

Application of Best-Worst Method (BWM) in Prioritization of International Business Strategies

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Abstract

This research provides a step by step methodology to prioritize international business strategies. Although the concept of business strategy has been vastly investigated in previous literature, its prioritization is less examined in conjunction with Multiple-Criteria Decision Making (MCDM) approaches. In addition, the problem is not adequately investigated in developing countries. Furthermore, recent MCDM model such as Best-Worst Method (BWM) are more appropriate tools in comparison with older approaches such as Analytic Hierarchy Process (AHP) as they need less judgments. In this regard, to address the gap of previous literature, this study has been arranged in two linked phases as follows. The first phase of this research examines different business strategies of previous literature. In this regard, a literature survey is completed to investigate different business strategies of previous studies. Following, the second phase applies a BWM to investigate and prioritize these strategies. The obtained results show that international business strategy, multi-country business strategy, transnational business strategy and global business strategy are the most important alternatives, respectively. Lastly, a summary and some directions for future research are suggested in the final section of study.

Keywords

MCDM, Business Strategy, and BWM.

1. Introduction

An appropriate decision making process ends in a suitable outcome (Hashemzahi et al. 2020). Therefore the short, medium and long term effects of a decision is directly affected by different processes required to make that decision (Hemmati et al. 2018:2019). As an example, many organizations are involved in strategy related decisions. In addition, some organizations have to follow international rules as they are working with abroad companies. To be more specific, different strategies can be considered by companies with regard to their scope, size, products and many other issues (Herzog 2011). Hence, it is essential to recognize and prioritize these strategies, especially in international companies. Although there are many qualitative approaches to select a business strategy for a company, there are also many

quantitative methods such as Multiple-Criteria Decision Making (MCDM) tools to be applied in this problem (Chiu et al. 2013).

International markets, internet, and fast progress of Information Technology (IT) contribute in unbelievable growth of international companies. In this regard, international companies play an important role in economic progress of nations, especially in developing countries. In addition, although working with international companies provide many benefits in terms of revenue and experience, it is necessary to consider numerous obligations such as technical issues, quality considerations, safety, manpower, and many others. Nevertheless, among different necessities of international markets, a proper international business strategy is beneficial as it might decrease expenses. In other words, a proper international business strategy forces companies to follow some obligations to improve their manpower performance, energy consumption, materials usage and other issues of business. Additionally, as international companies should follow though rules, even small faults could not be easily compensated and impose extra costs to companies. Therefore, international business strategies are important and should be more investigated (Kedia et al. 2002). According to recent literature, it is necessary for international companies to find their proper international business strategy and follow it as much as possible. More specifically, a proper application of international business strategy has been highlighted as an appropriate tool to decrease the expenses of companies. More specifically, different financial and non-financial obligations of business strategies should be seen in international companies. Additionally, as there are different international business strategy, it can be considered as a MCDM problem. In this regard, comparable with other MCDM problems, a decision maker should apply numerous criteria in decision making process as sole concentration on financial criteria is not enough (Khorramrouz and Galankashi 2019). To this end, an appropriate prioritization of international business strategies must focus on simultaneous consideration of decision making criteria, MCDM tools and proper examination of results.

Although the concept of business strategy, international business strategy and their related tools and techniques have been sufficiently investigated in previous studies (Ghauri et al. 2021), it is less examined in developing countries. In addition, by neglecting the nature of this problem, it is not properly linked with MCDM tools. However, as there are numerous criteria to prioritize, and there are many business strategies to be considered by companies, the problem should be enriched by MCDM tools. Furthermore, the majority of practitioners, decision makers and managers prefer recent MCDM techniques as they require fewer judgments compared to older approaches (Khorramrouz et al. 2019; Rezaei et al. 2020; Galankashi et al. 2021). More specifically, recent MCDM tools such as BWM requires fewer pairwise comparison matrices and provide reliable outputs compared with older methods such as AHP (Rezaei 2015). So, recent MCDM tools are strongly suggested in recent studies as they are more applicable to be used by decision makers and show more consistent results.

