THE APPLICATION OF GEOGRAPHIC INFORMATION SYSTEM IN ANALYSING THE VOTING PATTERNS AMONG DAYAK VOTERS IN THE SARAWAK STATE ELECTIONS OF 2016 AND 2021

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ABSTRACT

Geographic information system (GIS) and election-related research focuses on the geographical characteristics of election boundaries, the election information management system and the application of GIS analysis to election boundaries. This article aims to acquire a deeper understanding of the issues affecting Dayak voters during the state elections of 2016 and 2021, geographically. This study employs three spatial analyses: Thematic Map-Density, Spatial Autocorrelation Moran's I Index and Hot Spot Analysis (Getis-Ord Gi*). In select constituencies with a Dayak-majority, interviews and observations supplemented the spatial data. This article examines Dayak-majority constituencies' geographical distribution and spatial concentration in the 2016 and 2021 elections. It demonstrates that there are significant differences in the density of voter participation, majorities obtained by candidates, and total votes cast by the electorate across the state in both state elections, confirming the assertion made by researchers of electoral politics in Sarawak that election issues are primarily location-specific and that understanding the problems faced by communities at the local level is essential. It is anticipated that the outcome of this study will aid in providing a spatial overview and projection of state election results and in strategising the future management of state elections.

Keywords: 2021 Sarawak State Election, voting pattern, Dayak constituencies, geographic information system (GIS), electoral studies

INTRODUCTION

All different kinds of data can be created, managed, analysed and mapped using a geographical information system (GIS). GIS links data to maps by combining information about locations (i.e., where objects are) with other descriptive details (what things are like there). The combination of GIS analysis and electoral research helps connect geographical aspects of elections. According to Udoh (2014), one of the most critical roles that GIS performs is to deliver information to stakeholders through mapping and spatial analysis. He also stated that the application of GIS is now extensively used in various fields, including social sciences and politics. GIS performs essential roles in delivering information to stakeholders through mapping and spatial analysis, particularly in general elections.

According to Nabila et al. (2018), incorporating GIS application into elections emphasises geospatial aspects such as election boundaries, election information databases and GIS analysis in electoral studies. This is something that can be accomplished by integrating GIS applications into elections. The management of voters' data, the localisation of polling stations and the delivery of election outcomes are all functions performed by election information databases (Udoh 2014).

Several nations, including the United States of America (USA) and Ghana, have incorporated GIS into their political procedures. In the USA, the map was shown on television and was updated whenever there were new findings. It exhibited different map symbols, including roads and urban areas (Brace 2019). This is the new paradigm for using GIS in covering and reporting electoral outcomes. It is effective in enriching data and generating visually compelling maps for election. In Ghana, the GIS platform was utilised to display the election results in real time. This was done to prevent disseminating inaccurate information or results prone to error (Asare, Antwi and Adu-afare 2017).

The primary objective of this study is to map the voting pattern among Dayak voters and to investigate how critical issues in the Dayak-majority constituencies are reflected in the results of the Sarawak State Elections of 2016 and 2021 (henceforth, SSE16 and SSE21). The study aims to determine whether there is a spatial relationship between voting patterns, majority votes and popular votes in the Dayak-majority constituencies.