SELECTION OF SOCIAL MEDIA PLATFORMS USING FUZZY PROMETHEE METHOD WITH DIFFERENT SCENARIO TYPES

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Abstract: Social media are widely and mostly utilized in many areas to increase advertising, client relations, tourism, journey and many others by means of members or organizations. Social Media Platforms (SMPs) are becoming increasingly popular in the world. The selection of SMPs, which might be widely and mostly utilized by members or organizations, becomes a critical and complex problem. Moreover, some problems that need to be investigated which consist of the reason for the use of different SMPs, purpose, and frequency of use. In this study, we have investigated to explain these problems via questionnaire which evaluates by undergraduate pupils (N = 173). Therefore, we have created twelve different scenarios that are different weights and thresholds and handled the selection and ranking of SMPs by fuzzy Preference Ranking Organization Method for Enrichment Evaluation (PROMETHEE) I and II. Consequently, we able to conclude that "Which SMPs were more preferred?", "What are the reasons for selection of SMPs? and "Which criteria are more important for this selection?". In addition, this study can be guiding an infrastructure for the content of new SPMs in the future.

Keywords: fuzzy PROMETHEE, selection, ranking, multi-criteria decision making, social media, social media application

1. INTRODUCTION

Social media has become one of the essential and also fundamental instruments in modern day world. Social media consists of television, radio, billboards, newspapers, journal, posters, internet, and many others [1]. The internet is considered, one of the examples of social media, we are faced with the concept of Web 2.0. According to this concept, social media is divided into many classes as follows: collaborative projects (Wikipedia, Delicious etc.), blogs (personal web pages, personal dairies), content communities (Flickr, YouTube, SlideShare etc.), social networking sites (Facebook, Myspace etc.), virtual game worlds, virtual social worlds (Second Life) [2]. If social networking sites are handled, it is seen that not only persons communicate with each other, they also exchange ideas, such as Twitter, and even they are used as a means of photo or video sharing, such as Instagram and YouTube, respectively [3]. Moreover, LinkedIn in business-related situations, Myspace in music and policy areas, or Facebook, which is university students first keep in touch with each other via creating profiles [4]. Thus, it can allow a character to communicate with hundreds or even thousands of persons [5]. Furthermore, Pinterest offers users collections about hobbies, sports, fashion [6, 7], WhatsApp is the most frequently used application that can work on mobile devices and is used for communication [8], also many locations sharing applications have been developed, such as Foursquare [9]. Apart from these, some applications are seen to be used in certain geographies. For example, Weibo is a microblog that is very popular in China, which has the most internet users in the world [10], and WeChat has become one of the most universal communication application in China since the 2010s [11].

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Besides these, some social networking sites or applications have started to lose their popularity in recent years, on the contrary, Friendfeed [12] and Tumblr are one of the most popular platforms [13].

Social media are very influential in bringing people together with large masses and strengthening communication among them. Therefore, institutions and organizations are actively involved in using social media. For example, reputation management, advertise or increase advertising, client relations, tourism, journey as well as market survey with feedback from the masses at the design stage of the products. Hung et al. [14] analyzed the criteria impacting online reputation management, which is an important tool of social media marketing, with DEMATEL based ANP (DANP). Oralhan [15] determined criteria, which are view rate, view and perception, and member profile, for telecommunication sector to be preferred for advertising, calculated the effect levels of the criteria with the Fuzzy DEMATEL. Wu, Chang, and Liao [16] analyzed selecting the most suitable show hosts in social media and proposed a hybrid Multi Criteria Decision-Making Method (MCDM) that consists of fuzzy DELPHI, DEMATEL, ANP and TOPSIS. Muruganantham and Gandhi [17] handed to discover and rank influential users on Facebook and used various MCDM methods, such as ELECTRE, PROMETHEE, AHP, TOPSIS etc. Sudipa et al. [18] selected more favorable application for online businesses based on some criteria, which are security, application features, community, ease of access and response speed, via PROMETHEE II.

