



LOCAL KNOWLEDGE AS A PRIMARY BASIS IN IDENTIFICATION OF VILLAGE ADMINISTRATIVE BOUNDARY IN INDONESIA

Case study In Sumber Village, Trucuk Sub-District, Klaten Regency, Central Java Province

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ABSTRACT

The national development concept of Indonesia is now called as NAWA CITA. NAWA CITA is the nine development programs that are the main priorities of the Indonesian Government. One of the programs is to develop Indonesia from the periphery by strengthening the regions and villages within the framework of the unitary state. In Indonesia there are many villages which its administrative boundaries have not been verified and do not have Basic Geospatial Information. The unavailability of Basic Geospatial Information resulted in the limitations in advancing region development. Identification of administrative boundaries is very important to improve the development supported with good regional planning. This research was conducted on Sumber Village of Trucuk Sub-district of Klaten Regency. The purpose of this research is to verify the administrative boundaries of Sumber Village and to produce Basic Geospatial Information in the form of verified Village Administration Map. The method used in this research was cartometric method. The results of this study indicate that there are four distinct segments of administrative boundaries of Sumber Village which shift significantly from the actual village administrative boundary. There is a change of segment width and length after the verified process based on local knowledge of the village.

Keyword: Local Knowledge, Village, Government and Geospatial

I. INTRODUCTION

Research Background

The national development concept of Indonesia is now called as NAWA CITA. NAWA CITA is the nine development programs that are the main priorities of the Indonesian Government. One of the programs in NAWA CITA's national development concept is to build Indonesia from periphery by strengthening the regions and villages within the framework of the unitary state. One of the efforts to support this concept is by village mapping to produce geospatial information that can be used for planning objectives and other purposes. In addition, geospatial information can also be used to facilitate village governance to take on policy of the village. However, there are still many villages in Indonesia whose the administrative boundaries are still unverified. This condition is caused by the lack of quality human resources quality, especially the village apparatus related to the process of affirmation of the administrative boundaries of the village.

Affirmation of village boundary is the activity of identification the the cartometric points of village boundary conducted by cartometric method and or location survey. The cartometric method is the tracking / drawing the boundaries on the work map and the measurement of point position, line, distance and area coverage, by using base map and other geospatial information as a supporting materials. (Ministry of Home Affairs, 2016). It is implemented in boundary map with a list of boundary coordinate points of the village. (Ministry of Home Affairs, 2016) The purpose of affirmation and determination of village boundaries is to create an orderly administration of government, providing clarity and legal certainty to the boundaries of a village that meets the technical and juridical aspects (Ministry of Home Affairs, 2016). The process of affirmation in this research is by case study, and it does not fully follow the procedure of affirmation of village boundaries issued by the Ministry of Home Affairs in the Regulation of the Minister of Home Affairs of the Republic of Indonesia Number 45, 2016.

The purpose of this research are to implement the cartometric method mandated by the Ministry of Home Affairs and to produce verified village administration map. This research utilizes local knowledge of the apparatus and local villagers. This is very helpful the process of verifying village administrative boundaries by cartometric method because apparatus and villagers are the most understand and know the administrative boundaries of his own village. Conceptual local knowledge consists of two forms, [1] pragmatic knowledge of the ongoing natural / objective world and [2] supernatural knowledge concerning cultural values / subjective world, which often influence these values or modify people's desires on something (Nuraini W Prasodjo). In this research the local knowledge that involved in the tracking of the boundary of village administration on a cartometric basis is pragmatic local knowledge of the natural / objective realm. Apparatus and villagers who understand the conditions of the administrative boundaries of the village based on explanatroy knowledge and descriptive knowledge are selected and delineating village administrative boundary cartometrically. Apparatus and villagers who understand the conditions of the administrative boundaries of the village based on explanatroy knowledge and descriptive knowledge are selected and involved in the withdrawal of the village administrative boundary cartometrically. This study does not

involve the whole community but only a few apparatus and local village communities with pragmatic local knowledge.

The cartometric method in the process of verifying village administrative boundaries can not be effective without involving pragmatic local knowledge of local apparatus and village communities. In this context local knowledge of local apparatus and village communities is the main foundation in the process of determining and affirming village administrative boundaries by cartometric method.

