(V_{ij}) \text{ if } j \epsilon J`\}$-------(2)

Negative ideal solution

$A` = \{V_1`, \ldots\ldots V_n`\}$, where $V_j` = \{\min(V_{ij}), \text{if } j \epsilon J \ ; \ \max(V_{ij}) \text{ if } j \epsilon J`\}$----------(3)

Where J represents the benefit criteria and J` represents loss criteria

5) Calculation of separation using n-dimensional Euclidean distance. [9]

Separation from Positive ideal alternative

$\mathbf{S_i^+ = [\Sigma (V_j^* - V_{ij})^2]^{1/2}}$ i= 1,2.....,m

Separation from Positive ideal alternative

$\mathbf{S_i^- = [\Sigma (V_j` - V_{ij})^2]^{1/2}}$ i= 1,2.....,m

6) Calculate the relative closeness to the ideal solution

$C_i^* = S_i^* / S_i^+ + S_i^-$

7) The alternatives are ranked using the index C_i^* closure to 1. Higher is the value. Better is the alternative.

A. Data Collection

Primary data is collected by the researcher in the present study. Three law software packages,C1, C2, C3,were selected, and the relevant parameters (S1, S2, S3, S4, S5, and S6)were rated by law firms and lawyers.

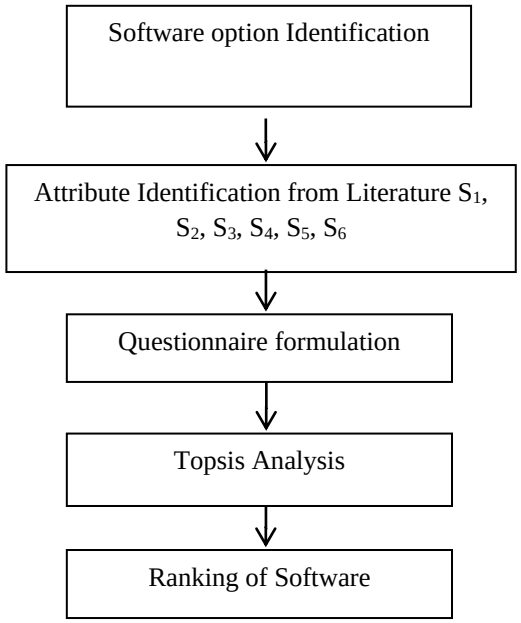

Fig 1. Research Framework

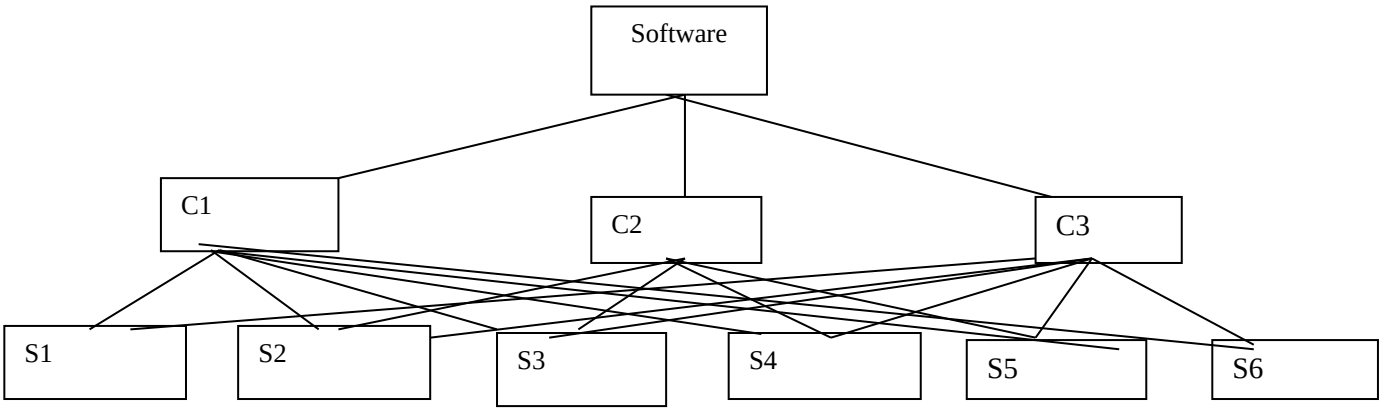

Fig. 2 Research Design for TOPSIS

V. DATA COLLECTION AND ANALYSIS

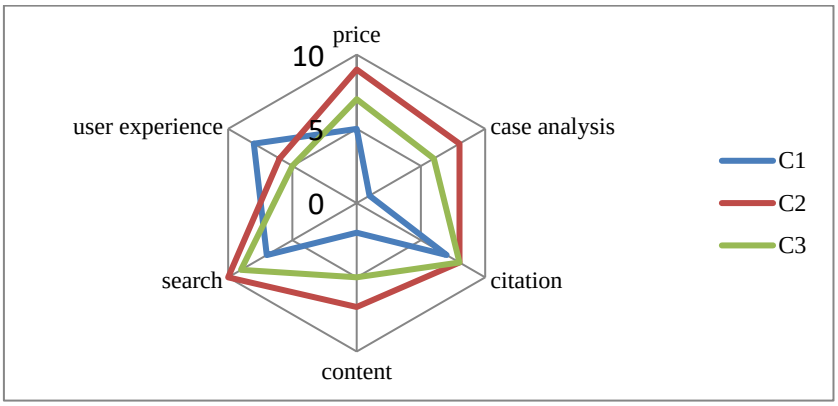

Fig. 3 Radar Graph showingthe relative performance of 3 software based on the selected criterion

There are six attributes in this study based on which the optimal software needs to be ranked. From equation (1), we find the corresponding weightof the independent variables in the following table.

Table 1. Selecting criterion for software evaluation and Weights