Hence, analyzing previous studies on business and international business strategies, applying a proper data collection approach, prioritizing international business strategies by MCDM techniques, and analyzing the outputs are the major challenges of international companies. There are many international business strategies to be considered by companies. However, they are not properly investigated in previous literature, especially in developing countries. To this end, by ignoring the accessibility of these strategies and the way they affect the performance of companies, many international companies of developing countries still focus on cost related issues and neglect other critical aspects of international markets. Hence, it is necessary to examine and demonstrate which business strategy is more important to be applied by international companies. So, proposing a step-by-step procedure to rank different international business strategies of companies is important as:

1. The developed methodology is applicable in real case studies
2. The steps can be repeated in other scopes such as national or local companies

The scope of this research is limited to international business strategies of companies. In other words, the scope of this research is related to different business strategies which are appropriate to be applied by international companies. More specifically, a step by step methodology is developed to investigate and prioritize different business strategies of international companies. However, although the scope of this study is limited to international business strategies of companies, the method, framework, criteria and results are applicable to be applied by managers, practitioners and researchers who are interested in prioritization process of other strategies. This research develops and prioritize international business strategies using MCDM techniques. Hence, by applying these techniques, this research provides an integrated framework to prioritize different business strategies of international companies. As a summary of

numerous steps necessary to address the objectives of this research, this study investigates previous literature on business strategy, finalize different international business strategies, and applies BWM to determine their ranking and final prioritization. The remainder of this research is arranged as follows. Section 2 investigates the previous literature. Next, numerous phases required to address the research objectives are investigated in research methodology section. Lastly, the outputs, discussions and some research directions are presented in Sections 4 and 5, respectively.

2. Literature Review

Different concepts, definitions and recent studies including business, business strategy, international business strategy, and an examination of recent literature are discussed in this section. Finally, conclusion and identification of research gaps are presented at the end of section.

2.1 International Companies

The scope, limitations, products and other features of international companies are unique. As it is clear from the name of these companies, international companies try to focus on both local and abroad markets. Therefore, different organizations, institutions, manufacturing sites and any entity which are involved in foreign trading can be considered as international company. In this regard, according to this definition, there are numerous companies which are considered as international (Janssens et al. 2004). Therefore, it is necessary to ensure that they have a proper international business strategy. In other words, applying a proper strategy helps these companies to deliver final products to final customers in desired time, quality, quantity, location and price (Bidoki et al. 2021). Furthermore, as these companies are involved in different requirements of different industries, their international business strategy should be followed by all components of their supply chain including plants, processes and other involved components. In this regard, there are numerous issues linked with these companies. However, among these issues, strategy related problems are more common in international companies. Therefore, to handle these issues, according to previous literature, international business strategy and its obligations should be considered by suppliers, contractors, manufacturers and any firm which is involved in abroad businesses. However, similar to any managerial problem, there is not a common solution for all businesses and any company might require its specific business strategy.

2.2 Business Strategy

According to previous literature, a considerable portion of previous studies have focused on business strategy in developed countries. In this regard, there are two important issues linked with business strategy. Firstly, it is necessary to extend the scope of business strategy from local companies to international companies. Secondly, it is required to focus on both business and international business strategy in companies. In this regard, as these issues are less examined in developing countries, it is essential to be considered in this research. According to recent studies, similar to local companies, international companies are also involved in numerous processes to convert manufacturing ideas in practice. In other words, these companies should improve quality, price and other characteristics of their products to satisfy both local and international companies. In this regard, as there are many objectives, these companies need a comprehensive planning to coordinate numerous issues such as cost, time, manpower, and technology. Therefore, simultaneous consideration of all these aspects need a lot of time, coordination and cost. Therefore, a business strategy can be applied to see all these issues in a framework. Hence, different probable business strategies should be known and ordered to assist managers, practitioners and researchers to manage different aspects of business properly.

2.3 International Business Strategy

According to previous discussion presented in previous sections, there are different international business strategies in previous literature. In other words, according to previous literature, different international strategies can be considered by companies. However, with regard to the limitations of time and cost, companies cannot apply all these strategies simultaneously. In addition, there might be some conflicts in concurrent application of two or more strategies. Therefore, a literature survey is applied to find major international business strategies as tabulated in Table 1.

Table 1. International Business Strategies

International Business Strategy	Sample Reference
International business strategy	Peng et al. (2008)

Global business strategy	Kasanagottu and Bhattacharya (2018)
Multi-country business strategy	Belyaeva and Lopatkova (2020)
Transnational business strategy	Meckling (2011)

2.4 Identification of research gap

As discussed in previous sections, according to the highlights of previous studies available in literature, a step by step procedure to investigate and prioritize international business strategies is not adequately developed, particularly in developing countries. Furthermore, as there are many international business strategies, it is essential to apply the most applicable strategy as concurrent application of them might be conflicting. Lastly, many managers, practitioners and decision makers prefer to make their judgments by fewer pairwise comparison matrices. In this regard, it is suggested to use recent MCDM tools such as BWM to address these issues. Therefore, to address the gap of previous studies, this study proposes a step by step methodology to investigate different international business strategies and prioritize them by BWM.

