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A Proposed Framework for Selection and Prioritization of the Best Strategies: A Hybrid SWOT Analysis, Fuzzy PROMETHEE II and Porter's Generic Strategies

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Abstract: Today, in turbulent market environments and successive appearance of new competitors, one of the most important goals of industrial and business firms is first to keep their market share and then to increase it. They must find untapped markets or make them themselves therefore they have to know their competitive advantages. In 1980, M. Porter introduced three generic strategies. They have been concentrated to cost leadership, product differentiation and focus strategy. Nowadays many companies use Porter's generic strategies pattern. The main challenge for companies is how to use Porter's generic strategies according to the internal and external factors of the company. This study presents a formulated framework for selection and prioritization of the best firms strategies based on Porter's generic strategies. The purpose of this study is to present a comprehensive logical method for prioritization of the best strategies according to porter's generic strategies then improving of SWOT analysis. This study tries to answer these questions: What is the method for improving selection and prioritization of strategies based on porter's generic strategies? 2. How organizations can select the best strategies? How organizations can prioritize the selected strategies? How they can select and prioritize the best strategies of organization according to Porter's generic strategies? In this study, we used SWOT analysis for selection of the strategies and prioritizing them by fuzzy PROMETHEE II method. This method uses Porter's generic strategies as criterion. We used Shannon's entropy to determine the importance weights of Porter's generic strategies.

Keywords: Entropy, fuzzy, porter's generic strategies, PROMETHEE II, SWOT analysis

INTRODUCTION

By challenges of expansion of global trade, rapid changes in consumption patterns and demand, the revolution in information technology and an increase in the number and quality of local and international competitors in the past two decades, the concept of competitiveness has become very important. The reason of many firms failure is ignorance of dynamic market environment and lack of strategic planning appropriate to the circumstances of these companies. Thus firms and industries must try to identify factors affecting competitiveness and improve them, In order to enhance its competitiveness. One of the most important points of competitive advantages is to know firms and companies, their market and environmental indices of market. Analysis refers to learning about environmental events and trends and it is a managerial activity. Analysis provides necessary information about events in the external environment and reduces uncertainty (Garvin, 2002). The analysis helps companies to reduce their risks. Companies can make investment with more confidence and security by adequate analysis and understanding of this type of risks makes low-risk investment (Zahra, 1991). Hitherto, many categories presented for types of competitive strategies that most important of which are Porter (1980) generic strategies and Miles and Snow (1978) competitive strategies. Porter (1980) posited that firms with competitive advantages based on either cost leadership or differentiation are able to outperform others. In more recent work, Porter (1996, 2001) further argues that technological innovations that permit the rapid diffusion of best practices make some operational improvements that enhance cost efficiency easily limitable. In the same vein, others (Ghemawat, 1986) have argued that some forms of competitive advantage are difficult to imitate and can therefore, lead to sustained superior performance. Michael Porter has argued that the strengths of firm ultimately fall into one of two headings: cost advantage and differentiation. By applying these strengths in either a broad or narrow scope, three generic strategies follow: cost leadership, differentiation and focus. These strategies are applied at

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the business unit level. They are called generic strategies because they are not firm or industry dependent (Porter, 1980). Recent studies use porter's strategies as many different dimensions of business, industry firms and etc. Manteghi and Zohrabi (2011) present a formulated hybrid model of balanced scorecard, SWOT analysis, porter‘s generic strategies and Fuzzy quality function deployment. Allen and Helms (2006) found a list of critical strategic practices significantly associated with organizational performance for each of Porter's generic strategies. Kim *et al*. (2004) use generic strategies in e-business. This study (Nandakumar *et al*., 2011) examines the relationship between business-level strategy and organizational performance and test the applicability of Porter's generic strategies in explaining differences in the performance of organizations. Powers and Hahn (2004) found the relationship between competitive methods, generic strategies and firm performance studied on banking industry. The study of Wu *et al*. (2012) has used MCDM method "ANP" in porter's five forces. This study (Wu *et al*., 2012) was able to provide a quantitative procedure to evaluate the processes in the firm case in order to optimally operationalize a strategy given limited resource.

The purpose of this study is presentation a proposed Framework for Selection and Prioritization of the best strategies: A Hybrid SWOT analysis, fuzzy PROMETHEE II and Porter's generic strategies.

Porter's generic strategies: Porter has described a category scheme consisting of three general types of strategies that are commonly used by businesses to achieve and maintain competitive advantage. Porter's generic strategy matrix, which highlights cost leadership, differentiation and focus (Porter, 1980) as the three basic choices for firms, has dominated corporate competitive strategy for the last three decades (Pretorius, 2008). Porter called the generic strategies "Cost Leadership", "Differentiation" and "Focus". He then subdivided the Focus strategy into two parts: "Cost Focus" and "Differentiation Focus". Table 1 shows the generic strategies.

