

# Brain Dominance and Local Government Performance in Negros Oriental, Philippines

<sup>1\*</sup>Philner P. Salindo

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## ABSTRACT

*This study aims to understand the thought patterns of officials in Local Government Units, through the investigation of their brain dominance and how their dominant brain quadrants translate into the overall performance of the LGUs that they administer and govern. The data were collected through survey and documentary research of the Local Government Performance Management System (LGPMMS) rating in Negros Oriental, Philippines. Results exhibited that there are no significant relationships between brain dominance and level of performance of LGUs in the following areas: Administrative, Economic, Social and Valuing Fundamentals of Governance. A significant relationship between brain dominance and level of performance of LGUs in the area of Environmental Governance was found. It concluded that the optimum level of performance of the LGUs depends on how the LGU officials maximized the four brain quadrants. Thus, there is a need to capacitate the LGU officials to maximize their capability in leading their LGUs to the future.*

**Keywords:** brain dominance, hindrances, local government performance, perceived solutions, relationship.

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## INTRODUCTION

The Herrmann Whole Brain Model identifies personality characteristics: the type of leader leading, the questions they ask, their reactions to situations and people, and how their reactions affect the political dynamics of the organization. The instrument is a characteristic model that relates to leadership, teaming, communication, and management styles. More specifically, the whole brain model helps the respondents zero in on their characteristic traits, in order to participate as an effective, contributing public administrator (Herrmann, 1989). Thus, the whole brain model is applied to help public administrators identify

their type(s) of leader-characteristics and assist them to become an effective public administrator.

Government administration in the Philippines is always at the forefront of public scrutiny both from the international and local critics and is and is probably because of the belief that “public service is public trust”. Even public servants cannot escape from such scrutiny. Some possible bureaucratic sources of public scrutiny are “deviant bureaucratic behavior” of public servants in various levels of governance. The incapacity of some political leaders to govern efficiently is either because of the lack of skills in governance or because the politician is naturally not a good administrator (see Confucius, The

Analects) and they too are objects of public scrutiny. Governance demands a lot from the political leaders; hence, they are important. According to Peter Drucker (1956), public leaders are important because without them resources remain resources but not services. For political leadership to become effective, the leader must be a “strategic thinker” who takes the long-term view (Daft, 2000) and who uses all the brain quadrants to mobilize resources of public service. Strategic thinkers are expected to be systems thinkers who take planned and evidence-based decision-making (Dimock, Dimock & Koenig, 1960); thus, government officials must remain strategic and whole brain thinker for a successful expressing and formulating of decisions on important matters of public governance.

Research on brain dominance and performance in the academe, in private corporations, and other industries were done, but there has not been any research on brain dominance of political leaders vis-à-vis their performance. It is in this view that this research is hopeful to contribute to the pool of knowledge that looks to leadership and brain dominance. The study looked into the mindset of local public officials using the Brain Dominance Model of Ned Herrmann. Comprehending the brain dominance of the government officials may give options and opportunities on what needs to be done in public governance leadership.

### **The Brain Dominance Model**

Ned Herrmann (1989) introduced the brain-map concept and developed the whole brain model to better understand the self and the others, enhanced communication, and productivity through teamwork, work climate for creativity and authenticity, enhanced teaching and learning, building composite learning group, and better management. The model also intends

to improve the management of human activity in a variety of jobs ranging from supervision of work groups at the lower levels to the executive functioning at the highest level.

The model exhibits four brain quadrants, A, B, C and D. Quadrant A has the following leadership characteristics: authoritative, directive, all business, analytical and factual. Quadrant B is with traditional, conservative, organized, accountable, and safekeeping leadership characteristics. Quadrant C has team-oriented, supportive, personable, intuitive, and communicator leadership characteristics while Quadrant D with adventurous, visionary, entrepreneurial, idealistic and holistic leadership characteristics, this brain model is the basis for the brain dominance instrument that determines what quadrant of the brain is dominant.

The utilization of the Herrmann Whole Brain Model in identifying what kind of team player a company worker is discoursed in the Article of Management Concepts Incorporated entitled “Teaming”. The material defined teaming as the process of joining another person or forming a group, which can be as little as two individuals or many people, with a goal of reaching an outcome. It can be as simple as accomplishing a single task or objective or finishing a long-term assignment that includes a series of tasks and objectives (Herrmann, 1989).

The Herrmann Whole Brain Model is one instrument that identifies personality characteristics: the type of leader leading, the questions they ask, their reactions to situations and people, and how their reactions affect the political dynamics of the organization. The characteristic model relates to leadership, teaming, communication, and management styles. More specifically, the model helps the respondents zero in on their characteristic traits, in order to participate as an effective, contributing public administrator (Herrmann, 1989).