3. Research Methodology

The developed research methodology of this study is discussed in this section. According to Figure 1, two linked phases should be followed to achieve different objectives of this research. The first phase of this study investigates previous studies to investigate different international business strategies. In other words, the initial phase of this study applies previous literature to develop potential business strategies of international companies. In this regard, different keywords such as business strategy, international business strategy, business strategy contributors, business strategies of companies, foreign business strategy, and abroad business strategy have been applied to find related papers. Consequently, in summary, the first phase of this study reviews the previous literature to finalize different international business strategies. Next, the second phase of this research ranks international business strategies of previous phase. To do so, a BWM is used as an appropriate and novel decision making tool to rank different business strategies of international companies. According to Rezaei (2015) there are different steps necessary to finalize the BWM. Initially, it is essential to define the problem. In other words, similar to other MCDM approaches, the objective, criteria and alternatives should be defined. Following, the potential alternatives should be evaluated considering the criteria. Next, the importance of all criteria should be determined. After, following to an appropriate data collection process, it is necessary to run the model to extract the outputs. Lastly, comparable with other MCDM models such as AHP (Ziaei et al. 2013; Galankashi et al. 2016), it is essential to check the consistency of the results. Both phases and their required steps are presented in Figure 1. Furthermore, all required steps of BWM are shown in Figure 2 (Duleba et al. 2021).