In this paper, we created the notion of Social Media Platforms (SMPs) by blending social media sites, application and classes that built on the concept of Web 2.0. These SMPs are used by individuals to communicate with each other, to gather information, to follow the agenda, to obtain personal information, upload photos and videos, or simply to enjoy leisure time. Selection of SMPs, which are widely used today, becomes a very difficult problem. The reasons for this difficulty are that there are too many and specific applications serve distinctive functions. In this context, we carried out a large literature study and identified 15 alternatives that are SMPs. In this study, we have preferred more preferred SMPs and aimed to be a guide for the applications that will be released to the market after examining the criteria in which will be preferred more. In addition, we consider that a hybrid SMP that can be created by using combining essentially the most preferred criteria shall be extra triumphant in the future. Selection via MCDM models or optimization techniques of SMPs or social networking sites are very few in the literature [1, 19-22]. Moreover, most studies are about a simple classification of social media types [23].

In this study, we focused a different perspective on the problem of the selection of SMPs with the scenarios. We created 12 scenarios consist of 4 different weights to the criteria and 3 different threshold values. Initially, it is set 15 SMPs and 4 main criteria comprised of 14 sub criteria. After that, we have conducted a questionnaire to undergraduate students (N = 173) for SMPs and according to the questionnaire results, the most preferred applications are selected and the number of SMPs reduced to 6. Then, we have fuzzification data from the questionnaire results and carried out the selection of SMPs by fuzzy PROMETHEE I and II.

The paper is organized as follows. In Section 2 presents literature review on social media, SMPs, and fuzzy PROMETHEE I- II, and describes the methodology used in the study. In Section 3 contains evaluation of alternatives by PROMETHEE I and II, results and discussion. Finally, Section 4 presents conclusions and future work.

2. METHODOLOGY

Nowadays, social media is used both in traditional and digital way. Many of companies aim to reach their customers online using social media. In this context, they have developed SMPs strategies [24]. They can also be used as a strategy developer for corporate branding and corporate communications [25]. Social media has become important to many areas not just companies. For example, it is used as information search platform for travelers [26], or the interactions and experiences of individuals [27]. Today, there are a wide variety of SMPs, and it becomes a growing market every day, but on the other hand it seems that some SMPs have not been used in time and be out of date [28]. The main reason is that the product designers do not take into consideration the needs based on cultural differences [29]. In these SMPs, individuals often interact with people, communities, groups, and organizations through a variety of methods, such as sharing photos, videos, posts etc. by creating a profile.

In this paper, we handled problem of selection of SMPs, which are widely used and popular for different purpose and field today. The reasons for this difficulty are that there are too many and particular applications serve distinctive functions and different criteria. For this reasons, we decided that selection of SMPs is a decision-making problem because of various objectives, such as ranking the alternatives or finding the best alternative,

separating the alternatives into groups of good/bad, acceptable/unacceptable or dominated/non-dominated, creating clusters with similar/unsimilar alternatives. Therefore, we can say that this problem is a complex decision-making and it has been solved via MCDM methods over the years. The MCDM methods are handled the problem as alternatives and criteria which represent (a_1, a_2, ..., a_m) and (f_1, f_2, ..., f_n), respectively. In this paper, the most favored SMPs are identified as alternatives, and the motives for his or her use constitute criteria. Firstly, we preferred popular SMPs as a result of literature review. These platforms are: Facebook, Friendfeed, Tumblr, Twitter, Pinterest, YouTube, LinkedIn, WhatsApp, Myspace, Instagram, Foursquare, WeChat, Google+, Webio, Snapchat [3, 30-33]. We have implemented questionnaire undergraduate students to evaluate 15 alternatives with 14 criteria and identified the 6 most preferred applications. These platforms are: Facebook, Twitter, YouTube, WhatsApp, Instagram, and Snapchat. Secondly, we have created 12 different scenarios and used fuzzy PROMETHEE I and II method for selection and ranking of SMPs. Also, we presented the framework applied to SMPs selection is presented in Figure 1 for a better understanding of the problem.

