

Supplier Selection for Mobile Phone Spare Parts Using Fuzzy PROMETHEE

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ABSTRACT

All businesses or organisations focused on the best suppliers to provide quality services or products to their customers. Choosing a great supplier can improve Supply Chain Management (SCM) and the performance of the business or organisation, but it is a challenging process due to the numerous criteria that a business owner must consider, as well as the fact that human judgment is subjective. This study proposes to rank suppliers for business owners using the fuzzy PROMETHEE mathematical method, and to compare the fuzzy PROMETHEE ranking of suppliers to the business owner's original ranking. Five mobile phone spare parts suppliers were evaluated based on four distinct criteria: price, responsiveness, quality, and delivery. In this study, one of the MCDM methods, fuzzy PROMETHEE, was used to rank the suppliers. The study's findings considered four important criteria in selecting a supplier for a business, including price, responsiveness, quality, and delivery time. The five suppliers were rated favourably. The fuzzy PROMETHEE ranking was compared to the original decision maker ranking. The comparison result between the fuzzy PROMETHEE ranking and the decision maker's original ranking revealed some similarities and differences. The similarities in the results indicated the decision maker's preferred decision, whereas the differences indicated the decision maker's confusion in making the decision. The method used in this study demonstrated that this method was effectively used for business owners to make a decision due to the ability to handle human doubts and subjectivity. Finally, this research was useful in assisting business owners in selecting the best supplier for their company. Aside from being beneficial to business owners, it can also help suppliers improve their service in order to attract more customers and expand their wholesaler base.

Keywords: Supply chain management, Supplier selection, Fuzzy PROMETHEE, rank