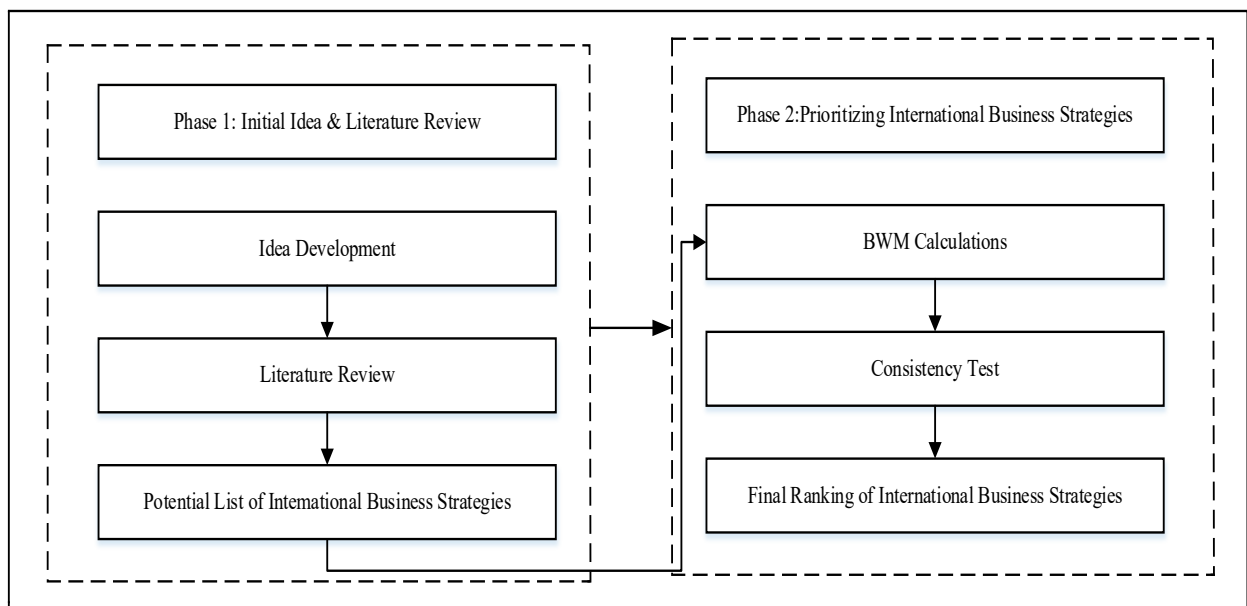


Figure 1. Research Steps

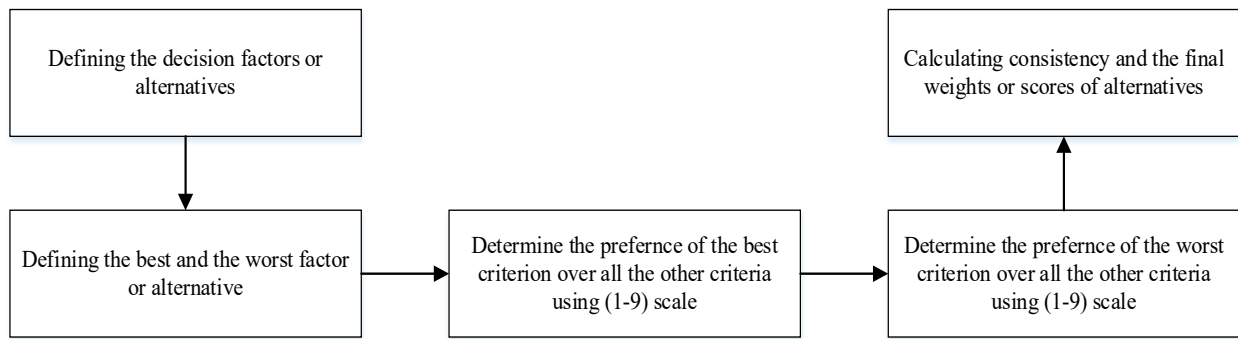


Figure 2. BWM Steps (Duleba et al. 2021).

4. Results and Discussion

Different outputs of this research are presented in this section. According to research methodology section, two phases are necessary to achieve the objectives of this study. Therefore, this section has been ordered based on different phases of research methodology. Firstly, it was necessary to develop international business strategies of companies. In this regard, a literature review was conducted to find the most frequently applied business strategies of international companies. Next, a questionnaire was designed according to different steps of BWM. Lastly, the comments of experts were applied to prioritize international business strategies. Following presents different obtained results of this research. As a reminder, the main output of the first phase was tabulated in Table 1. According to this table, international business strategy, global business strategy, multi-country business strategy, and transnational business strategy are considered as potential international business strategies. Next, as discussed in research methodology, a BWM is applied to prioritize these international business strategies as follows. According to BWM, the first step formulates the problem. Therefore, the addressed problem aims to prioritize different international business strategies. Following, it is necessary to determine the alternatives to be ranked. In this regard, different international business strategies tabulated in Table 1 are examined to find their final ranking. However, according to BWM, it is required to set the best and worst criteria. Therefore, the international business strategy and multi-country business strategy are considered as the best and worst criteria, respectively. A 1-9 scale developed by Saaty (Saaty 1996) is applied to compare alternatives as tabulated in Table 2. Following, Tables 3 and 4 present the comparison of best criteria with others according to the comments of the first and second expert, respectively. Furthermore, according to BWM, other criteria should be also compared with the worst criteria. So, Tables 5 and 6 present the comparison of other criteria with the worst one according to the judgments of the first and second expert, respectively. Next, the weights of international business strategies are tabulated in Tables 7 and 8 according to the comments of first and second expert, respectively. Finally, the scores of first and second experts are integrated using a mean average and tabulated in Table 9 and depicted in Figure 3. According to this table, international business strategy, multi-country business strategy, transnational business strategy and global business strategy are the most important business strategies of international companies, respectively.

Table 2. Saaty's 1-9 scale

Intensity of Importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance	Experience and judgment slightly favor one over another
5	Strong importance	Experience and judgment strongly favor one over another
7	Very strong importance	Activity is strongly favored and its dominance is demonstrated in practice
9	Absolute importance	Importance of one over another affirmed or the highest possible order
2,4,6,8	Intermediate values	Used to represent compromise between the priorities listed above

Table 3. Comparison of the best criteria with others (best-to-others preference based on first expert)

Best-to-others	International Business Strategy	Global Business Strategy	Multi-country Business Strategy	Transnational Business Strategy
International Business Strategy	1	4	9	6

Table 4. Comparison of the best criteria with others (best-to-others preference based on second expert)

Best-to-others	International Business Strategy	Global Business Strategy	Multi-country Business Strategy	Transnational Business Strategy
International Business Strategy	1	3	6	8

Table 5. Comparison of other criteria with the worst (others-to-worst preference based on first expert)

Multi-country Business Strategy	Others-to-worst preference
International Business Strategy	9
Global Business Strategy	5
Multi-country Business Strategy	1
Transnational Business Strategy	4