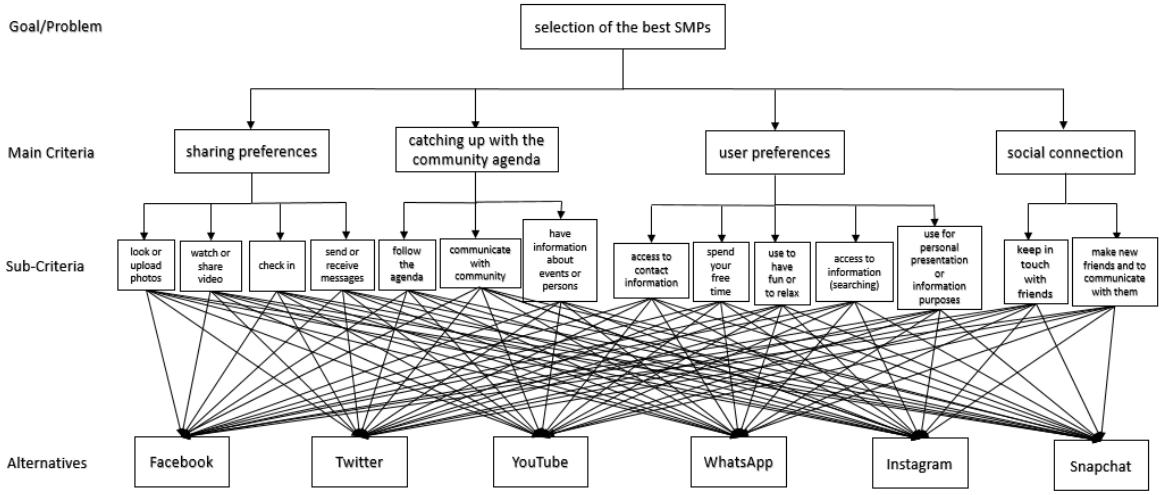


Fig. 1. Framework for the selection of the best alternative.

Studies on the PROMETHEE I and II and its derivatives are quite extensive in the literature even though studies on fuzzy PROMETHEE I and II are relatively rare. For example, ranking of alternative energy exploitation projects [34], selection of information system outsourcing [35], quality assessment for hospital websites [36], ranking of contaminated sites according to the risk assessment paradigm [37], selection of multi-criteria suppliers [38] etc. PROMETHEE has several steps for the computational procedures and this steps are generalized and handled below [39]:

Step 1: Define $A = \{a_1, a_2, \dots, a_m\}$ and $C = \{c_1, c_2, \dots, c_n\}$ the set of alternatives and criteria, respectively. Calculate preferred value $P_k(a_i, a_j)$, $P_k(a_i, a_j) = f_k[d_k(a_i, a_j)]$, where f_k is a preferred function, $d_k(a_i, a_j)$ represents the difference between the assessments of the alternatives $a_i$and $a_j$for the criterion c_k for all *i, j = 1, 2, …, m,* and *k = 1, 2, …, n.*

Step 2: The weighted preferred degree $\Gamma_k(a_i, a_j)$ is calculated, $\Gamma_k(a_i, a_j) = w_k P_k(a_i, a_j)$, where w_k represents the weight of criterion for all *k = 1,2, …, n*.

Step 3: $\phi^+(a_i)$ and $\phi^-(a_i)$ of the alternative a_i are calculated which represent positive and the negative net outranking flow, where:

$$\phi^+(a_i) = \sum_{a_i \epsilon A} \Gamma_k(a_i, a_j) \quad and \quad \phi^-(a_i) = \sum_{a_i \epsilon A} \Gamma_k(a_j, a_i) \quad \forall \in i. \tag{1}$$

Step 4: $\phi(a_i)$ is calculated which represent the net flow of the alternative a_i, where:

$$\phi(a_i) = \phi^+(a_i) - \phi^-(a_i) \quad \forall \in i. \tag{2}$$

Step 5: Rank alternatives a_i, i = 1, 2, …, m, according to their net flows.
In this section, first of all, we explained methodology and detailed data collection, determination of alternatives, criteria, criteria weights, fuzzy numbers, preferred functions and parameters for criteria. Moreover, we created scenarios with criteria weights and threshold values and ranked the scenarios via fuzzy PROMETHEE I and II method.