Also included in the Herrmann instrument is the understanding of each quadrant of the brain. Through this, it has become effortless to determine the strengths and weaknesses of team members, thereby making it easy to employ the appropriate intervention to ensure productivity and efficiency. In addition, the instrument reflected the effectiveness of a creative team when it indicated a heterogeneous dominance profile. A team with a heterogeneous dominance profile has adequate representation from each of the four brain quadrants while a homogenous one comprises of members from the same brain dominance. In achieving optimum group effectiveness, the team will need to be in its most creative state, which means it should be heterogeneous and gender-balanced. It has been established that gender-balanced heterogeneous groups are capable of significantly greater creative output than unbalanced or homogeneous groups (Herrmann, 1989).

The description of each leadership characteristics from Quadrant A, B, C, and D is listed in the table on the next page:

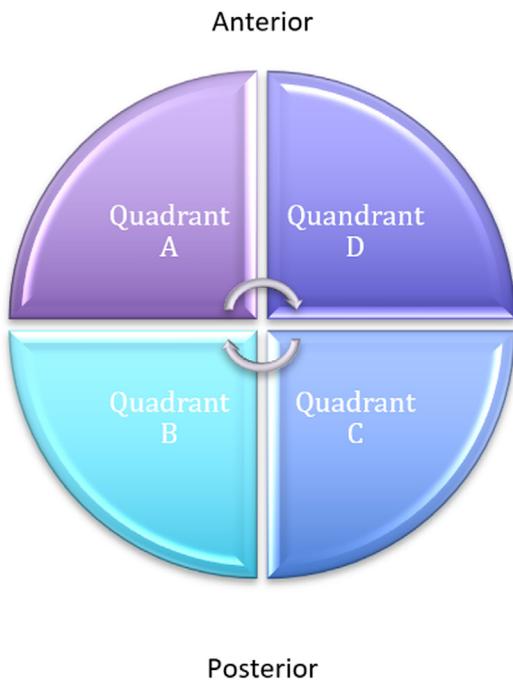
Quadrant A	Quadrant B	Quadrant C	Quadrant D
Authoritative	Traditional	Team-Oriented	Adventurous
Directive	Conservative	Supportive	Visionary
All Business	Organized	Personable	Entrepreneurial
Analytical	Accountable	Intuitive	Idealistic
Factual	Safekeeping	Communicator	Holistic

For the validity of measures, Bunderson (1985) identified various factors to support and strengthen the claim about the validity of HBDI and its being the most vital consideration in evaluating a test or a questionnaire. Validity means the fitness, significance, and utility of specific inferences made from test scores. It is important to note that not the scores themselves that are valid or invalid, but rather the specific inferences we take from the current scores and the scales underlying the said ratings. The test validation process is designed to accumulate evidence to support a given type of inference, be it content-related evidence, criterion-related evidence, or construct-related evidence. We must remember that for different types of inferences, sets of varying studies are also required. Some studies would be needed to validate predictions about occupational satisfaction, management effectiveness, the different effects of teaching treatments for different profiles, among others.

Most importantly, Bunderson (1985) also laid out the constructs of HBDI and claimed that the evidence of construct validity is the most general and the most relevant to the HBDI. The author, of course, exhaustively explained the construct validity which is the basis of the validity of the instrument of this study.

On the other hand, Green (2013) established the use of the Hermann Brain Dominance Instrument (HBDI) by personally taking the test. He gave his interpretations by analyzing the

**NED HERRMANN BRAIN MAP MODEL**



results in the profile of quadrant A, B, C, and D. His profile results demonstrated consistency with data from other instruments as well as feedback from other respondents. Moreover, the extensive literature regarding the Brain Dominance Instrument (HBDI) results supports the interpretation of the outcomes in relation to Green's current strengths, a breakthrough of his strategies, and his role as an educational leader and classroom teacher.

## RELATED LITERATURE AND STUDIES

The following studies looked into the validity of Herrmann's (1989) brain dominance theory as well as the relationship between brain dominance and performance. A study in West Virginia, USA explored the cognitive processing style and leadership style of school superintendents and revealed a relationship between self-perceived cognitive style and self-assessed leadership style of superintendents. The superintendents who showed right hemispheric dominance manifested a "people person" type of leadership. On the other hand, the superintendents who showed left hemispheric dominance did not manifest a "task-oriented" type of leadership, contrary to what the literature has presented. It concluded that the integration of thinking process and manifested brain hemisphere is vital in the attainment of the goals of education through holistic management that utilizes people who are both logical and visionary (Toth & Farmer, 1997). It further established that there is a relationship between leadership styles and brain dominance (Herrmann, 1989).