Table 6. Comparison of other criteria with the worst (others-to-worst preference based on second expert)

Multi-country Business Strategy	Others-to-worst preference
International Business Strategy	8
Global Business Strategy	6
Multi-country Business Strategy	4
Transnational Business Strategy	1

Table 7. Weights of international business strategies (first expert)

International Business Strategy	International Business Strategy	Multi-country Business Strategy	Global Business Strategy	Transnational Business Strategy
Weight	0.6327	0.1854	0.0582	0.1236

Table 8. Weights of international business strategies (second expert)

International Business Strategy	International Business Strategy	Multi-country Business Strategy	Global Business Strategy	Transnational Business Strategy
Weight	0.5882	0.2353	0.1176	0.0588

Table 9. Final weights of international business strategies

International Business Strategy	International Business Strategy	Multi-country Business Strategy	Global Business Strategy	Transnational Business Strategy
Weight	0.6105	0.2104	0.0879	0.0912

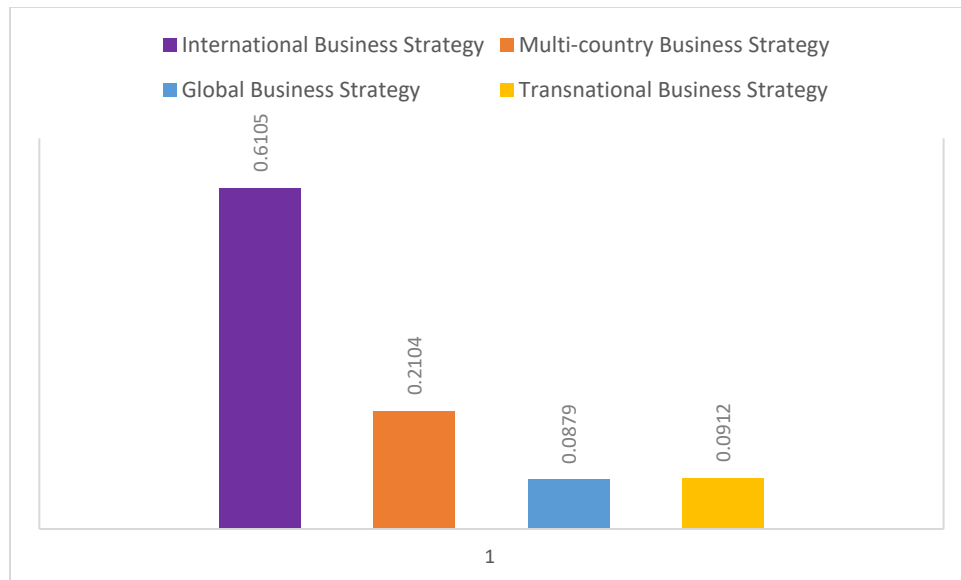


Figure 3. Final weight of international business strategies

5. Conclusion

This study proposed a step by step procedure to rank different international business strategies. According to the discussed literature review, business and international business strategy have been adequately investigated in previous studies. However, prioritization of these strategies is less examined in conjunction with MCDM approaches. Furthermore, the problem was not adequately examined in developing countries. Finally, recent MCDM models such as BWM are more appropriate tools in comparison with older approaches such as AHP as they need less judgments. In this regard, two linked phases were applied to address the objectives of research. The initial phase of this research examined numerous business strategies of previous studies. To do so, a literature review was completed to investigate business strategies of previous literature. Next, the second phase applied a BWM to investigate and prioritize these strategies. According to the obtained results, international business strategy, multi-country business strategy, transnational business strategy and global business strategy are the most important international business strategies, respectively. As a direction for future research, the developed methodology of this study can be repeated in similar strategy related research such as Lean Manufacturing (LM), Agile Manufacturing (AM) and sustainability.