2.1. Determination of alternatives
In this stage, the decision maker or decision team determine the alternatives for a particular job or situation. In our study, the most favourite SMPs were evaluated as alternatives by blending them that consist of social media sites, application and classes in the literature. Firstly, we identified 15 alternatives: Facebook, Friendfeed, Tumblr, Twitter, Pinterest, YouTube, LinkedIn, WhatsApp, Myspace, Instagram, Foursquare, WeChat, Google+, Webio, Snapchat. Secondly, these SMPs were evaluated by undergraduate students on a scale of 1-7 and were distinguished that get the most points as the result of the evaluation: Facebook (A_1), Twitter (A_2), YouTube (A_3), WhatsApp (A_4), Instagram (A_5), Snapchat (A_6).

2.2. Determination of criteria
In this stage, we determined 4 main and 14 sub-criteria to evaluate each alternative. These 4 main criteria: i) sharing preferences, ii) catching up with the community agenda, iii) user preferences, iv) social connections. Table 1 shows the 4 main and 14 sub-criteria.

Table 2. The main and sub-criteria.

Main criteria	Sub-criteria
sharing preferences	-look or upload photos (C_1) -watch or share video (C_2) -place notification (check in) (C_3) -send or receive messages (C_4)
catching up with the community agenda	-communicate with community, group etc. (C_5) -follow the agenda (C_6) -have information about events or persons (C_7)
user preferences	-access to contact information (C_8) -spend your free time(C_9) -use to have fun or to relax (C_{10}) -access to information (searching) (C_{11}) -use for personal presentation or information purposes (C_{12})
social connections	-keep in touch with friends (C_{13}) -make new friends and to communicate with them (C_{14})

2.3. Determination of criteria weights
At this stage of the study, we determined criteria weights that are constituted different methods which consist of Common Set of Weights (CSW), ii) weights obtained according to the questionnaire data, iii) equal weight to four main criteria, iv) equal weight to each sub criteria.

i) weights obtained with CSW (W_1): The determination of weights with CSW takes place this mathematical model which gives outputs weight upper bounds [40]:

$$Max\ u_p \tag{3}$$

st.

$$\sum_{i=1}^{m} v_i\, x_{ip} = 1 \qquad j = 1,2,\dots,n \tag{4}$$

$$\sum_{r=1}^{s} u_r\, y_{rj} - \sum_{i=1}^{m} v_i\, x_{ij} \le 0 \tag{5}$$

$$u_r, v_i \ge 0 \tag{6}$$

$j = 1,2, \dots, n$ decision making units (DMU-each criterion), $i = 1,2, \dots, m$ number of inputs, v_i input weights, x_{ij} input values and $r = 1,2, \dots, s$ number of output, u_r output weights, y_{rj} output values. The output-oriented model is used by accepting v_i, x_{ij} as one and obtained weights are normalized.

ii) weights obtained according to the questionnaire data (W_2): Score from questionnaire results (θ_{ji}), j represent criterion, i represent alternative and weight obtained for each criterion ($w_j = \sum_{i=1}^{6} \theta_{ji}$; $\forall j$). Finally, the normalization process is applied ($\widehat{w_j} = w_j / \sum_{j=1}^{14} \sum_{i=1}^{6} \theta_{ji}$).

iii) equal weight for four main criteria (W_3): Each main criterion is called $t = \{1,2,3,4\}$, $T \subset$ N, main criterion weight is calculated $\frac{1}{|T|}$ and is distributed equally sub-criteria.

iv) equal weight for each sub-criteria (W_4): Each sub-criterion weight is calculated $\frac{1}{|N|}$ which is represents $j = \{1,2, \dots, n\} \in N$. The weights created using different methods of each criterion given in Table 2.

Table 2. Created weights using different methods.