Cost leadership strategy: A successful cost leadership strategy is likely to rest upon a number of organizational features. Attainment of a position of cost leadership depends upon the arrangement of value chain activities (Evans *et al*., 2006). Costs are an important determinant of prices charged by firms. It has been argued that companies with lower costs gain competitive advantage by charging lower prices whereas the ability to differentiate allows companies to charge higher prices (Porter, 1985). Firms that succeed in cost leadership often have the following internal strengths (Porter, 1985):

Table 1: It shows the generic strategies

Scope	Board	Cost leadership	Differentiation
	Narrow	Cost focus	Differentiation focus
		Cost	Differentiation

Competitive advantage

- Access to the capital required making a significant investment in production assets; this investment represents a barrier to entry that many firms may not overcome
- Skill in designing products for efficient manufacturing
- High level of expertise in production process engineering
- Efficient distribution channels

Differentiation strategy: A differentiation strategy is based upon persuading customers that a product is superior in some way to that offered by competitors. In differentiation strategies, the emphasis is on creating value through uniqueness, as opposed to lowest cost (Porter, 1980; Hlavacka *et al*., 2001; Bauer and Colgan, 2001; Cross, 1999). It calls for the development of a product or service that offers unique attributes that are valued by customers and that customers perceive to be better than or different from the products of the competition It is argued that Porter's generic differentiation strategy has been further developed into more specific strategies, such as differentiation by product innovation, customer responsiveness, or marketing and image management, in responding to the complexity of the environment, while cost leadership remains focused on price and cost control (Miller, 1986; Perera *et al*., 1997; Lillis, 2002). Firms that succeed in a differentiation strategy often have the following internal strengths:

- Access to leading scientific research
- High skilled R&D unit
- Strong sales team
- Quality and innovation

Focus strategy: A focus strategy is aimed at a segment of the market for a product rather than at the whole market (Porter, 1980; Hlavacka *et al*., 2001; Bauer and Colgan, 2001; Cross, 1999; Davidson, 2001). Focus strategies can be based on differentiation or lowest cost. There is much debate as to whether or not a company can have a differentiation and low-cost leadership strategy at the same time (Helms *et al*., 1997). Firms that succeed in a focus strategy are able to tailor a broad range of product development strengths to a relatively narrow market segment that they know very well. Firms pursuing focus strategies must be able to identify their target market segment and both estimate and understand the needs and leanings of customers in that segment better than any other competitor at market.

PROPOSED METHODOLOGY

The purpose of this study is to present a comprehensive logical method for prioritization of the best strategies according to porter's generic strategies then improving of SWOT analysis. This study tries to answer these questions:

- What is the method for improving selection and prioritization of strategies based on porter's generic strategies?
- How organizations can select the best strategies?
- How organizations can prioritize the selected strategies?
- How they can select and prioritize the best strategies of organization according to Porter's generic strategies?

Strategic management can be defined as the art and science of formulating, executing and evaluating function decisions which enable organizations to reach their long-term objectives (David, 1999). As no organization has unlimited resources and due to competitive dominant environment, formulating the competitive strategies target which lead organization to the macro goals, is very important. That's why organization spending their resources on extraneous purposes will easily substitute their rivals on behalf of themselves. Therefore they are supposed to formulate the appropriate strategies to attend the competitive area (Zohrabi and Manteghi, 2011). First step of this method is selection of strategies by SWOT matrix. SWOT is a management tool to formulate strategic action plans. SWOT is an acronym for strengths, weaknesses, opportunities and threats. SWOT matrix analyzes the internal strengths and weaknesses as well as external opportunities and threats to derive promising future strategies (Rauch, 2007). The proposed methodology of this study is based on four steps. These four steps are as follows.