References

- Belyaeva, Z., & Lopatkova, Y., The Impact of Digitalization and Sustainable Development Goals in SMEs' Strategy: A Multi-Country European Study. In *The Changing Role of SMEs in Global Business* (pp. 15-38). Palgrave Macmillan, Cham, 2020.
- Bidoki, M. Z., Galankashi, M. R., & Setak, M., Pricing decision in a multi-period hub location problem under uncertainty: a mathematical model. *International Journal of Value Chain Management*, 12(4), 370-399, 2021.
- Chiu, W. Y., Tzeng, G. H., & Li, H. L. A new hybrid MCDM model combining DANP with VIKOR to improve e-store business. *Knowledge-Based Systems*, 37, 48-61, 2013.
- Duleba, S., Moslem, S., & Esztergár-Kiss, D., Estimating commuting modal split by using the Best-Worst Method. *European Transport Research Review*, 13(1), 1-12, 2021.
- Galankashi, M. R., & Helmi, S. A., Assessment of hybrid Lean-Agile (Leagile) supply chain strategies, *Journal of Manufacturing Technology Management*, vol. 27, no. 4, pp. 470-482, 2016.
- Galankashi, M. R., & Rafiei, F. M., Financial performance measurement of supply chains: a review. *International Journal of Productivity and Performance Management*. 2021.
- Galankashi, M. R., Helmi, S. A., & Hashemzahi, P., Supplier selection in automobile industry: A mixed balanced scorecard-fuzzy AHP approach, *Alexandria Engineering Journal*, vol. 55, no. 1, 93-100, 2016.
- Galankashi, M. R., Rafiei, F. M., & Ghezlbash, M., Portfolio selection: a fuzzy-ANP approach, *Financial Innovation*, vol. 6, no. 1, pp. 1-34, 2020.

- Ghauri, P., Strange, R., & Cooke, F. L., Research on international business: The new realities. *International Business Review*, 30(2), 101794, 2021.
- Hashemzahi, P., Azadnia, A., Galankashi, M. R., Helmi, S. A., & Rafiei, F. M., Green supplier selection and order allocation: a nonlinear stochastic model, *International Journal of Value Chain Management*, vo.11, no. 2, pp. 111-138, 2020.
- Hemmati, N., Galankashi, M. R., Imani, D. M., & Farughi, H., Maintenance policy selection: a fuzzy-ANP approach. *Journal of Manufacturing Technology Management*, 2018.
- Hemmati, N., Galankashi, M. R., Imani, D. M., & Rafiei, F. M., An integrated fuzzy-AHP and TOPSIS approach for maintenance policy selection. *International Journal of Quality & Reliability Management*, 2019.
- Herzog, P., *Open and closed innovation: Different cultures for different strategies*. Springer Science & Business Media, 2011.
- Janssens, M., Lambert, J., & Steyaert, C., Developing language strategies for international companies: The contribution of translation studies. *Journal of World Business*, 39(4), 414-430, 2004.
- Kasanagottu, S., & Bhattacharya, S., A Review of Metro, Target, & Woolworths Global Business Strategy. *International Journal of Mechanical Engineering and Technology*, 9(7), 2018.
- Kedia, B. L., Nordtvedt, R., & Pérez, L. M., International business strategies, decision-making theories, and leadership styles: an integrated framework. *Competitiveness Review: An International Business Journal*, 2002.
- Khorramrouz, F., & Galankashi, M. R., Fault diagnosis and prioritisation in sugar industry: a fuzzy-AHP approach. *International Journal of Value Chain Management*, 10(3), 181-195, 2019.
- Khorramrouz, F., Pourmahdi Kajibadi, N., Rahiminezhad Galankashi, M., & Mokhatab Rafiei, F., Application of fuzzy analytic hierarchy process (FAHP) in failure investigation of knowledge-based business plans. *SN Applied Sciences*, 1(11), 1-13, 2019.
- Meckling, J., The globalization of carbon trading: transnational business coalitions in climate politics. *Global Environmental Politics*, 11(2), 26-50, 2011.
- Peng, M. W., Wang, D. Y., & Jiang, Y., An institution-based view of international business strategy: A focus on emerging economies. *Journal of international business studies*, 39(5), 920-936, 2008.
- Rezaei, A., Rahiminezhad Galankashi, M., Mansoorzadeh, S., & Mokhatab Rafiei, F., Supplier selection and order allocation with lean manufacturing criteria: an integrated MCDM and Bi-objective modelling approach, *Engineering Management Journal*, vol. 32, no. 4, pp. 253-271, 2020.
- Rezaei, J., Best-worst multi-criteria decision-making method. *Omega*, 53, 49-57, 2015.
- Saaty, T. L., *The analytic hierarchy process*. Pittsburgh, 1996.
- Ziaei, F., Baniani, A. M., Galankashi, M. R., Ghashami, S. S., & Nargesi, Z. R., Application of minimax, minsum and analytical hierarchy process for facility location problem. *Australian Journal of Basic and Applied Sciences*, 7(14), 237-245, 2013.

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