Criteria	W_1	W_2	W_3	W_4
C_1	0.06	0.08	0.06	0.071
C_2	0.06	0.08	0.06	0.071
C_3	0.11	0.04	0.06	0.071
C_4	0.05	0.07	0.06	0.071
C_5	0.06	0.07	0.08	0.071
C_6	0.07	0.08	0.08	0.071
C_7	0.07	0.08	0.08	0.071
C_8	0.07	0.06	0.05	0.071
C_9	0.07	0.08	0.05	0.071
C_{10}	0.06	0.09	0.05	0.071
C_{11}	0.08	0.07	0.05	0.071
C_{12}	0.09	0.06	0.05	0.071
C_{13}	0.06	0.08	0.13	0.071
C_{14}	0.08	0.06	0.13	0.071

2.4. Determination of fuzzy numbers and importance scale

In this stage, firstly, we applied fuzzification process the result of the questionnaire that implemented to the students. Table 3 shows that importance scale and triangular fuzzy number, in the form $x=(m,a,b)_{LR}$ [34]. For example, if fuzzy number x is equal to the m, full membership is a matter of fact and is expressed as $f(x) = 1$. If the expressed fuzzy number x is less than $(m - a)$ and greater than $(m + b)$, then it does not belong any group and $f(x) = 0$. If it is in the range $(m - a) < x < (m + b)$, using operations with basic fuzzy numbers, the membership function is in the range of 0-1.

Table 3. Importance scale $(m, a, b)_{LR}$.

Very Low	(0,0,0.15)
Low	(0.15,0.15,0.15)
Medium Low	(0.30,0.15,0.20)
Medium	(0.50,0.20,0.15)
Medium High	(0.65,0.15,0.15)
High	(0.80,0.50,0.20)
Very High	(1,0.20,0)

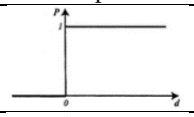
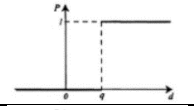
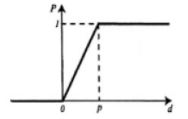
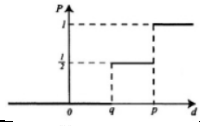
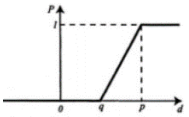
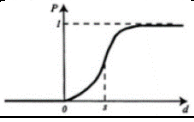
Secondly, we used Yager index $F(m,a,b) = (3m-a+b) / 3$ in the fuzzy number defuzzification process. As an example, consider the fuzzy number (0.30, 0.15, 0.20) defuzzification process is below:

$F(m, a, b) = \frac{3m-a+b}{3}$ and F(0.30, 0.15, 0.20) $= \frac{3\times0.30-0.15+0.20}{3} = 0.32$.

2.5. Determination of preferred functions and thresholds

The decision maker or decision team which consist of expert have difficulty in deciding the preferred function which is represent *P(d)* and thresholds. Also, the decision maker may not have clear information or may be ambivalent between several preferred functions in the face of the question of which preferred function is probabilistic. Preferred function of PROMETHEE is used to define deviations between alternatives for each criterion. In this paper, the definitions of 6 preferred functions are presented and given Table 4 [41, 42]. In this study, we used linear preference and indifference area and determined parameters q = 0, p = 0.6 for the linear function, which is frequently preferred in the literature. In addition, two different parameters are determined, q = 0, p = 0.5 and q = 0.2 and p = 0.8, in other words, preferred function is linear when parameters take q = 0, p = 0.6 and q = 0, p = 0.5 values. Therefore, we created different scenarios which consist of particular thresholds and weights, thus, we offered an interactive method by creating different scenarios between decision maker and problem solver.