Step 1: selection of strategies by SWOT analysis: SWOT is a management tool to formulate strategic action plans. SWOT is an acronym for strengths, weaknesses, opportunities and threats. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favorable and unfavorable in achieving that objective. SWOT maximizes strengths and opportunities and minimizes threats and weaknesses. In other words, it transforms weaknesses into strengths and threats into opportunities (Amin *et al*., 2011; Arslan and Deha Er, 2008; Christensen *et al*., 1976). Kurttila *et al*. (2000) introduced a new hybrid method for improving the usability of SWOT analysis. They combined SWOT and (AHP) to provide information for strategic planning processes. The SWOT analysis is used for selection the strategies in this framework. SWOT analysis is a useful tool for strategic planning in environmental management and supplies the basic foundation for identifying the situation and designing future procedures which is necessary in strategic attitude (Nikolaou and Evangelinos, 2010). According to Kangas *et al*. (2003) SWOT analysis is a powerful tool to aid decision-making and systematically analyzing the external and internal environment of an organization or institution. By identifying opportunities and threats, strengths and weaknesses, organizations can develop strategies based on their strengths, vanish weaknesses, gain maximum profit using opportunities and neutralize threats. Dyson (2004) also said SWOT analysis is incomplete to measure and evaluate strategy, thus the effect of each factor in the proposed strategy does not show. SWOT matrix analyzes the internal strengths and weaknesses as well as external opportunities and threats to derive promising future strategies (Rauch, 2007). SWOT analysis is a systematic analysis for identifying these factors that formulates strategies by creating the best accommodation between internal and external factors, therefore through analogy of these factors, it can present four types of strategies such as SO, ST, WO and WT. Therefore, SWOT matrix is a tool which is used in this research in order to formulate initial strategy of instructional organization (Manteghi and Zohrabi, 2011). As been said before the strategies are selected by SWOT analysis in this method. The strategies are weighted and rated by Decision (DMs) makers. The DMs are experts of organizations. The strategies with the highest scores in four sections of SO, ST, WO and WT will be selected. SWOT analysis framework is illustrated in Fig. 1.

Step 2: determine the importance weights of Porter's generic strategies by fuzzy Shannon's entropy: In this study Porter's generic strategies are the criteria for selection and prioritization of the best strategies. Fuzzy Shannon's strategy is used for importance weighting of Porter's generic strategies. The importance weight is a number and these numbers show the importance of the criteria. The obtained numbers of Shannon's entropy prioritize the criteria according to their importance. In this part for better understand, at first we introduce the fuzzy logic, fuzzy sets and fuzzy numbers then introduce Shannon's entropy.

Fuzzy logic, fuzzy sets and fuzzy numbers: A fuzzy set is presented by Zadeh (1965). It is a class of objects with grades of membership. A membership function is between zero and one (Zadeh, 1965). Fuzzy logic is derived from fuzzy set theory to deal with reasoning that is approximate rather than precise. It allows the model to easily incorporate various subject experts' advice in developing critical parameter estimates

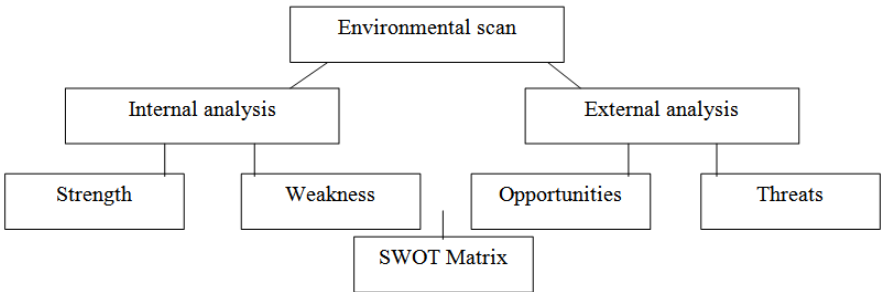

Fig. 1: SWOT analysis framework

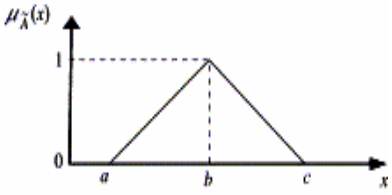

Fig. 2: A triangular fuzzy number $\tilde{A}$

$$\mu_{\tilde{A}}(x) = \begin{cases} 0, & x < a_1 \\ \frac{x-a_1}{a_2-a_1}, & a_1 \leq x \leq a_2 \\ \frac{a_3-x}{a_3-a_2}, & a_2 \leq x \leq a_3 \\ 0, & x > a_3 \end{cases}$$

Fig. 3: The fuzzy function

(Zimmermann, 2001). One of the most popular of fuzzy shapes numbers is Triangular Fuzzy Number (TFN). A triangular fuzzy number $\tilde{A}$ can be defined by a triplet (a, b, c) as showed in Fig. 2.

The membership function is illustrated in Fig. 3. Let A and B be defined as A = (a_1, a_2, a_3), B = (b_1, b_2, b_3). Then C = (a_1 + b_1, a_2 + b_2, a_3 + b_3) is the addition of these two numbers. Besides, D = (a_1 _ b_1, a_2 _ b_2, a_3 _ b_3) is the subtraction of them. Moreover, E = (a_1 * b_1, a_2 * b_2, a_3 * b_3) is the multiplication of them (Zadeh, 1965; Zimmermann, 2001; Lai and Hwang, 1995).