In Cotabato, a study categorized the students of the College of Teacher Education according to their left, right, or confluent brain hemispheric orientation through a preference scale (Alvaro, 2006); in a sense, the study shows the use of brain dominance theory. It showed that regardless of

age and ethnicity, mathematics students have a left brain hemispheric orientation; thus, affirming the Herrmann (1989) brain dominant characteristics of quadrant A and B. Individuals with these quadrants are characterized as logical, mathematical, and analytical. It also laid out that there is a significant relationship between the brain dominance orientations of students with the level of performance in mathematics as shown in the number of students who are "average" in their performance compared to the "low" and "high" performance in mathematics (Alvaro, 2006). Thus, it is apparent that the brain dominance of students affected their performance in school.

Another study was conducted in Western Mindanao to determine the relationship between the hemispheric dominance (HD) and English proficiency (EP) in the four-macro skills of the college students of Western Mindanao State University vis-à-vis their age, gender and area of specialization. In consonance with the brain hemispheric preference, this study concluded that there is no significant relationship between hemispheric dominance and the score of students in their English proficiency exams among the identified four macro skills in English: listening, speaking, reading, and writing. However, there is a significant relationship between the hemispheric dominance and English proficiency of students against the categories of age, gender, and area of specialization (Tendero, 2000).

Locally, a study by Fontelo-Javier (2011) also banked on Herrmann's Brain Dominance Theory; it was conducted at Silliman University aimed to revisit and evaluate the 24-year old College of Agriculture. It sought to study the learning needs, individual learning styles, and academic performance of the learners of the Silliman University College of Agriculture (SUCA) with the intention of gathering insights for the progressive development of the approach.

## Brain Dominance and Political Performance

In governance, some enormous and sometimes flimsy but very significant factors or hindrances challenge the administration of local government officials. Addressing these obstacles is key to the success of the local government officials' administration and the solutions they provide to address problems are products of the local government officials thought pattern and brain dominance.

Kotler (1967), a pioneer in strategic planning, worked on strategic marketing that laid the foundation of how organizations and strategic thinkers adjust to the ever-changing environment. He recognized that in creating optimum strategies that will be beneficial to organizations or companies, a leader has to take into account internal and external factors that he believes affect the decision-making process. Internal factors such as proximity and profit of markets, among others, significantly affect the strategies to be devised by a marketing strategist. External factors, which include macro conditions and nature of markets, are also observed to maximize strategic marketing.

In local government, the strategy that is formulated by the local government officials is highly influenced by both internal and external environmental factors. The environment, therefore, is vital in soliciting or stimulating the thought patterns of the local government officials. These thought patterns are the manifestation of brain dominance of local officials which they usually use in solving problems or planning strategies that will address problems in the localities. In a sense, the contributions of Kotler (1967) are not only limited to marketing but are also very significant in public administration. It gave the framework for strategy making in relation to the internal and external factors; hence, the strategy that local government officials

created is tailored by the internal and external factors present in the locality where it will be implemented.

Moreover, Rüegg-Stürm and Gomez (1994) explained the importance of vision when corporations are put into uncertainties by internal and external factors. These factors affect every facet of the corporations' existence; therefore, it is deemed necessary to accept the concept of vision or the act of being conversant in the transition in the future. Vision is the unifying thought between what is real, present, and what things can happen and when they happen. This concept shows how the real and the present can be affected by what is envisioned for the future; this is where the perspective of planning or strategizing comes in, and its applications can alter the faith of the organization. The study identified the vision as the strategies to address the prevalent problems in the present. From a holistic point of view, the vision serves as the light that allows corporations to adapt to what is going on in the present to gain betterment and sustainability.

The strategic planning, the visioning and the administrative capacity of the local government officials are manifestations of the holistic usage of the brain quadrants. One can be very good in rational and logical thinking, as well as being analytical in strategizing public interest, but governance needs planning and properly organizing. Clearly, these character traits are manifestations of quadrant A and B. Quadrant D comes in with the visioning of local officials when they are intuitive, imaginative and holistic in their approach in governance. Lastly, all of these leadership traits translate into policies and programs, and can only be effective and efficient when leaders manifest the following traits: being empathetic, intuitive towards people, cooperative, and participative - all of which are found in quadrant C. Governance by local government officials must be a realization of the

holistic development of all brain quadrants.

