THE STUDY OF FLOOD RISK AREA IN KEMAMAN, TERENGGANU USING GIS APPROACH

NURUL SYAHIRAH BINTI MAZLAN

NURSYAFIQAH HAZWANI BINTI ZAIDI

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ABSTRACT

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Flooding, defined as a hydrological phenomenon caused by a major surge of runoff water that overwhelms and overflows a drain, river, or stream, typically after heavy rainfall, tropical storms, and cyclones, has a variety of effects on Kemaman, Terengganu area. The increasing flood crisis in Kemaman has rising the need for studies aimed at improving the general management of floods. This paper discusses the creation of a flood risk area map for Kemaman, which employs both the weightage and ranking methods to reclassify flood risk factors. The major goal is to identify and characterize flood-prone zones, which will provide critical information for disaster management and mitigation planning. To achieve this, multiple factors affecting flood risk were discovered. Each element was allocated a weightage according to how much of a contribution it makes to flood risk, as determined by expert judgment and a literature assessment. The ranking method was then used to reclassify the values of each factor onto a standardized scale, allowing for comparison study. Geospatial data for these factors were gathered and integrated into a Geographic Information System (GIS). The weighted sum technique was used to integrate the reclassified factors, producing a composite flood risk index. This index was then mapped to visualize areas with varied levels of flood danger. The generated flood risk map for Kemaman shows separate zones of very high, high, moderate, low and very low flood risk. High-risk locations were primarily located in low-lying regions and along riverbanks, whereas elevated and well-drained areas were less risky.

Keyword: Flood, Natural disaster, Geographic Information System (GIS), Weighted Sum, Flood risk

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(NURUL SYAHIRAH BINTI MAZLAN & NURSYAFIQAH HAZWANI BINTI ZAIDI)

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INTRODUCTION

1.1 Background and problem statement

Floods are among the most destructive natural disasters, affecting millions of people and seriously harming lives, agriculture, and infrastructure across the globe. Floods are the most damaging natural dangers in many areas and nations, affecting the social and economic facets of the populace and taking more lives than any other natural occurrence. In Malaysia, particularly in the district of Kemaman, Terengganu, is known for being vulnerable to flooding because of its location, topography, and land use patterns. To identify places at high risk of flooding and to understand the flow of the watershed, it is essential to analyze the flood risk zones in Kemaman.

Kemaman, which is Malaysia's Terengganu state, frequently experiences floods, especially during the monsoon season. In Malaysia, every year 29000km2 of area and 22% of Malaysian are affected by floods. Due to the region's topographical characteristics, which include low-lying regions and proximity to river basins, it is more vulnerable to flooding, which poses serious risks to public safety, the integrity of the infrastructure, and socioeconomic stability. Despite the implementation of several flood