This research takes a case in Sumber Village. That village is located in Trucuk Sub District, Klaten Regency, Central Java Province. The boundary of Sumber Village conterminous by Keden Village and Bendo Village of Pedan Subdistrict in the east, Beji Village and Temuwangi Village of Pedan Subdistrict, Mandong Village of Trucuk Subdistrict in the south, while in the west conterminous by Palar Village of Trucuk Subdistrict. Sumber Village is divided into five hamlet namely Ngerjo Hamlet, Sumber Wetan Hamlet, Sumber Kulon Hamlet, Kiringan Hamlet, and Plagan Hamlet. The Hamlets are divided into 8 Community Association (RW) and 19 Neighbourhood (RT)

II. RESEARCH METHODOLOGY

2.1 Research Location

This research takes a case in Sumber Village. That village is located in Trucuk Sub District, Klaten Regency, Central Java Province. . Sumber Village is divided into five hamlet namely Ngerjo Hamlet, Sumber Wetan Hamlet, Sumber Kulon Hamlet, Kiringan Hamlet, and Plagan Hamlet. The Hamlets are divided into 8 Community Association (RW) and 19 Neighbourhood (RT).

2.2 Data and Equipments

a. Data

The data used in this research are:

1. Digital RBI data of 2004
2. Google Sattalite Maps Imagery of Sumber Village 2016, downloaded for free using SASPlanet.
3. Supporting Data as local knowledge about hamlet information and administrative boundary of Sumber Village
4. Other maps and supporting documents from Sumber Village.

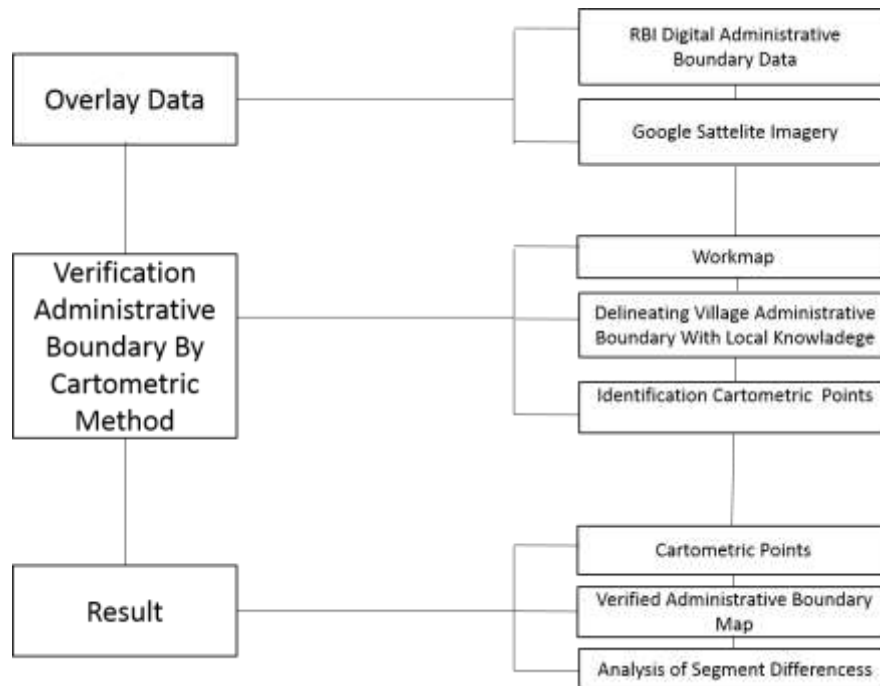
b. Equipments

Equipments used in this research are Personal Computer / Netbook, GPS, ArcGIS 10.22, Hard File of Google Sattlite Map Imagery.