DMs selection strategies are based on fuzzy logic: In this method the proposed scale is applied to consider the uncertainty in human thought. Let U = {VL, L, ML, M, MH, H, VH} be the linguistic set used to express opinions on the group of attributes (VL = Very Low, L = Low, ML = Medium Low, M = Medium, MH = Medium High, H = High, VH = Very High). The linguistic variables of U can be quantified using triangular fuzzy numbers as: VL = (0, 0, 1); L = (0, 1, 3); ML = (1, 3, 5); M = (3, 5, 7); MH = (5, 7, 9); H = (7, 9, 10); VH = (9, 10, 10) (Fig. 4) (Amin and Razmi, 2009).

The primary reason for using triangular fuzzy numbers can be stated as their intuitive and computational-efficient representation (Karsak, 2002). A linguistic variable is defined as a variable whose values are not numbers, but words or sentences in natural or artificial language. The concept of a linguistic variable appears as a useful means for providing approximate characterization of phenomena that are too complex or ill-defined to be described in conventional quantitative terms (Zadeh, 1975). Defuzzified triangular fuzzy number Ã = (a_1, a_2, a_3) is based on Eq. (1):

$$\textit{Defuzzified number} = \frac{1}{3} \times (a1 + a2 + a3) \qquad (1)$$

Fuzzy Shannon's entropy based on α-level sets: One of the objective weighting measures which has been proposed by researchers is the Shannon entropy concept (Shannon, 1948). When the decision matrix is fully specified, the entropy method can be used to assess weights. Entropy concept was used in various scientific fields. Entropy is one of the key concepts in the social sciences, physics and information theory. The concept of Shannon's entropy has an important role in information theory and is used to refer to a general measure of uncertainty. In transportation models, entropy acted as a measure of dispersal of trips between origin and destinations (Islam and Roy, 2006). In physics, the word entropy has important physical implications as the amount of "disorder" of a system (Islam and Roy, 2006). In 2010, Hosseinzadeh Lotfi and Fallahnejad (2010) present the extension of the Shannon entropy method for the imprecise data, especially interval and fuzzy data cases. The explanation of fuzzy Shannon's entropy is similar to this study (Hosseinzadeh Lotfi and Fallahnejad, 2010). Chaghooshi *et al*. (2012) also used this method:

- The α-level set of a fuzzy variable $\tilde{x}_{ij}$ is defined by a set of elements that belong to the fuzzy variable $\tilde{x}_{ij}$ with membership of at least α i.e.:

  $$(\tilde{x}_{ij})_\alpha = \{\tilde{x}_{ij} \in R | \mu_{\tilde{x}ij}(x_{ij}) \geq \alpha\}$$

  The α-level set can also be expressed in the following interval form:

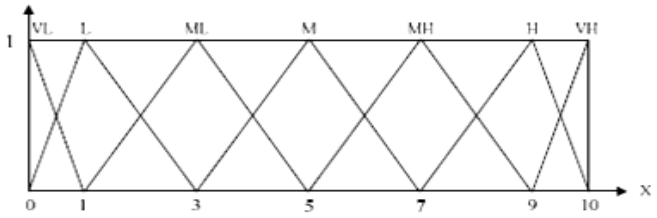

Fig. 4: The linguistic variables of U

$[(\tilde{x}_{ij})^{L}_{\alpha},(\tilde{x}_{ij})^{U}_{\alpha}] = [min_{xij}\{\tilde{x}_{ij} \in R|\mu_{\tilde{x}ij}(x_{ij}) \geq \alpha\}, max_{xij}\{\tilde{x}_{ij} \in R|\mu_{\tilde{x}ij}(x_{ij}) \geq \alpha\}]$

where $0<\alpha\leq 1$. By setting different levels of confidence, namely 1-α, fuzzy data are accordingly transformed into different α-level sets $\{(x_{ij})_{\alpha}|0<\alpha\leq 1\}$ which are all intervals.