Code	Criteria	Weightage
S1	Price	0.2417
S2	Case Analysis	0.4083
S3	citation	0.1583
S4	Content	0.1028
S5	Search	0.0611
S6	Interface	0.0278

From equation (2), we derive the separation from positive ideal solution as shown below

Table 2. Determination of Separation from a positive ideal solution

S_i^+	separation					
	S1	S2	S3	S4	S5	S6
C1	0	0.004583	3.97E-05	0.00433	2.4E-05	0
C2	0.00140625	0	0	0	0	0.004007
C3	0.00050625	0.000353	0	0.002767	1.52E-05	0.844377

From equation (3), we demonstrate the separation from negative ideal solution as follows

Table 3. Determination of Separation from Negative ideal solution

S_i^-	separation					
	S1	S2	S3	S4	S5	S6
C1	0.00140625	0	0	0	0	0.844377
C2	0	0.004583	3.97E-05	0.00433	2.4E-05	0.964717
C3	0.00050625	0.002391	3.97E-05	0.002767	1E-06	0

To determine a single value (U1, U2 &U3) corresponding to each Software (C1, C2 & C3)respectively for matrix tabulation, the following steps are used.

$$\mathbf{Ui = (\Sigma\ Sj)^{1/2}} \text{ -----(4)}$$

Where i= 1,2,3 (individual Software); j = 1,2,3,4,5,6 (criteria)

From equation (4), the values of U_i s are determined:

Table 4. Determination of Relative closeness

Criteria	U1	U2	U3
Si*	0.004488	0.002707	0.424009
Si'	0.422892	0.486847	0.3
Si/Si*+Si'	0.989498807	0.99447	0.414359

According to the TOPSIS method, the alternative with the highest value of relative closeness coefficients is the best alternative among the number of alternatives under consideration [9, 10]. Table4 above shows the value of relative closeness coefficients.Therefore according to TOPSIS, the best alternative among the software is C2 (Table 5)

