

**Application of Analytical Hierarchy Process (AHP) and Factor Analysis Model (FAM) for Landslide Susceptibility Analysis (LSA) at Kota Kinabalu area, Sabah, Malaysia**

**ABSTRACT**

The aim of this study was to produce Landslide Susceptibility Level (LSL) map for Kota Kinabalu area in Sabah, Malaysia by using both Analytical Hierarchy Process (AHP) and Factor Analysis Model (FAM). Firstly, landslide locations were identified by aerial photographs and satellite images interpretations, field observation and secondary data resources. A total of 367 landslides were mapped from various sources. Secondly, the landslide inventory maps were randomly split into a dataset of 256 landslides (70 %) for running the both models and the remaining 110 landslides (30%) was used for validation purpose. Fifteen data layers, as the landslide causing factors has been used to detect the most susceptible areas. These factors are lithology, soil textures, lineament, weathering, magnitude, spreading distance, slope angle, height slope, rainfall, groundwater level, landuse, friction angle, cohesion, shear strength and rock quality designation (RQD). Lastly, LSL maps were produced using AHP and FAM. For verification purpose, Area Under the Curve (AUC) method were used in the format of GIS (Geographic Information Systems). The verification result showed that AHP (91%) performed better than FAM (85%) for the study area. The resulting LSL map can be used by local administrator or developers to locate areas prone to landslides, determine the land use suitability area as well as to organize more detailed analysis of the identified "hot spot" areas.