- The normalization of p'_{ij} and p''_{ij}:

$p'_{ij} = \frac{x'_{ij}}{\sum_{j=1}^{m} x''_{ij}}$, $p''_{ij} = \frac{x''_{ij}}{\sum_{j=1}^{m} x''_{ij}}$, $J = 1, 2, 3, \ldots, m$
$i = 1, 2, 3, \ldots, n$

- Lower bound h'_i of interval entropy:

$h'_i = \min\{-h_0 \sum_{j=1}^{m} p'_{ij}.Ln\, p'_{ij}, -h_0 \sum_{j=1}^{m} p''_{ij}.Ln\, p''_{ij}\}$, $J = 1, 2, 3, \ldots, m$, i = 1, 2, 3, …n

Upper bound h''_i of interval entropy:

$h''_i = \max\{-h_0 \sum_{j=1}^{m} p'_{ij}.Ln\, p'_{ij}, -h_0 \sum_{j=1}^{m} p''_{ij}.Ln\, p''_{ij}\}$, $J = 1, 2, 3, \ldots, m$, i = 1, 2, 3, …n

where h_0 is equal to $(\text{Ln } m)^{-1}$ and $p'_{ij}.Ln\, p'_{ij}$ or $p''_{ij}.Ln\, p''_{ij}$ is defined as 0 if $p'_{ij} = 0$ or $p''_{ij} = 0$ (Chaghooshi *et al*., 2012).

- Set the lower and the upper bound of the interval of diversification di' and di'' as the degree of diversification as follows (Chaghooshi *et al*., 2012):

$d'_i = 1- h''_i$, $d''_i = 1- h'_i$, $i= 1, 2, 3, \ldots, n$

- And last steps for Shannon's entropy is set the below equation as the lower and upper bound of interval weight of attribute i (Chaghooshi *et al*., 2012).

$w_i^L = \frac{d_i^L}{\sum_{s=1}^{n} d_s^u}$, $w_i^U = \frac{d_i^L}{\sum_{s=1}^{n} d_s^L}$

PRIORITIZATION OF THE STRATEGIES BY FUZZY PROMETHEE II

The final step of this method is prioritization of strategies by PROMETHEE II method. As seen before, the strategies of organization is selected by SWOT analysis which is step 1. In step 2, Fuzzy Shannon's strategy is used for importance weighting of Porter's generic strategies. The generic strategies are criteria for prioritization of the best strategies; it means the strategies will prioritize based on generic strategies approach. The Preference Ranking Organization Method for Enrichment Evaluation (PROMETHEE) is a multicriteria decision-making method developed by Brans *et al*. (1986) and then extend in six categories (Brans and Mareschal, 2005). PROMETHEE I deals with a partial preorder, PROMETHEE II deals with a complete preorder, PROMETHEE III deals with an interval order emphasizing indifference, PROMETHEE IV deals with continuous set of possible alternatives, PROMETHEE V supports the optimization under constraints and PROMETHEE VI is a representation of the human brain (Yuen and Ting, 2012). PROMETHEE compares each pair of alternatives for each criterion and grades the alternatives in the 0-1 interval. Implementing the PROMETHEE requires two additional types of information (Albadvi *et al*., 2007). It is well adapted to problems where a finite number of alternative actions are to be ranked considering several, sometimes conflicting, criteria (Brans and Mareschal, 2005). There are six basic types of preference function in PROMETHEE method, therefore experts can establish flexible standard according to the requirement of competition condition in the same industry with respect to each criterion by PROMETHEE method (Brans *et al*., 1986). Brans and Mareschal (2005) combined the fuzzy set theory (Dubois and Prade, 1978) in the form from Zadeh (1965) and the ranking method (Yager, 1981) into PROMETHEE, named F-PROMETHEE. The four steps of FPROMETHEE describe as follow (Yuen and Ting, 2012).

Formulate a fuzzy decision matrix: Figure 5 is a typical m by n fuzzy decision matrix.

$\hat{c}_j \in \hat{C}$ is a fuzzy positive criterion. The criterion is a maximum criterion if the decision maker prefers more value for this criterion. Otherwise, it is a minimum criterion. $\hat{T}_i \in \hat{T}$ is an fuzzy alternative. $\hat{T}^*$ is the ideal fuzzy alternative from $\hat{T}$. $\hat{r}_{ij} \in \hat{r}$ is the utility value. $\hat{W}_1 \in \hat{W}$ is the fuzzy weight of $\hat{c}_j$ (Yuen and Ting, 2012). Goumas and Lygerou (2000) used the fuzzy

