A MODEL OF SERVICE DELIVERY FOR WATER DISTRICTS IN SOUTHERN MINDANAO

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Introduction

Water is one of the most important public goods that a state owns and must provide to its citizenry. Acces to safe water is a fundamental human need and a basic human right (World Health Organization, 2000). Next to air, water is one resource that man cannot live without. Aside from drinking, water is needed for irrigation, power, industrial and domestic uses (Elazegui, 2001). Provision of potable water to the public is a principal basic social service and the government must ensure affordability of its delivery to every Filipino (Kasamatsu, 2007). However, its distribution right at the homes of the citizenry is not as costs are involved in ensuring its potability, equitable distribution, use and sustainability.

Decision-makers, water managers and users need to increase their capacity to manage limited water resources taking into account increased user demands and environmental needs. Only when water resources are managed in ways responsive to social, and economic needs and to the long term sustainability of the water resource will the goal of water security be achieved (Hall, 2002).

In the Philippines, the mandate to provide clean potable water to the households and other users in the provinces and other cities is lodged with Water Districts except for the Metro Manila area where the distribution of water was given to private companies by an act of Congress as franchisees but is still under government regulation.

In Southern Mindanao, water resource is threatened by land conversion, competition between watershed protection and use for hydropower generation, irresponsible management of stakeholders, e.g., mismanagement of its distribution, issues of poor service delivery and the like. In addition, some water districts are

confronted with specific management issues like discontentment with benefits, unionism, and the like.

Several studies on water management have been commissioned by varied institutions like Asian Development Bank, World Bank and other donor agencies deeply concerned with this finite resource. Problems encountered by water districts and users are similar all over the country. Such problems include wasteful usage, poor coordination among stakeholders, multiplicity of institutions governing water supply planning and operations, poor water quality, limited distribution of tap water to urban areas, very weak service delivery, poor water pricing policies and lack of capital needed for expansion (PIDS Policy Notes, 2000, 2001). A local paper in Davao City mentioned the complaints of residents outside of Davao City on the "yellowish, undrinkable water" coming out of their taps. It reminds everyone that water is a resource that is not easily replenished, especially if people continue with the way we flatten out watersheds and dispose of wastes.

This researcher is as concerned as the article presented by the local paper and on the problems discovered from the PIDS policy notes. Water Districts, as the sole provider of tap water must therefore intensify efforts in improving service delivery of this very important public good. Given such scenario, what should water districts do to improve on their service delivery? What kind of governance strategies in water management must water districts pursue to improve if not sustain service delivery among water districts? Hence, the researcher would like to come up with a model of an efficient and effective service delivery of a water district.

Specifically, this investigation sought to find answers to the following:

1. As perceived by the internal clients, how are the functions of management implemented in water districts in terms of planning; organizing; leading; and controlling?

2. As perceived by the internal and external clients, how is good governance practices manifested in water districts in terms of transparency; accountability; participation; predictability; and sustainability?

3. As perceived by the internal and external clients, what corporate culture

predominantly exists in water districts as to common behaviour patterns; organizational values and beliefs; and personal attitudes and assumptions?

4. As perceived by the internal and external clients, what is the level of efficiency and effectiveness of service delivery of water districts in terms of Non-Revenue Water; Water Resource Management; Complaints Management; Billing and Collection; Management Skills; BOD Involvement; Information Technology; and Public Relations?

5. Is there a significant difference in the perception of internal and external clients of water districts on efficient and effective service delivery?

6. Among the variables, which predict a significant relationship between efficient and effective service delivery of water districts and factors associated with governance strategies among internal and external clients?

Null Hypotheses of the Study

1. There is no significant difference in the perception of internal and external clients of water districts on efficient and effective service delivery.

2. No variables predict a significant relationship between efficient and effective service delivery of water districts and no factors associated with governance strategies among internal and external clients that depict a model of service delivery.

Research Methodology

The design of the study is quantitative non-experimental. A total of 839 respondents, distributed into 424 internal and 415 external, participated in the study. A researcher-developed questionnaire was used which was validated by experts. Internal clients are the employees of the respective water districts while external clients refer to any government employee that is an active concessionaire of the water districts under study. Mixed method of sampling (purposive and random) was done to ensure proper representation of all water districts.

The study was conducted in Region XI among the following water districts: Davao City Water District, Tagum Water District, Mati Water District and Nabunturan Water District.

To gauge the reliability of the instrument, a pilot test was performed using Cronbach's alpha. Two tests were done: one for the independent variables and the other for the dependent variables. The result of the test was 0.985 for the independent variables and 0.954 for the dependent variables, which showed a high internal consistency or that the instrument that was used was very reliable. Statistical Package for the Social Sciences V.16 was used to generate the findings of the study.

Problems 1- 4 were hypothesis free. It used descriptive statistics which included mean, standard error and 95% confidence interval.

Problem 5: Multivariate Analysis of Variance (MANOVA) was used o determine the significant difference in the perception of internal and external clients of water districts on efficient and effective service delivery. The advantage of a multivariate test, in contrast to univariate tests, is not only does it include correlations between the dependent variables which make the analysis more informative and reflective of relationships among variables in nature, but it also reduces the inflation in type I error.