3.3 Research Work Flow

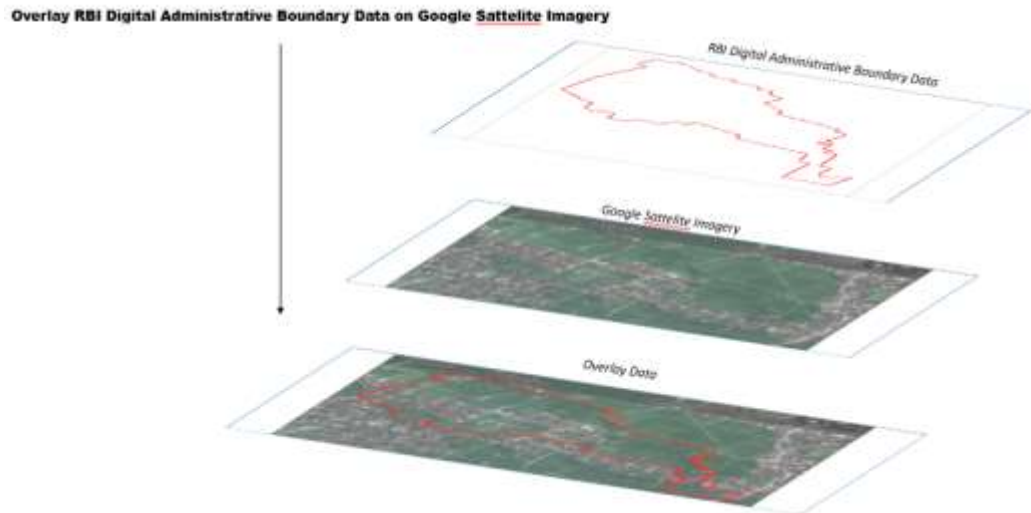
Overall, the flowchart of this research can be shown in Picture 1.

Picture 1. Flowchart of Research



- a) Overlay RBI digital Data of Sumber Village 2004 on Google Sattelite Map Imagery Data of Sumber Village 2016
Google Sattelite Map Imagery of Sumber Village 2016 Data downloaded using SASplanet application for free and has been georefrencing automatically with .ecw format. Google Sattelite Maps imagery that has been downloaded, then overlaid with village administrative boundary obtained from RBI digital data of 2004. Then the overlay results from Google Sattelite Maps Imagery and RBI digital data 2004 printed and used as work maps.

Picture 2. Overlay Proses



- b) Verification village administrative boundary by cartometric method
Verification village administrative boundary by cartometric method is by tracking manually on the work map by delineating the administrative boundaries, accordance with local knowledge and a good mental map of the village administrative boundary area by the village apparatus. This process is also assisted by sketches of the village as supporting data and obtaining the coordinate points.
- c) Identification cartometric points
Identification cartometric point processed by extracting the coordinate points based on the delineation boundary line. It is carried out in accordance with the specified technical specifications on ArcGIS with reference to work maps that have been delineated by the village apparatus or villagers who have good local knowledge and mental maps related to village boundaries.
- d) Result and Analysis
The Result of identification the cartometric points obtain the new and verified village administrative boundaries. This verified village administrative boundary and than analyzed the difference of the length and width segmentation of the changed village administration limits.

III. RESULT AND ANALYSIS

3.1 Result

a. Cartometric Points

Cartometric points is the result of verification village administrative boundary by cartometric method. Total of the cartometric points that has been obtained in this research is 349 points and it is shown in the picture below.

Picture 3. Cartometric Points in Basedata

ID	Segmen	URAIAN	TK	Keterangan
172	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
173	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
174	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
175	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
176	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
177	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
178	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
179	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
180	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
181	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
182	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
183	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
184	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
185	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
186	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
187	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
188	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
189	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
190	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
191	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
192	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
193	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
194	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
195	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
196	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
197	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
198	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
199	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar
200	Pasar	0 TK2.33.331.3310060.60017-3310140.140007-001		Desa Sumber - Desa Palar

Picture 4. Distribution Cartometric Points in Sumber village



Naming the cartometric points in the database, combines the abbreviations of the cartometric point (TK) as point type , the area code and the serial number of the cartometric points. The naming of the cartometric points in Sumber Village shown in the table 1.

Table 1. Name of Cartometric Points in Sumber Village

Nama Titik Kartometrik	Keterangan
TK1.33.331.3310060.60017-3310140.140006-001	Sumber Village - Keden Village
TK2.33.331.3310060.60017-3310140.140002-001	Sumber Village - Beji Village
TK3.33.331.3310060.60017-3310140.140006-001	Sumber Village - Temuwangi Village
TK4.33.331.3310060.60017-3310140.140007-001	Sumber Village - Mandong Village

TK5.33.331.3310060.60017-3310140.140007-001	Sumber Village - Palar Village
TK6.33.331.3310060.60017-3310140.140007-001	Desa Sumber - Desa Bendo

Source: Cultivation Cartometric Data, 2017.