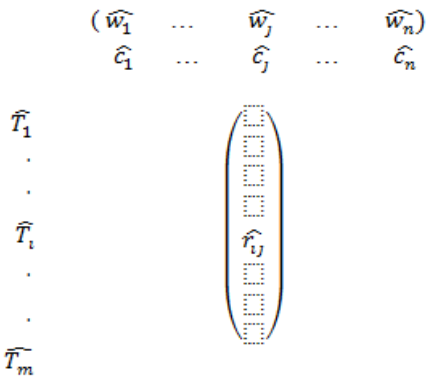

Fig. 5: Typical m by n fuzzy decision matrix

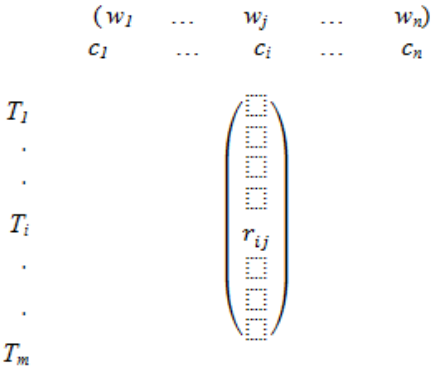

Fig. 6: Crisp matrix

number in the form (η, a, b), which is equivalent to the conventional form of triangular fuzzy number (l, η, u) such that (l, η, u) = (η-a, η, η+b) where m-a is the low boundary l, m + b is up boundary u and η is the model value. The conventional form of fuzzy number is (l, η, u) (Yuen and Ting, 2012) and this method use it as fuzzy number.

Index fuzzy numbers in the fuzzy decision matrix: The fuzzy number in the fuzzy decision matrix can be (defuzzified) as Eq. (1):

$$I(l, \eta, u) = \frac{(l,+\eta,+u)}{3}$$

Thus up Equation makes fuzzy decision matrix Fig. 5 as a crisp matrix Fig. 6.

$c_j \in C$ is the positive criterion. $T_i \in T$ is the alternative. T^* is the ideal alternative from T. r_{ij} is the utility value. $w_j \in W$ is the weight of the criterion c_j. The cap removal from the fuzzy notations is crisp value (Yuen and Ting, 2012).

Calculate aggregated preference indices: $P_j(T_i, T_k) = P_j(d(T_i, T_k)) = P_j(r_{ij}\text{-}r_{kj})$ is a preference function showing that how much T_i prefers to T_k with respect to c_j (Yuen and Ting, 2012). Brans and Maraeschal (2005) proposed six types of preference functions $P(d)$. As follow Yuen and Ting (2012), in this study for its proposed method, we choose Gaussian Criterion function as the preference function and its equation is:

$$P(d) = \begin{cases} 0 & d \le 0 \\ 1 - e^{-\frac{d^2}{2s^2}} & d > 0 \end{cases}$$

If the criterion is a maximum criterion:

$$P(d) = \begin{cases} 0 & d \ge 0 \\ 1 - e^{-\frac{d^2}{2s^2}} & d < 0 \end{cases}$$

If the criterion is a minimum criterion.

Aggregated preference index $\pi(T_i, T_k)$ expresses the degree of how T_i is preferred to T_k (Yuen and Ting, 2012) over all the criteria. The equations of aggregated preference indices:

$$\pi(T_i, T_k) = \frac{\sum_{j=1}^{n} P_i(T_i.T_k).w_j}{\sum_{j=1}^{n} w_j}, \forall T_i.T_k \in T \text{ and } i \neq k$$

Outranking flow calculation: Each alternative T_i is facing (m-1) other alternatives in T, In order to rank the alternatives, the outranking flows are defined as follows (Yuen and Ting, 2012).

The positive outranking flow, It expresses how an alternative T_i is outranking all the others:

$$\emptyset^+(T_i) = \sum_{k=1}^{m} \pi(T_i, T_k)$$

The higher $\emptyset^+(T_i)$ is a better alternative.

The negative outranking flow, it also expresses how an alternative T_i is outranked by all the others:

$$\emptyset^-(T_i) = \sum_{k=1}^{m} \pi(T_k, T_i)$$

Therefore the lower $\emptyset^-(T_i)$ gives a better alternative.
The net outranking flow is applied and its form is:

$$\emptyset(T_i) = \emptyset^+(T_i) - \emptyset^-(T_i), \forall_i \in \{1, \ldots, m\}$$

And finally the higher $\emptyset(T_i)$ shows the better alternative (Yuen and Ting, 2012).

The FPROMETHEE section is the last step of this method. It shows the priority of strategies. As a matter of fact prioritization of strategies gives us the best of them based on Porter's generic strategies.