**METHODOLOGY**

This study was conducted in all the twenty-five city and municipality government units in the Province of Negros Oriental. There are four government units in the interior part of the province: Canlaon City in the first district, Pamplona and Mabinay in the second district, and Valencia in the third district, while there are twenty-one local government units located along the coastlines.

The researcher identified all twenty-four mayors and twenty-two vice-mayors in the Province of Negros Oriental through purposive sampling; four vice-mayors, however, did not answer the questionnaire for personal reasons.

	A	B	C	D
Descriptors	Logical	Detailed	Musical	Spatial
	Rational	Conservative	Participative	Imaginative
TOTAL				

The Herrmann Brain Dominance Instrument (HBDI), a standard questionnaire used to identify the dominant brain quadrants of the government officials, was employed to collect the primary data. The questionnaire was divided into three parts. The first part was the instructions, followed by a step-by-step process on how to rate the respondents' brain preference; the questionnaire also provided the corresponding points to a chosen descriptor that best describes the respondents' character, where most was equivalent to 20 points, moderately - 12 points, a bit - 6 points, most unlike - 0 points. The second part was a rating of the respondent's brain preference; it consisted of several self-descriptors which were appropriately lined up to a particular brain quadrant and described leadership styles. The last part was the glossary, which provided

definition and meaning for every descriptor found in the second part.

The secondary data were collected through extensive documentary research on the local government units' performance, as assessed by the Department of Interior and Local Government (DILG). The LGPMS or the Local Government Performance Monitoring System is an official instrument used by the DILG to monitor the performance of the local government all around the country. It is inherent to the instrument since it is employed by the DILG; the biases of rating though do not totally represent the entirety of the situation in the province of Negros Oriental.

The data exhibited the level of performance of the LGUs in the area of administrative, economic, social, valuing fundamentals and environmental governance. The 5-point Likert scaling of 4.21-5.00 (excellent), 3.41-4.20 (high), 2.61-3.40 (fair), 1.81-2.60 (low), 1.00-1.80 (very low), was utilized to interpret the level of the LGUs' performance. The verbal description of excellent level of performance has a rating of 81-100%; high has a rating of 61-80%; fair has a rating of 41-60%; low has a rating of 21-40%; very low has a rating of 1-20%.

The chi-square was employed to identify the relationship between the brain dominance and the level of performance; the significance level used was 0.05.

**RESULTS**

Table 1 presents the Dominant Brain Quadrant of the mayors and vice-mayors as shown below. It shows that thirteen (13) or 54.20% of the mayors are in the Quadrant A brain dominance and five (five) or 20.80% belong to Quadrant C and B, respectively. It means that eighteen (18) out of twenty-five (25) mayors are left-brain dominant with "analytic-procedural"

thinking styles and a leadership style that tends to be rational and systematic; thus, they are considered "technical" people (Katz, 1973). On the other hand, ten (10) or 45.45% of the vice-mayors are in the Quadrant B, while seven (7) or 31.81 % are in Quadrant A. No one belongs in Quadrant D; Quadrant C, however, accounts for five (5) or 22.73%.

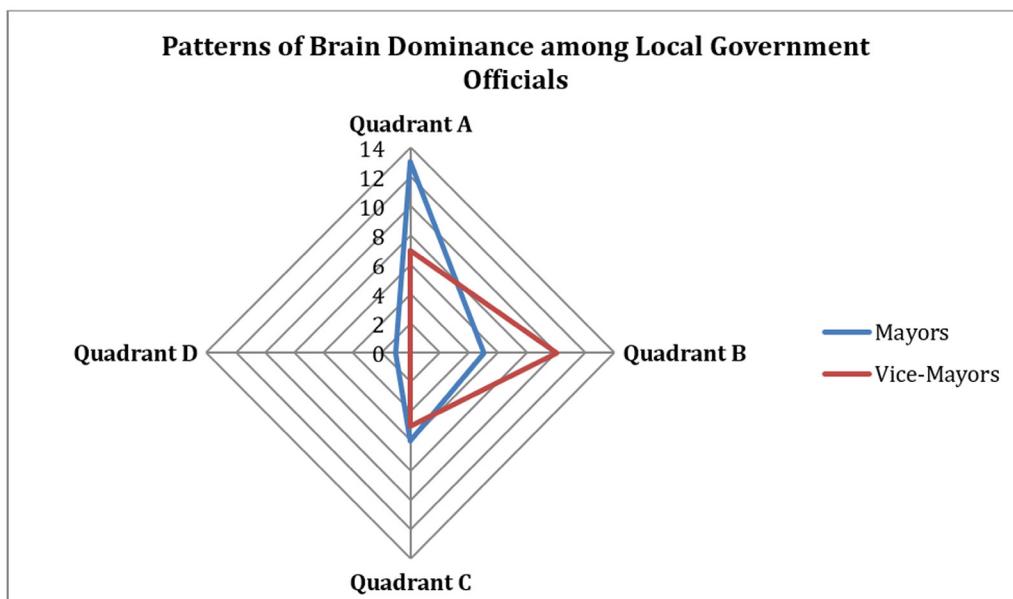
Table 2 shows the Local Government Units' performance in administrative governance. Among the top-performing administrations are the cities of Bais, Dumaguete, Bayawan, Guihulngan, and towns of Zamboanguita, La Libertad, and