Cartometric Points are basis to re-deliniate the village administrative boundary using ArcGIS Application to get the new and verified village administrative boundary by apparatus that has a local knowledge of the village.

b. Verified Village Administrative Boundary

Cartometric points that has been connected to the others are obtained the new village administrative boundary . Its shown on the pictures bellow.

Picture 5. Verified Village Administrative Boundary



Source: Processing Data, 2017.

3.2 Analysis

a. Segment Boundary Identification

The process of overlay the original village administrative boundary from RBI and the verified village administrative boundary by cartometric method obtained the very striking segment diferences. It shown in the picture bellow.

Picture 6. very striking segment diferences in Sumber Village



Source: Processing Data, 2017.

- A. Settlement area that should be a part of sumber Village but in the RBI it is part of Mandong Village
- B. Funeral area that should be a part of Mandong Village, but in the RBI it is part of Sumber Village
- C. Paddy Field that should be a part of Sumber Village but in the RBI it is part of Palar Village
- D. The boundary of Funeral area that should be on the broken wall situs, but in RBI the boundary is in the road situs.

b. Segment Wide Differencess

verification of the administrative boundary of the Sumber village obtained some changes that occurred in the segment of the administrative boundaries of the Sumber Sumber area. The segment wide differencess is shown in the table bellow

Table 2. Segment Wide Differencess

Digital RBI 2004 Data	Verified Village Administrative Boundary
153.404.722 hectare	159.922.147 hectare

Source: Processing Data, 2017

From the table we kow that the wide differencess between the original boundary feom RBI Data and the Verified Boundary is 6.517.425 hectare.

c. Segment Legth Differencess

verification of the administrative boundary of the Sumber village also obtained some changes that occurred in the segment legth of the administrative boundaries of the Sumber Sumber area. The Segment wide differencess is show in the table bellow.

Table 3. Segment Lenght Differencess

Digital RBI 2004 Data	Verified Village Administrative Boundary
8056.7 meters	8925.18 meters

Source: Processing Data, 2017

From the table we kow that the length differencess between the original boundary feom RBI Data and the Verified Boundary is 868,48 meters

IV. CONCLUSION

1. Local knowledge is a primary basis in identification of village administrative boundary of Sumber Village, Trucuk Sub-district, Klaten Regency, Central Java Province.
2. Cartometric Method is an efficient way if used based on local knowledge of village apparatus in identification of village administrative boundary.
3. There are four very striking segment differences in this research; Sumber Village-Temuwangi Village 1 segment, Sumber Village-Mandong Village 2 segments, and Sumber Village-Palar Village 1 segment,
4. There are differences about width and length in verified village administrative boundary, both of them are wider and longer than the original boundary from RBI

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VI. REFERENCES

- Adikresna, P. 2014. "Penentuan Batas Wilayah Dengan Menggunakan Metode Kartometrik". *Jurnal GEOID* Vol. 09, No. 02, Februari 2014 (195-200).
- Kementerian Dalam Negeri, (2016). Peraturan Menteri Dalam Negeri Republik Indonesia Nomor 45 Tahun 2016 Tentang Pedoman Penetapan dan Penegasan Batas Desa, Jakarta.
- Kementerian Dalam Negeri, (2016). Lampiran Peraturan Menteri Dalam Negeri Republik Indonesia Nomor 45 Tahun 2016 Tentang Pedoman Penetapan dan Penegasan Batas Desa, Jakarta.
- Prakasa, Satria. 2017. "Validasi Batas Administrasi Desa Menggunakan Metode Kartometrik". *Skripsi*. Surabaya: Fakultas Teknik Sipil dan Perencanaan, Program Studi Teknik Geomatika, Institut Teknologi Sepuluh Nopember.
- Rahmawati, R. et. al. 2008. "Pengetahuan Lokal Masyarakat Adat Kesepuhan". *Jurnal Transdisiplin Sosiologi, Komunikasi, dan Ekologi Manusia*, Vol. 2, 2008.