CONCLUSION

The generic strategies were first set out by Porter (1985). Porter's generic strategies are a widely accepted typology of strategic options for businesses. They can be applied to products or services in all industries and to organizations of all sizes. It is important for organizations or industries that applied the generic strategies to how select and prioritize their organization

strategies based on generic strategies. This study introduces a comprehensive formulated framework for selection and prioritization of the best strategies based on Porter's generic strategies. One of the comprehensive aspects of this method is that it uses SWOT analysis as one of the most general, useful and familiar tools for all kind of organizations and industries. In fact, the general frame work of this method is based on improving the analysis of SWOT. On one hand we have the selected strategies by SWOT analysis; on the other hand the selected strategies needs be prioritized with an approach to Porter's generic strategies which is the final goal of this study. In this study, Shannon's Entropy is the way to determine the importance weight of Porter's generic strategies. In this proposed framework, the fuzzy logic is applied to consider the uncertainty in human (DMs) thought. When the decision matrix is fully specified, the entropy method can be used to assess weights. The results of Shannon's entropy are the weights of criteria and they used as (W) in next section of this proposed method. The final part of this frame work is to prioritize strategies based on Porter's generic strategies by fuzzy PROMETHEE II. As been said before, the generic strategies have been used as criterion in PROMETHEE method. Finally, the FPROMRTHEE shows preference selection of the best strategies. This framework can be implemented on any organizations that want to use Porter's generic.

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REFERENCES

Albadvi, A., S.K. Chaharsooghi and A. Esfahanipour, 2007. Decision making in stock trading: An application of PROMETHEE. Eur. J. Oper. Res., 177: 673-683.

Allen, R.S. and M.M. Helms, 2006. Linking strategic practices and organizational performance to Porter's generic strategies. J. Bus. Process Manage., 12(4): 433-454.

Amin, S.H. and J. Razmi, 2009. An integrated fuzzy model for supplier management: A case study of ISP selection and evaluation. Expert Syst. Appl., 36(4): 8639-8648.

Amin, S.H., J. Razmi and G. Zhang, 2011. Supplier selection and order allocation based on fuzzy SWOT analysis and fuzzy linear programming. Expert Syst. Appl., 38: 334-342.

Arslan, O. and I. Deha Er, 2008. SWOT analysis for safer carriage of bulk liquid chemicals in tankers. J. Hazard. Mater., 154(1-3): 901-913.

Bauer, C. and J. Colgan, 2001. Planning for electronic commerce strategy: An explanatory study from the financial services sector. Logist. Inform. Manage., 14(1/2): 24-32.

Brans, J.P. and B. Mareschal, 2005. PROMETHEE Methods. In: Figueira, J., S. Greco and M. Ehrgott (Eds.), Chapter 5, Multiple Criteria Decision Analysis: State of the Art Surveys. Springer, New York, 78: 163-196.

Brans, J.P., Ph. Vincke and B. Mareschal, 1986. How to select and how to rank projects: The PROMETHEE method. Eur. J. Oper. Res., 24: 228-238.

Chaghooshi, A.J., M.R. Fathi and M. Kashef, 2012. Integration of fuzzy Shannon's entropy with fuzzy TOPSIS for industrial robotic system selection. J. Ind. Eng. Manage., 5(1): 102-114.

Christensen, R., N. Berg and M. Salter, 1976. Policy Formulation and Administration. Richard D. Irwin, Homewood, IL, pp: 16-18.

Cross, L., 1999. Strategy drives marketing success. Graphic Arts Monthly, 71(2): 96-106.

David, F.R., 1999. Strategic Management: Concepts and Cases. 7th Edn., Prentice Hall, Upper Saddle River, NJ.

Davidson, S., 2001. Seizing the competitive advantage. Community Banker, 10(8): 32-47.

Dubois, D. and H. Prade, 1978. Operations on fuzzy numbers. Int. J. Syst. Sci., 9: 613-626.

Dyson, R.G., 2004. Strategic development and SWOT analysis at the University of Warwick. Eur. J. Oper. Res., 152: 631-640.

Evans, N., D. Campbell and G. Stonehouse, 2006. Strategic Management for Travel and Tourism. Butterworth-Heineman, Oxford, UK.

Garvin, D.A., 2002. A note on corporate venturing and new business creation. Harvard Bus. Sc., Note9: 24-32.

Ghemawat, P., 1986. Sustainable advantage. Harvard Bus. Rev., 64(5): 53-58.

Goumas, M. and V. Lygerou, 2000. An extension of PROMETHEE method for decision making in fuzzy environment: Ranking of action energy exploitation projects. Eur. J. Oper. Res., 123: 347-357.

Helms, M.M., D. Clay and W. Peter, 1997. Competitive strategies and business performance: Evidence from the adhesives and sealants industry. Manage. Decis., 35(9): 689-703.

Hlavacka, S., L. Bacharova, V. Rusnakova and R. Wagner, 2001. Performance implications of Porter's generic strategies in Slovak hospitals. J. Manage. Med., 15(1): 44-66.

Hosseinzadeh Lotfi, F. and R. Fallahnejad, 2010. Imprecise Shannon's entropy and multi attribute decision making. J. Entropy, 12: 53-62.