Table 5. TOPSIS Output

Software	C_i^*	Ranking
C1	0.9894	2
C2	0.9947	1
C3	0.4143	3

VI. CONCLUSION

The law industry in India is shifting towards advanced technical up-gradation, but since it is in the nascent stage with the limited number of software packages available in the market, this study has contributed towards the selection of software to the law firms and lawyers [11, 12]. The methodology used in the study comprises of two techniques-Rank order Centroid and technique for order preference by similarity to ideal solution (TOPSIS).Literature review on selecting the right alternatives in the case of Software related to manufacturing, library, supply chain, ERP, etc., are found,which uses different methods of evaluating the best one[13, 14]. It is observed that the TOPSIS method is preferred as compared to other methods. The technique was applied to 3 law software for maximizing the output through the conversion of Qualitative into Quantitative parameters.The rank order centroid reveals that the importance of the case study is the highest among the criteria selected, followed by the Price of the software.It may be concluded from the present study that software C2 has the highest ranking among all the three software followed by C1 and C3 on the basis of criteria chosen for selecting the software. It is also seen that in the case of C1 and C2, the relative closeness is very small. This may be contributed to the presence of few alternatives in the market which are more competitive in nature [15]. Other sophisticated methods like-PROMETHEE II, ELECTRE I can also be used to identify the best alternatives to assess the optimal solution.

REFERNCES

[1] Hwang C.L and K.Yoon., Multiple Attribute Decision Making: Methods and Application, Springer-Verlag, New York., (1981).

[2] Santanu Kumar Misra&AmitavaRay.,.Comparative study on different Multicriteria Decision-making tools in Software Project Selection Scenario. International Journal of Advanced Research in Computer Science, 3(4) (2012) 172-178

[3] Mohamed et al., Application of an integrated multi-criteria decision-making AHP-TOPSIS methodology for ETL software selection. Springer Plus,5(263) (2016) 1-17

[4] KambizShahroudi et al., Application of TOPSIS method to supplier selection in Iran Auto Supply chain. Journal of Global Strategic Management, 6(2) (2012)123-131

[5] RanaBasu et al., An Approach to identify issues affecting ERP implementation in Indian SMEs. Journal of Industrial Engineering and Management, 5(1) (2012)133-154

[6] Laurie McLeod et al., Factors that affect software systems development Project outcomes: A survey of research, ACM computing surveys,43(4) (2011) 24-56

[7] AthanasiosKolios et al,.A comparative study of Multi-Criteria Decision-making Methods under Stochastic Inputs. Energies,9(7) (2016)1-21

[8] ZhongliangYue,A method for group decision-making based on determining weights of decision-makers using TOPSIS Applied Mathematical Modelling, 35(4) (2011) 1926-1936

[9] Martin, H et al., Application and extension of the TOPSIS methodfor the assessment of floating offshore wind turbine support structures. Journal Ships Offshore Structure 8(5) (2013) 477–487.

[10] Behzadian et al.,A state-of-the-art survey of TOPSIS applications. Exp. Syst. Appl. 39(17) (2012) 13051–13069.

[11] Shahroudi K et al., Application of Topsis Method to supplier selection in Iran Auto Supply Chain. Journal of global strategic Management, 6(2) (2012) 123-131

[12] Paul, P et al., Selection of the most optimal contractor in the Indian Construction Industry using the Topics and Extended Topics model. IOSR Journal of Mechanical and Civil Engineering, (2016) 67-78

[13] Gurung, S., &Phipon, R., Multi-criteria decision-making for supplier selection using AHP and TOPSIS method. International Journal of Engineering Inventions, 6 (2)(2016) 13-17.

[14] Sharad K. Maheshwari et al., Selection of Accounting Software tools for small business: Analytical hierarchy Process Approach.Allied Academies International Conference, 11(2) (2006) 39-43

[15] Mulliner, E et al., Comparative analysis of MCDM methods for the assessment of sustainable housing affordability. LJMU research online. 59(B) (2016) 146–156.