Sibulan. They have weighted means that range between 4.21 and 4.69, meaning a performance at 'excellent' level. The remaining municipalities and cities fall under the weighted mean of below 4.21 but higher than 3.5 which means that their administrative performance is of 'high' level.

Table 3 shows the Local Government Units' performance in economic governance which include areas such as support to the agriculture sector, support to fishery services and entrepreneurship, business and industry promotion. LGUs are evaluated by DILG to measure the level of economic performance using

**Table 1.** Brain Dominance of Local Government Officials

Local Government Officials	Patterns of Brain Dominance among Local Government Officials					
	Quadrant A (%)	Quadrant B (%)	Quadrant C (%)	Quadrant D (%)	Quadrant C and D (%)	Total (%)
Mayors (N=24)	13 (54.20)	5 (20.80)	5 (20.80)	0(0.00)	1(4.20)	24(100.00)
Vice-Mayors (N=22)	7 (31.81)	10 (45.45)	5 (22.73)	0(0.00)	0(0.00)	22(100.00)
All (N=46)	20 (43.50)	15 (32.60)	10 (21.73)	0(0.00)	1(2.17)	46(100.00)



policy indicators on a scale of 5.0.

Table 4 shows the Local Government Units' performance in four priority areas of social governance as evaluated by the DILG. These areas cover indicators such as health services, health services, support to education services, support to housing and basic utilities and peace, security

and disaster risk management.

Table 5 shows the Local Government Units' performance in valuing fundamentals. This variable operationalizes LGU performance in terms of three areas of priority: participation, transparency, and financial accountability. This variable has an overall weighted mean index of

**Table 2.** LGU Performance in Administrative Governance

Local Government	Rating in the LGPMS of the DILG	Level of Performance	Brain Dominance of LGU Officials	
			Mayors	Vice-mayors
Bais City	4.69	Excellent	C	B
Dumaguete City	4.59	Excellent	B	B
Bayawan City	4.33	Excellent	A	C
Zamboanguita	4.31	Excellent	A	A
La libertad	4.30	Excellent	A	A
Guihulngan City	4.27	Excellent	A	A
Sibulan	4.21	Excellent	C	A/C
Ayungon	4.16	High	C	B
Amlan (ayuquitan)	4.11	High	A	-
Santa catalina	4.10	High	A	B
Valencia	4.10	High	A	-
Canlaon city	4.07	High	A	B
Tanjay city	4.03	High	A	C
Mabinay	4.02	High	B	-
Dauin	3.97	High	C	B
Bacong	3.90	High	A	B
Siaton	3.89	High	A	B
Manjuyod	3.85	High	B	A
Pamplona	3.84	High	B	C
Vallehermoso	3.81	High	D	B
San jose	3.80	High	C	-
Basay	3.72	High	A	C
Bindoy (payabon)	3.72	High	B	B
Jimalalud	3.67	High	C	A
Tayasan	3.52	High	A	B
<b>Aggregate</b>	<b>4.03</b>	<b>High</b>		

Source: DILG LGPMS 2012-13

**Table 3.** LGU Performance in Economic Governance

Local Government	Rating in the LGPMS of the DILG	Level of Performance	Brain Dominance of LGU Officials	
			Mayors	Vice-mayors
Siaton	4.66	Excellent	A	B
Bais city	4.57	Excellent	C	B
Guihulngan city	4.57	Excellent	A	A
Bacong	4.49	Excellent	A	B
La libertad	4.44	Excellent	A	A
Santa catalina	4.43	Excellent	A	B
Bayawan city	4.30	Excellent	A	C
Tanjay city	4.30	Excellent	A	C
Dauin	4.25	Excellent	C	B
Mabinay	4.25	Excellent	B	-
Canlaon city	4.20	High	A	B
Amlan (ayuquitan)	4.16	High	A	-
Dumaguete city	4.09	High	B	B
San jose	4.07	High	C	-
Jimalalud	4.05	High	C	A
Valencia	4.00	High	A	-
Manjuyod	3.92	High	B	A
Bindoy (payabon)	3.89	High	B	B
Pamplona	3.78	High	B	C
Sibulan	3.75	High	C	A/C
Ayungon	3.74	High	C	B
Tayasan	3.59	High	A	B
Zamboanguita	3.46	High	A	A
Basay	3.07	Fair	A	C
Vallehermoso	2.83	Fair	D	B
<b>Aggregate</b>	<b>4.03</b>	<b>High</b>		