The discriminated function was used in classifying respondents to determine if it could improve on the 50% probability by chance alone.

Problem 6: Multiple regression was used to determine the relationship between efficient and effective service delivery of water districts and factors associated with good governance strategies (implementation of managerial functions, observance of good governance and observance of corporate culture) among internal and external clients.

Each group of respondents (internal and external) was split into two groups: the actual group which was used to construct a model and the holdout group which was used to validate the regression model extracted from the actual group.

Stepwise method was done to select statistically significant predictors of effective and efficient service delivery among the independent variables to generate a regression model. In the stepwise method, the partial correlation of each independent variable was evaluated one at a time. Only those that had statistically significant partial correlations

were included in the regression model and the remaining variables that had no statistically significant partial correlations were excluded.

The regression model generated by the actual group was cross-validated by computing the predicted scores in the holdout group using the regression coefficients produced by the actual group and correlating them to the observed scores of the holdout group.

Results of the Study

Perception on the implementation of the four basic managerial functions does not have an effect on the effective and efficient service delivery of the four water districts under study. On the other hand, perception on the observance of good governance practices has an influence on an effective and efficient service delivery of water districts. Perception on the observance of corporate culture did not have an influence on the effective and efficient service delivery of water districts. Only the variable observance of good governance practices had an influence on effective and efficient service delivery of water districts. Perception on the efficiency and effectiveness of service delivery of water districts showed varying responses on the eight variables identified.

Perception of Internal and External Clients on Effective and Efficient Service Delivery

To simultaneously measure differences among effective and efficient service delivery variables between internal and external clients across all water districts, Multivariate Analysis of Variance (MANOVA) was used. The result of the investigation showed the presence of a significant difference in the perception of effective and efficient service delivery variables using various test statistics such as the Pillai's Trace, Wilks' Lambda, Hotelling Trace and Roy's Largest Root. Please refer to Table 1.

Table1. Multivariate Analysis of Variance Test of Significance for Effective and Efficient Service Delivery

Test	Value	F	Significance
Pillai's Trace	.090	10.247a	.000
Wilks' Lambda	.910	10.247a	.000

Hotelling's Trace	.099	10.247a	.000
Roy's Largest Root	.099	10.247a	.000

[a]significant at .05

The result of the univariate F test (Table 2) showed that internal clients had significantly greater mean scores compared to external clients for all effective and efficient delivery variables. This type of investigation further showed the difference in perception of the internal and external clients among the four water districts.

Table 2. Univariate F tests for Effective and Efficient Service Delivery as Perceived by Internal and External

				95% Confidence Interval for Mean	
		Mean	Std. Error	Lower Bound	Upper Bound
nonrevenue	Internal	3.9160*	.03943	3.8385	3.9935
	External	3.4371	.05403	3.3309	3.5433
	Total	3.6791	.03433	3.6118	3.7465
water	internal	3.6934*	.03735	3.6200	3.7668
	external	3.3436	.03698	3.2709	3.4163
	Total	3.5204	.02696	3.4675	3.5733
complaints	internal	3.7146*	.04765	3.6210	3.8083
	external	3.3557	.03916	3.2787	3.4326
	Total	3.5371	.03150	3.4752	3.5989
billing	internal	3.8777*	.03249	3.8138	3.9415
	external	3.6348	.03593	3.5641	3.7054
	Total	3.7575	.02454	3.7094	3.8057
management	internal	3.7514*	.04044	3.6719	3.8309
	external	3.4790	.03575	3.4088	3.5493
	Total	3.6167	.02742	3.5629	3.6705
bod	internal	3.5005*	.03947	3.4229	3.5780
	external	3.3219	.03411	3.2549	3.3890
	Total	3.4122	.02629	3.3606	3.4638
it	internal	3.8432*	.03635	3.7717	3.9146
	external	3.6767	.03865	3.6007	3.7527
	Total	3.7608	.02665	3.7085	3.8131
pr	Internal	3.8160*	.03784	3.7417	3.8904
	External	3.4506	.03771	3.3765	3.5247
	total	3.6353	.02743	3.5814	3.6891

*significant at .05

The split sample test revealed that both internal and external clients had observed a positive influence on the variable good governance practices towards an effective and efficient service delivery of the four water districts.

The discriminant model used efficient and effective service delivery variables to depict type of client and identified the variables that contributed to the significant difference in effective and efficient service delivery. The discriminant analysis model revealed that the variables that contributed to the discriminant scores were Information Technology (-.597), Public Relations (.592) and Non Revenue Water (.442). Please see Table 3.

