

Regarding Environmental Issues, Are Inhabitants of Bandung Interested in Municipal Solid Waste Management?

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INTRODUCTION

- The improper municipal waste management system created poor environmental condition across cities in developing countries.
- Bandung city, Indonesia, produces unsustainable amount of waste, only 61% is treated.
- Numbers of policies and regulations regarding municipal solid waste management (MSWM) have been set up in Indonesia. Unfortunately, they are not well introduced to a public sector and their compliance is limited by many factors namely lack of financial sources inadequate infrastructure lack of manpower and others.
- An aspect of public perception and approach on MSWM plays essential role to establish sufficient MSWM. Nevertheless, this aspect has been poorly investigated in Bandung city.
- This study investigated public perception and approach on MSWM in Bandung, Indonesia. Interest of MSWM in connection to the environmental issues and factors likely to influence this factor were examined. As well as willingness assessment of inhabitants to pay taxes for sufficient MSWM services, in terms that higher taxes could results in better MSWM services and financial background for investments to awareness or education.



Figure 1. Waste dumped alongside streets

HIGHLIGHTS

- Public perception of waste have significant impact on waste generation handling, tretment, usage and value
- The public approach to interest in MSWM in connection to the environmental issue could be influenced by age, education level, locality, and satisfaction with MSWM
- Inhabitants of Bandung are willing to pay for sustainable waste management services
- Sufficient awareness plays key role in inhabitants desicion makeing regarding watse handling and recycling

METHODS

Primary data source

- Structured questionnaire - single response with nominal categories, multiple-choice response and ope-ended
- Covenient sampling method and snowball method were used to select respondents

Data analysisi methods

- Basic descriptive statistics
- To assess willingness of inhabitants to pay for sufficient MSWM services was applied a Pearson’s Chi-square test to determine factors of dependence
- Public interest in MSWM in connection to the environmental issue was modelled as binary choice (respondets were either interested in MSWM or not) for this analysis was decided to apply a binary probit model

Pearson’s Chi-square test

- To determine whether there is a statistical independence or association between two or more categorical variables
- Assessed associations between willingnes to pay for sufficient MSWM services and other variables, namely: gender, age, years spent in Bandung, level of education, monthly income, satisfaction with MSWM practices, interest in MSWM, sufficient awareness about waste handling and recycling

Binary probit model

- The probit analysis provides statistically significant finding of which factors are likely to increase or decrease influence of the dependent variable
- Dependent variable: Interest of respondent in MSWM in connection to the environmental issues
- Explanatory variables: gender, age education, locality, satisfaction with MSWM services, sufficient awareness - waste handlin; waste recycling



Figure 2. Temporary waste station in city centre

RESULTS

- Overall descriptive statistctics showed that respondets are interest in MSWM in connection to environmental issues further statistics show influences of different factors on respondents interest
- Results of Chi-square test to assess willingness of inhabitants to pay for sufficient MSWM services in Bandung

Factors that were asociated with respondent’s willingnes to pay:

- Age
- Education level
- Income

Factors that were NOT asociated with respondent’s willingnes to pay:

- Gender
- Years spend in Bandung
- Waste management satisfaction
- Sufficient awareness about waste handling and recycling
- Interest in MSWM



Figure 3. Incorrectly used bins for separated waste

- Analytical results of binary probit modelofactors likely to influence interest of inhabitants in MSWM in Bandung

Explanatory variables that has influence on interest in MSWM in connection to the environmental issues shows Table 1.

Table 1. Results of binary probit model

Coef.	Standard error		p-value	95% Conf. Interval		Marginal effect
Reference (Locality of respondent is metropolitan area)						
Selatan	0.630	0.265	0.018	0.110	1.149	0.195
Reference (Age of respondent is 40 and more)						
Young	1.576	0.283	0.000	1.022	2.130	0.468
Middle	1.301	0.256	0.000	0.799	1.803	0.432
Reference (Education level of respondent is university)						
Primary and highe	-0.613	0.172	0.000	-0.950	-0.276	-0.217
Public perception						
Satisfaction WM	1.645	0.751	0.028	0.173	3.117	0.302
Constant	-0.739	0.311	0.017	-1.348	-0.131	

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CONCLUSION

Study results showed that age, education level, locality and satisfaction had significant influence on public approach to interestin MSWM in connection to the environmental issue. Younger and middle age respondents tended to be more interested in this issue than respondents in older age category. Respondents with university education were more interested than those with primary or secondary education level. Respondents from Selatan district were more interested in MSWM than those who lived in metropolitan area of Bandung city. Satisfaction with MSWM practices played important role in interest, satisfied responded tended to be more interested than those who were unsatisfied

Public perception and approach were also examined through willingness to pay taxes for sufficient MSWM. There wassignificant relationship among willingness to pay, age, education and monthly income. Respondents with university education were willing to pay higher taxes as well as respondents with the highest income. In addition, respondents in older age category were willing to pay more than young and middle age category.