Source: DILG LGPMS 2012-13

4.44. This percentage explains an “excellent” level of performance.

Table 6 shows Local Government Units’ performance in the four priority areas of environmental governance: forest ecosystems, freshwater ecosystems, coastal marine ecosystems, and urban ecosystems management

(DILG LGPMS, 2012-13).

Table 7 shows the association between the brain dominance of Local Government officials and the Local Government Units’ level of performance. As seen, only Local Government Units’ performance level in environmental governance is significantly associated with

**Table 4.** LGU Performance in Social Governance

Local Government	Rating in the LGPMS of the DILG	Level of Performance	Brain Dominance of LGU Officials	
			Mayors	Vice-mayors
Zamboanguita	4.83	Excellent	A	A
Dumaguete city	4.79	Excellent	B	B
Tanjay city	4.77	Excellent	A	C
Mabinay	4.69	Excellent	B	-
Bacong	4.66	Excellent	A	B
Bayawan city	4.66	Excellent	A	C
Amlan (ayuquitan)	4.62	Excellent	A	-
Basay	4.56	Excellent	A	C
Bindoy (payabon)	4.56	Excellent	B	B
San jose	4.54	Excellent	C	-
Dauin	4.50	Excellent	C	B
Manjuyod	4.45	Excellent	B	A
La libertad	4.37	Excellent	A	A
Vallehermoso	4.37	Excellent	D	B
Santa catalina	4.29	Excellent	A	B
Ayungon	4.27	Excellent	C	B
Siaton	4.20	High	A	B
Bais city	4.06	High	C	B
Guihulngan city	3.87	High	A	A
Canlaon city	3.80	High	A	B
Sibulan	3.71	High	C	A/C
Valencia	3.63	High	A	-
Pamplona	3.43	High	B	C
Jimalalud	3.41	High	C	A
Tayasan	3.19	Fair	A	B
<b>Aggregate</b>	<b>4.25</b>	<b>Excellent</b>		

Source: DILG LGPMS 2012-13

**Table 5.** LGU Performance in Valuing Fundamentals in Governance

Local Government	Rating in the LGPMS of the DILG	Level of Performance	Brain Dominance of LGU Officials	
			Mayors	Vice-mayors
Bais city	4.69	Excellent	C	B
Santa catalina	4.83	Excellent	A	B
Amlan (ayuquitan)	4.76	Excellent	A	-
Dumaguete city	4.75	Excellent	B	B
Tanjay city	4.75	Excellent	A	C
Guihulngan city	4.66	Excellent	A	A
Manjuyod	4.65	Excellent	B	A
Jimalalud	4.64	Excellent	C	A
Valencia	4.62	Excellent	A	-
Bacong	4.60	Excellent	A	B
La libertad	4.56	Excellent	A	A
San jose	4.55	Excellent	C	-
Sibulan	4.53	Excellent	C	A/C
Bayawan city	4.51	Excellent	A	C
Siaton	4.40	Excellent	A	B
Ayungon	4.40	Excellent	C	B
Mabinay	4.35	Excellent	B	-
Bindoy (payabon)	4.34	Excellent	B	B
Basay	4.29	Excellent	A	C
Canlaon city	4.27	Excellent	A	B
Zamboanguita	4.26	Excellent	A	A
Dauin	4.22	Excellent	C	B
Vallehermoso	4.21	Excellent	D	B
Pamplona	4.08	High	B	C
Tayasan	3.21	Fair	A	B
<b>Aggregate</b>	<b>4.44</b>	<b>Excellent</b>		

Source: DILG LGPMS 2012-13

brain dominance. Data suggests that the level of environmental governance performance of the LGUs is associated with the common brain patterns of the brain dominance of its mayors and vice-mayors.