Table 4. Types of *P(d).*

Type	Parameters	Function	Graphic
Usual criterion	-	$P(d)=\begin{cases}0 & d\le 0\\ 1 & d>0\end{cases}$	
Quasi criterion	q	$P(d)=\begin{cases}0 & d\le q\\ 1 & d>q\end{cases}$	
Criterion with linear preference	p	$P(d)=\begin{cases}0 & d\le 0\\ \frac{d}{p} & 0\le d\le p\\ 1 & d>p\end{cases}$	
Level criterion	q, p	$P(d)=\begin{cases}0 & d\le q\\ \frac{1}{2} & q\le d\le p\\ 1 & d>p\end{cases}$	
Criterion with linear preference and indifference area	q, p	$P(d)=\begin{cases}0 & d\le q\\ \frac{d-q}{p-q} & q\le d\le p\\ 1 & d>p\end{cases}$	
Gaussian criteria	s	$P(d)=\begin{cases}0 & d\le 0\\ 1-e^{-\frac{d^2}{2s^2}} & d>0\end{cases}$	

2.6. Calculation of ϕ^- , ϕ^+ and ϕ^{net}

ϕ^- , ϕ^+ are calculated equation (1) to partial ranking PROMETHEE I, the preference relation and partial ranking of *a* and *b* are derived equation (7) and (8) [39]:

$$aP^+b=\begin{cases}P, if\ and\ only\ if\ \phi^+(a)\succ\phi^+(b);\ \forall\ a,b\in A\\ I, if\ and\ only\ if\ \phi^+(a)=\phi^+(b);\ \forall\ a,b\in A\end{cases} \tag{7}$$

$$aP^-b=\begin{cases}P, if\ and\ only\ if\ \phi^-(b)\succ\phi^-(a);\ \forall\ a,b\in A\\ I, if\ and\ only\ if\ \phi^-(a)\succ\phi^-(b);\ \forall\ a,b\in A\end{cases} \tag{8}$$

In the partial ranking PROMETHEE I, all alternatives are not comparable. Thus, we need to calculate the net outranking flow. ϕ^{net} is calculated according to equation (9) and in order to full ranking PROMETHEE II, it is necessary to compare the net flows of *a* and *b*. If the following condition, equation (10), can be provided, *a* is superior to *b*.

$$\phi^{net}(a)=\phi^+(a)-\phi^-(a) \tag{9}$$

$$\phi^{net}(a)\succ\phi^{net}(b) \tag{10}$$

3. RESULTS AND DISCUSSION

In this study, the alternatives mentioned in the previous section for SMPs are as follows: Facebook (A_1), Twitter (A_2), YouTube (A_3), WhatsApp (A_4), Instagram (A_5), Snapchat (A_6). We have examined most preferred criteria in which the 6 alternatives determined by the questionnaire. A_1 has the best scores on the criterion of C_8 which is access to contact information, A_2 has the best scores on the criterion of C_6 which is follow the agenda, A_3 has the best scores on the criterion of C_2 which is watch or share video, A_4 has the best scores on the criterion of C_4 which is send or receive messages, A_5 has the best scores on the criterion of C_1 which is look or upload photos. Thus, we analyzed which application stands out more in which field and it can be said that the inferences are quite satisfactory. The prominence of different criteria in different applications shows that the applications come to the fore in certain areas. Therefore, the similar criteria can be integrated into an existing application or criteria can be diversified in new applications for the purpose of increase the user rate or download rate, enlarge the market share etc.

In this study, the scenarios are created with three different thresholds and the weights which handled four different methods. 12 scenarios with different threshold values and different weights are given in Table 5. In this way, a more interactive approach is presented to the parameters which cannot be determined or evaluated incorrectly by the decision maker.

Table 5. 12 scenarios with different threshold values and different weights.

Scenario	Threshold Values	Weight
S_1	q=0 and p=0.5	W_1
S_2	q=0 and p=0.5	W_2
S_3	q=0 and p=0.5	W_3
S_4	q=0 and p=0.5	W_4
S_5	q=0 and p=0.6	W_1
S_6	q=0 and p=0.6	W_2
S_7	q=0 and p=0.6	W_3
S_8	q=0 and p=0.6	W_4
S_9	q=0.2 and p=0.8	W_1
S_{10}	q=0.2 and p=0.8	W_2
S_{11}	q=0.2 and p=0.8	W_3
S_{12}	q=0.2 and p=0.8	W_4