Table 3. Standardized Canonical Discriminant Function Coefficients*

Non-revenue Water	Water Resource Management	Complaints Management	Billing and Collections	Management Skills	Board of Directors Involvement	Information Technology	Public Relations
.442	.271	.210	.005	.299	-.238	-.597	.592

*Group centroids: internal clients = .311; external clients = -.317

A model consisting of sustainability and transparency from internal clients was generated using step-wise procedure. The model from the internal respondents revealed that the variables of sustainability (R^2 = 0.574) and transparency (R^2=0.054) are the predictors for an efficient and effective service delivery. This model has a total R^2=0.628, which means that sustainability and transparency can explain 62.8% of the variation in effective and efficient service delivery. However, the model cannot account for the remaining 37.2% which is a sizeable amount; thus, the model should be interpreted with caution. Please see Table 4.

Table 4. Good Governance Factors that Influence Effective and Efficient Service Delivery among Internal Clients in the Actual Group.

	B	SE B	B
Step 1			
Constant	1.605	.131	
Sustainability	.580	.034	.758*

Step 2			
Constant	1.288	.136	
Sustainability	.418	.044	.546*
Transparency	.251	.046	.314*

Note R^2 = 0.574 for step 1; ΔR^2=0.054 for step 2. *significant at .05.

A model consisting of accountability, sustainability, and transparency from external clients was generated using step-wise procedure. The model generated from the external respondents revealed that the variables Accountability (R^2 = 0.394), Sustainability (R^2=0.063) and Transparency (R^2=0.023) are the predictors for an efficient and effective service delivery. This model has a total R^2=0.48, which means that accountability, sustainability and transparency can explain 48% of the variation in effective and efficient service delivery. However, the model cannot account for the remaining 52% thus, the model should also be interpreted with caution.

Table 5. Good Governance Factors that Influence Effective and Efficient Service Delivery among External Clients

	B	SE B	B
Step 1			
Constant	1.608	.163	
Accountability	.518	.045	.628*
Step 2			
Constant	1.449	.158	
Accountability	.324	.058	.393*
Sustainability	.261	.054	.344*
Step 3			
Constant	1.424	.155	
Accountability	.233	.065	.283*
Sustainability	.235	.054	.310*
Transparency	.139	.046	.204*

Note R^2 = 0.394 for step 1; ΔR^2=0.063 for step 2; ΔR^2=0.023 for step 3. *significant at .05.

The first null hypothesis is rejected. The result of the investigation showed the presence of a significant difference in the perception of effective and efficient service delivery variables using various test statistics.

The second null hypothesis is likewise rejected. There are variables that predict a significant relationship between efficient and effective service delivery of water districts and there are factors associated with governance strategies among internal and external clients that depict a model of service delivery.

Table 6 shows the diagnostic statistics for independent errors and multicollinearity in the regression models for external clients and internal clients. The Durbin-Watson statistics were smaller than 3 and greater than 1, which means the assumption of independent errors is tenable for both regression models. The VIF is less than ten and the tolerance is greater than 0.2, thus the assumption of no multicollinearity is valid for both regression models.

Table 6. Tests for Independent Errors and Multicollinearity

Diagnostic Statistics	External Clients Regression Model	Internal Clients Regression Model
Durbin-Watson	1.853	1.878
Variance Inflation Factor	2.043	1.835
Tolerance	0.497	0.545

The study showed that the best model that a water district may adopt for an efficient and effective service delivery is the model generated from internal clients which is sustainability and transparency. Sustainability refers to the concept of making use of available resources without compromising the needs of future generations. Transparency refers to the availability of information to the general public and clarity about government rules, regulations and decisions. The Asian Development Bank asserts that transparency in government decision making and public policy implementation reduces uncertainty and can help inhibit corruption among public officials. In addition, an article In the Phillippine Star (March 25, 2011) mentioned

accountability and transparency as keys to good governance. Speaker Feliciano Belmonte Jr. continued further on in saying that with lack or absence of “understanding of good governance or its indicators, government officers and leaders will find it difficult to assume their proper role in the efficient management and use of the country’s resources.”

Recommendations

Massive and continuous information dissemination among all stakeholders must be in place since the responsibility of ensuring the sustainability of our water resource for future generations does not merely rest with water districts as the sole distributor of tap water to our very homes but to everybody. This involves strong policy pronouncements from the three tiers of Local Government Units (Province/City, Municipality and Barangay), the LWUA, the DENR and other government and non-government advocates.

The study showed sustainability as a very important predictor for an effective and efficient service delivery. People from all walks of life must understand the need to sustain this very important resource which is water. Moreover, the program on non revenue water must be given prime importance by water districts. It is surely a twin activity of promoting sustainability. Lesser leaks mean more water for the homes.

Measures adapted by other government agencies in promoting accountability and transparency must be vigorously pursued by the agencies promoting it (i.e. CSC, Ombudsman, etc.) in tandem with the water districts.

Digital era governance has come of age. Water districts must pursue a continuous build-up of its information technology. We are now at a juncture of very demanding and discriminating clients and improving on how we deliver an excellent service is ad priori.

Other researchers can pursue similar studies like inter-organizational linkages, institutional arrangements and other variables that may help the water districts become

more viable as a public enterprise. Still others can replicate this present study and find out if there is a change in perceptions after a certain period of time.

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