As shown in Table 8, Quadrant A is associated

**Table 6.** LGU LGU Performance in Environmental Governance

Local Government	Rating in the LGPMS of the DILG	Level of Performance	Brain Dominance of LGU Officials	
			Mayors	Vice-mayors
Bayawan city	4.90	Excellent	A	C
Amlan (Ayuquitan)	4.83	Excellent	A	-
San jose	4.81	Excellent	C	-
Manjuyod	4.78	Excellent	B	A
Siaton	4.78	Excellent	A	B
Sibulan	4.78	Excellent	C	A/C
Bindoy (payabon)	4.75	Excellent	B	B
Ayungon	4.75	Excellent	C	B
Valencia	4.72	Excellent	A	-
Zamboanguita	4.71	Excellent	A	A
Bais city	4.70	Excellent	C	B
Bacong	4.67	Excellent	A	B
Guihulngan city	4.67	Excellent	A	A
Basay	4.56	Excellent	A	C
La libertad	4.55	Excellent	A	A
Dumaguete city	4.50	Excellent	B	B
Dauin	4.48	Excellent	C	B
Santa catalina	4.48	Excellent	A	B
Jimalalud	4.41	Excellent	C	A
Tanjay city	4.31	Excellent	A	C
Tayasan	4.00	Excellent	A	B
Mabinay	3.73	High	B	-
Vallehermoso	3.68	High	D	B
Canlaon city	3.33	Fair	A	B
Pamplona	3.10	Fair	B	C
<b>Aggregate</b>	<b>4.44</b>	<b>Excellent</b>		

Source: DILG LGPMS 2012-13

with excellent and fair levels of environmental governance, together with Quadrant B and Quadrant C. Quadrant B and D are also associated in the high level of environmental governance. A heterogeneous representation of all the brain quadrants is also shown thus suggesting that the level of performance of the Local Government Units in environmental governance is associated with the dominant brain quadrants as manifested by the local government officials.

**Table 7.** Brain Dominance of Local Government Units' Officials and LGU Performance

VARIABLES	$\chi^2$	df	P value	Remarks
Brain Dominance & Administrative Governance	2.15	3	0.542	Not significant
Brain Dominance & Economic Governance	11.3	6	0.080	Not significant
Brain Dominance & Social Governance	2.95	6	0.815	Not significant
Brain Dominance & Valuing Fundamentals of Governance	2.52	6	0.866	Not significant
Brain Dominance & Environmental Governance	19.00	6	0.004	Significant

**Table 8.** Brain Quadrants and Level of Environmental Governance

Level of Performance in Environmental Governance	Brain Dominance				Total
	A	B	C	D	
<b>Excellent</b>	19	11	10	0	40
<b>High</b>	0	2	0	1	3
<b>Fair</b>	1	2	1	0	4
<b>Total</b>	20	15	11	1	47

## DISCUSSION

The objective of this study was to identify the dominant brain quadrants of the local government officials. The brain quadrants determine the thinking styles and consequently, assess their performance in administering their respective Local Government Units (LGUs).

Ned Herrmann (1954) came up with a “brain map” that situates the focus of the different thinking styles of an individual. The map consists of four brain quadrants labeled as posterior right brain quadrant, anterior right brain quadrant, posterior left-brain quadrant, and anterior left-brain quadrant. The anterior left-brain quadrant is known to be the analytical-quantitative-factual quadrant; the anterior right brain quadrant is the visualizer-conceptualizer-synthesizer thinking styles; the posterior left-brain quadrant thinks scientific and procedural while the right posterior brain quadrant is the nurturing-caring-effective thinking styles (Lumsdaine & Lumsdaine, 1995).

Each thinking style corresponds to a specific leadership style so that the particular thinking style shapes each leadership style. The anterior left-brain quadrant is authoritative, directive, all business, analytical and factual leadership styles. The posterior left-brain quadrant is traditional, conservative, organized, accountable and safekeeping leadership styles. The right posterior brain quadrant is team-oriented, supportive, personable, intuitive, and communicator leaderships styles while the anterior right brain quadrant is adventurous, visionary, entrepreneurial, idealistic, and holistic leadership styles. Thomas and Thomas (1928) asserted that a human person behaves according to a definition, and his thinking styles are also central to a condition.

Although 21.73% of the mayors are quadrant C professionals and they have a “nurturing” leadership style (Lumsdaine & Lumsdaine,

1995), only one of them belongs to the visualizer-conceptualizer leadership (Lumsdaine & Lumsdaine, 1995) thus becomes a “thought leader” (SPAG position statement, 2007). As Lynch and Kordis (1989) put it, the majority of the local government officials can hardly think outside of the box to become innovative or creative.

Since most of the Local Government officials are in Quadrant A, and a general left-brain dominant, it is recommended to enhance and stimulate the other brain quadrants, especially quadrant C and D, or simply the right brain. The holistic performance of the officials in administration depends on the adequacy of brain quadrant usage, the heterogeneous usage of the brain quadrants, the better the results (Herrmann, 1989; Lumsdaine & Lumsdaine, 1995). It is, therefore, necessary to create an institutionalized training for the Local Government officials that focuses on the stimulation of the whole brain quadrant as a means to improve the LGUs' performance and naturally improves the lives of the constituents of Negros Oriental.