The partial ranking of the scenarios obtained using Fuzzy PROMETHEE I is listed in Table 6 while the complete ranking of the scenario obtained using Fuzzy PROMETHEE II is listed in Table 7. Facebook, A_1, one of the most popular platforms as seen in the history, is at the end of the sequence in all scenarios in partial ranking. Based on this result, we can say popular platforms have lost their users over time or are not actively used. WhatsApp, A_4, is at the beginning of the sequence in all scenarios in partial ranking. WhatsApp, A4, is at the beginning of the ranking in all scenarios in partial ranking. Moreover, A_4 shares A_3, A_5 at the beginning of ranking with A_3, A_5 in the S6. Another ranking difference between seen that A_2 and A_6 in S_{10} and S_{11}.

Table 6. Partial ranking with fuzzy PROMETHEE I.

Scenario	Partial Ranking
S_1	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_2	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_3	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_4	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_5	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_6	$A_3 = A_4 = A_5 \succ A_6 \succ A_2 \succ A_1$
S_7	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_8	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_9	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_{10}	$A_4 \succ A_5 \succ A_3 \succ A_2 = A_2 \succ A_1$
S_{11}	$A_4 \succ A_5 \succ A_3 \succ A_2 = A_6 \succ A_1$
S_{12}	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$

Table 7. Complete ranking with fuzzy PROMETHEE II.

Scenario	Complete Ranking
S_1	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_2	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_3	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_4	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_5	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_6	$A_4 \succ A_5 \succ A_3 \succ A_6 > A_2 \succ A_1$
S_7	$A_4 \succ A_5 \succ A_3 \succ A_6 > A_2 \succ A_1$
S_8	$A_4 \succ A_5 \succ A_3 \succ A_6 > A_2 \succ A_1$
S_9	$A_4 \succ A_5 \succ A_3 \succ A_2 > A_6 \succ A_1$
S_{10}	$A_4 \succ A_5 \succ A_3 \succ A_2 \succ A_6 \succ A_1$
S_{11}	$A_4 \succ A_5 \succ A_3 \succ A_6 \succ A_2 \succ A_1$
S_{12}	$A_4 \succ A_5 \succ A_3 \succ A_2 \succ A_6 \succ A_1$

In the complete ranking, A_4 is at the beginning of the sequence and A_1 is at the end of the sequence in all scenarios. In general, it is seen that in all scenarios the same ranking, but when viewed as a scenario, there are slight differences in scenarios S_9, S_{10} and S_{12}, A_2 and A_6 alternate with each other. As a result, when the full ranking results are examined, no significant difference was observed in the ranking of SMPs via scenario which consist of the weights and threshold values expected to be decided by the decision maker.

4. CONCLUSIONS

In recent time's rapidly evolving technology and information systems, software, platforms are emerging simultaneously with this technology and these platforms have a perceptible influence on every aspect of our lives. Companies can reach customers more comfortable or to improve their customer portfolio through these platforms. Not only in companies but also in individuals are using for different purposes such as reaching large masses, finding a job, traveling, establishing social connections, getting information about hobbies or getting a hobby. The problem of selection platforms, which are often used by companies and individuals for different purposes, becomes a rather complex problem. In addition, the question of which platform to use for which purpose is also emerges as another problem. Therefore, we thought that the problem was a decision-making problem and handled Fuzzy PROMETHEE I and II methods which is one of the MCDM methods. In this problem, decision makers have good understanding or expert knowledge to determine alternatives, criteria, weights, parameters etc. Therefore, it is considered an interactive approach by using 12 different scenarios with 3 different threshold values and 4 different weights. The partial ranking of the scenario obtained using Fuzzy PROMETHEE I and complete ranking of the scenario obtained using Fuzzy PROMETHEE II.

In conclusion, this work presents an interactive perspective for decision-making problems, and that platforms in the ranking will be addressed with a different perspective for individuals and companies. Furthermore, it is considered the platforms involved in the study with 14 different criteria and it is a guide to the new platforms that are put on the market in the future which criteria are the best.

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