Islam, S. and T.K. Roy, 2006. A new fuzzy multi-objective programming: Entropy based geometric programming and its application of transportation problems. Eur. J. Oper. Res., 173: 387-404.

Kangas, J., M. Kurtila, M. Kajanus and A. Kangas, 2003. Evaluating the management strategies of a forestland estate-the S-O-S approach. J. Environ. Manage., 69: 349 358.

Karsak, E.E., 2002. Distance-based fuzzy MCDM approach for evaluating flexible manufacturing system alternatives. Int. J. Prod. Res., 40(13): 3167-3181.

Kim, E., D. Nam and J. Stimpert, 2004. The applicability of Porter's generic strategies in the digital age: Assumptions, conjectures and suggestion. J. Manage., 30(5): 569-589.

Kurttila, M., M. Pesonen, J. Kangas and M. Kajanus, 2000. Utilizing the Analytic Hierarchy Process (AHP) in SWOT analysis: A hybrid method and its application to a forest-certification case. J. Forest Policy Econ., 1(1): 41-52.

Lai, Y.J. and C.L. Hwang, 1995. Fuzzy Mathematical Programming: Methods and Applications. Springer-Verlag, New York.

Lillis, A., 2002. Managing multiple dimensions of manufacturing performance: An exploratory study. Account. Org. Soc., 27: 497-529.

Manteghi, N. and A. Zohrabi, 2011. A proposed comprehensive framework for formulating strategy: A hybrid of balanced scorecard, SWOT analysis, porter`s generic strategies and Fuzzy quality function deployment. Soc. Behav. Sci., 15: 2068-2073.

Miles, R.E. and C.C. Snow, 1978. Organizational Strategy, Structure and Process. McGraw-Hill, New York.

Miller, D., 1986. Configurations of strategy and structure: Towards a synthesis. J. Strategic Manage., 7: 233-249.

Nandakumar, M.K., A. Ghobadian and N. O'Regan, 2011. Generic strategies and performance: Evidence from manufacturing firms. J. Prod. Perform. Manag., 60(3): 222-251.

Nikolaou, I.E. and K.I. Evangelinos, 2010. A SWOT analysis of environmental management practices in Greek mining and mineral industry. Resour. Policy, 35: 226-234.

Perera, S., G. Harrison and M. Poole, 1997. Customer-focused manufacturing strategy and the use of operations-based non-financial performance measures: A research note. Account. Org. Soc., 22(6): 557-572.

Porter, M., 1980. Competitive Strategy: Techniques for Analyzing Industries and Competitors. Free Press, New York.

Porter, R., 1985. Competitive Advantage: Creating and Sustaining Superior Performance. Free Press, New York.

Porter, M., 1996. What is strategy? Harvard Bus. Rev., 74: 61-78.

Porter, M., 2001. Strategy and the internet. Harvard Bus. Rev., 79(3): 62-78.

Powers, T.L. and W. Hahn, 2004. Critical competitive methods, generic strategies and firm performance. J. Bank Marketing, 22(1): 43-64.

Pretorius, M., 2008. When Porter's generic strategies are not enough: complementary strategies for turnaround situations. J. Bus. Strat., 29(6): 19-28.

Rauch, P., 2007. SWOT analyses and SWOT strategy formulation for forest owner cooperations in Austria. Eur. J. Forest Res., 126: 413-420.

Shannon, C.E., 1948. A mathematical theory of communication. J. Bell Syst. Tech., 27: 379-423.

Wu, K., M. Tseng and A.S.F. Chiu, 2012. Using the analytical network process in porter's five forces analysis: Case study in Philippines. Proc. Soc. Behav. Sci., 57: 1-9.

Yager, R.R., 1981. A procedure for ordering fuzzy subsets of the unit interval. Inform. Sciences, 24: 143-161.

Yuen, K.K.F. and T.O. Ting, 2012. Textbook selection using fuzzy PROMETHEE II method. Int. J. Future Comput. Commun., 1(1): 76-78.

Zadeh, L.A., 1965. Fuzzy sets. Inform. Control, 8(1): 338-353.

Zadeh, L.A., 1975. The concept of a linguistic variable and its application to approximate reasoning-I. Inform. Sciences, 8(3): 199-249.

Zahra, S.A., 1991. Predictors and financial outcomes of corporate entrepreneurship. J. Bus. Venturing, 6: 259-285.

Zimmermann, H., 2001. Fuzzy Set Theory and its Applications. Kluwer Academic Publishers, Boston.

Zohrabi, A. and N. Manteghi, 2011. A proposed model for strategic planning in educational organizations. Proc. Soc. Behav. Sci., 28: 205-210.