The study shows the aggregate level of government performance of the LGUs in the areas of Administrative Governance, Economic Governance, Social Governance and Valuing Fundamentals of Governance as “excellent”. The study further exhibits that there are no significant relationships between brain dominance and level of performance of LGUs in areas of Administrative Governance, Economic Governance, Social Governance and Valuing Fundamentals of Governance; thus this affirms that there is a homogeneous representation of all brain quadrants. In the work of teaming, homogeneous representations mean that almost all members of the team are all on the same dominance. Due to the uniformity of brain dominance the team lacks creativity and will have a hard time upping their performance.

Hypothetically based on Ned Herrmann

Brain Map Model, the performance of the local government units in the areas of Administrative Governance, Economic Governance, Social Governance and Valuing Fundamentals of Governance is supposed to be lower than what is the Local Government Performance Management System is exhibiting, which is excellent. This is because the evaluation of the Local Government Units' performance is administered by the DILG (Department of the Interior and Local Government). The excellent performance means a reward of the LGU for the Seal of Good Governance and translates to extra funding from the government, which is worth millions. It cannot be denied that the personal interests and the prestige of being awarded slighted the actual rating of the Local Government Units because the excellent rating does not reflect the actual situation in the province. It was in fact recommended that other researchers conduct a survey with the constituents of the Local Government Units as respondents to have another perspective on the secondary data provided by the DILG. Moreover, it is highly recommended that the department should employ an independent evaluating agency to evaluate the Local Government Units, probably coming from other institutions to avoid biases in their assessments, not merely an evaluation summary that does not reflect the situations of Negros Oriental. Hence, the results showed no correlation between the brain dominance of the local government officials and their performance in the areas mentioned earlier in governance.

However, it was manifested that there is a significant relationship between brain dominance and level of performance of LGUs in the area of Environmental Governance. It means that the level of performance of the LGUs depends on the common brain patterns of the brain dominance of its mayors and vice-mayors. The dominant brain quadrants are A, B, and C, and the LGUs rating of the level of performance of LGUs are

mostly excellent. This result affirmed the study about teaming. A team with heterogeneous dominance has adequate representation from each of the four brain quadrants. The team will have optimum effectiveness and has a significantly greater creative output (Herrmann, 1989) thus conforming to Lumsdaine and Lumsdaine's (1995) report that whole-brain teams usually come up with superior solutions once members learn how to work together. Consequently, with the dominant approach adequately represented, the LGU's performed at an optimum level thus getting a rating of excellent.

The results imply that the LGU officials used all their brain quadrants to address problems concerning the freshwater ecosystem. Long-term planning is valued when it comes to the preservation and protection of the environment. It is, therefore, safe to say that in this is the area of governance, LGU officials practically put into practice the holistic manifestations of the brain map model. The LGU's acknowledge the utmost importance of environmental governance since it does involve not only the generation of today but also the generation of the future.

A prototype capability program is created to immerse the LGU officials in Negros Oriental to enhance their thinking capabilities and will stimulate all their brain quadrants. The program expects to produce LGU officials who are not only capable of leading their people actively but also have the unquestioned capacity to lead their localities to the future through foresight, creativity, entrepreneurial skills, and developmental planning. In other words, LGU officials become thought leaders in today's uncertainties.

This study, however, only focused on the two executives, the mayors and the vice-mayors of the local government as respondents, and when the research was conducted before the election period, making it difficult to approach and interview the officials. The local governments

may have a number of officials, like the city and municipality councilors and chief executives of various departments whose leadership styles affect the local government in all angles.

## CONCLUSION

The data suggest that the level of performance of the local government units in areas of administrative governance, economic governance, social governance, and valuing fundamentals of governance is not associated with the brain dominance of the Local Government officials. Regardless of their dominant leadership attributes or thinking styles, the Local Government Units performs excellently against the assessment evaluation of the Department of the Interior and Local Government. However, in the level of performance in the area of environmental governance, it says otherwise. It is therefore apparent that the optimum level of performance of the Local Government Units depends on the adequate representation of all the brain quadrants of the Local Government officials. They should reinforce and update their strategic planning skills, foresight for developmental planning, entrepreneurial skills, and the likes through capability programs, to the dynamism of the Local Government Units for them to better address problems that may arise or may soon occur, hence making them better equipped and prepared public servants.

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