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SELECTION OF THE BEST TELCO SERVICE USING
SINGLE VALUED NEUTROSOPHIC SET IN MULTI-
CRITERIA DECISION MAKING (MCDM)

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ABSTRACT

The telecommunication industry is a sector that will steadily evolve ahead as the world will thrive ahead towards the Fourth Industrial Revolution. This sector also has contributed a significant element in economic growth. This industry plays an essential role since Covid-19 epidemic break out throughout the world. Since every communication process need to be done online, it has created a problem to choose which telco company that can offer the best services for all its user especially for students and workers that need to settle their work from home. This study applies Single-Valued Neutrosophic Analytic Hierarchy Process (NAHP) in Multi-Criteria Decision Making (MCDM) to select which telco company is the best at KPM Bandar Melaka. Neutrosophic sets is an extension from sets and is used to address issues such as unknown, indistinct, lacking, and inconsistent information can be solved. Five decision makers have been chosen to answer thirty question to assess four different criteria which are service quality, price, promotions and customer satisfaction and four alternatives which are Maxis, Celcom, DiGi and UMobile. The questionnaire that has been answered will be converted into Single-Valued Triangular Neutrosophic Number (SVTrN) and will be evaluated using AHP method under MCDM problems. From the calculation, the conclusion that can be made is that UMobile is the most preferable telco service among the students in KPM Bandar Melaka with the highest weight value.

1 INTRODUCTION

1.1 Research Background

The telecommunication sector started with the discovery of a telegraph in the 1830s. With this invention, the communication process that takes days is shortened to hours. This industry keeps growing with each innovation such as telephone, radio and computers. Telecommunication Service Providers also known as TSP refer to a business that runs within the telecommunication industry. Telecom providers are a form of Communications Service Provider (CSP) that is responsible for data transmission over the internet. Additionally, telecom providers also refer to a variety of functions such as Voice over Internet Protocol (VoIP), cloud migrations and continuous administration. The telecommunication industry is a vital and steadily developing sector worldwide along with a significant element for economic growth in several fields (Rani et al., 2021). This industry is very important as the world is thriving towards the Fourth Industrial Revolution.

According to Munyanti & Masrom (2018), in Malaysia, the first telco service providers that has been established to provide land lines and mobile services is Telekom Malaysia (TM). Then, Malaysia currently has other major telco service providers such as Maxis, Celcom, DiGi and UMobile. The writers also said that the mobile telecommunication service in Malaysia has shown great progress in recent years. As a result, telco services has competing fiercely to maintain and win new customers. Next, Rahman et al. (2011) also said that the telecommunication industry in Malaysia has been growing align with global advancement. This sector also has improved to the nation's economic growth and development, which are in line with the national vision 2020.

Since the Covid-19 epidemic emerged in the world in early 2020, telecommunication has become significant. In consequence, all types of communication are required to be done from home and the demand is rising especially for students and workers that need to finish all their