



UNIVERSITI PUTRA MALAYSIA

***ECONOMIC VALUE AND DETERMINANTS OF EFFECTIVE
HOUSEHOLD SOLID WASTE COLLECTION SERVICES IN KANO,
NIGERIA***

HAMISU ALHAJI BASIRU

FPAS 2018 1



**ECONOMIC VALUE AND DETERMINANTS OF EFFECTIVE
HOUSEHOLD SOLID WASTE COLLECTION SERVICES IN KANO,
NIGERIA**

By

HAMISU ALHAJI BASIRU

**Thesis submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfillment of the Requirements for the Degree of Doctor of Philosophy**

November 2017

COPYRIGHT

All material contained within the thesis, including without limitation text, logos, icons, photographs, and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia



DEDICATION

This thesis work is absolutely dedicated to my treasured late parents; Mallam Hassan Maikaji Jahun and Mallama Aishatu for their morality and spiritual trainings. May Allah (SWT) let Jannatil-Firdausi be your final abode. AminYaa Rabbih!!



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in Fulfillment
of the requirement for the degree of Doctor of Philosophy

**ECONOMIC VALUE AND DETERMINANTS OF EFFECTIVE
HOUSEHOLD SOLID WASTE COLLECTION SERVICES IN KANO,
NIGERIA**

By

HAMISU ALHAJI BASIRU

November 2017

Chairman : Associate Professor Mohd Rusli Bin Yacob, PhD
Faculty : Environmental Studies

Solid waste management (SWM) in Kano metropolis is under the responsibility of urban authority, known as, Refuse Management and Sanitation Board (REMASAB). Waste management is a critical issue in the metropolis due to dwindling financial resources and population escalation. These problems result in poor control and handling SWM effectively and efficiently, giving rise to adverse threats on both environmental and public health. In a radical policy response to address this environmental problem, Kano State government proposed to privatize SWM services, via REMASAB, for improved collection services, as a better management option to ensure sustainability in SWM in Kano metropolis.

Thus, the aim of this study is to estimate the economic values and determinants of waste collection services and their potentials towards effective waste management in Kano metropolis. Choice Experiment (CE) and Contingent Valuation Methods (CVM) valuation techniques were employed in the study. In the CVM section, willingness to pay (WTP) elicitation format, dichotomous choice and a close ended question were employed. In the CE part, five categories of non-market values of waste collection services were defined including: collection frequency, storage facilities, disposal method, pre-collection services and collection value. A total of 400 respondents were interviewed in face-to-face format, using cluster random sampling method.

In the CVM section, logit model was defined based on dichotomous choice method for the estimation of the WTP off a specified bid amount to the hypothetical price for waste collection services. The logit model was used to drive marginal value and compensating surplus of the respondents to the attributes of non-market values of waste collection services.

The results of mean WTP was estimated using single bounded dichotomous choice contingent valuation (DC-CVM) format, however, the result demonstrated respondents positive WTP for improve waste collection services. The estimated mean WTP was ₦2202.03 (\$11.7) per household, and from the CE ₦2593.2 (\$13.2) per household respectively.

The households' statistics acquired from the 2006 Population Census data that Kano metropolis has a total number of 275,851 households. This implies an aggregate welfare gain worth ₦607, 432,177.53 (\$3, 08,412.06) monthly, or ₦7, 289,186,130.4(\$33,000,944.82) annually, for the CVM and ₦715, 336813.2 (\$3, 631151.3) monthly and annually ₦858,404, 1758, 4 (\$43, 573816) for the CE. Invariably, this study generate significant information on the practical potentials for improving waste collection services in Kano metropolis.

Generally, the results, in this research indicated that households placed high value on the collection services, and they are willing to pay for their waste collections in sustainable manner. These findings can be used for larger societal awareness about the waste collection services and the incurred benefits, including economic benefits. The results would also be beneficial to policy makers and PSPs to set priorities to ensure that the polluters' pay principal is observed accordingly for environmental sustainability.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**NILAI EKONOMI DAN PENENTU PERKHIDMATAN PENGUMPULAN
SISA PEPEJAL DALAM KALANGAN PENGGUNA ISI RUMAH DI
KANO, NIGERIA**

Oleh

HAMISU ALHAJI BASIRU

November 2017

Pengerusi : Profesor Madya Mohd Rusli Bin Yacob, PhD
Fakulti : Pengajian Alam Sekitar

Pengurusan sisa pepejal di metropolis Kano di bawah tanggungjawab pihak berkuasa bandar, dikenali sebagai, Lembaga Pengurusan Sisa dan Sanitasi (REMASAB). Pengurusan sisa pepejal merupakan isu yang kritikal di metropolis disebabkan penyelewengan sumber kewangan dan eskalasi populasi. Oleh sebab itu, masalah tersebut menyebabkan ketidakkompetensian dalam pengawalseliaan dan pengendalian penghasilan sisa secara efektif dan berkesan, dan seterusnya menimbulkan ancaman buruk pada kedua-dua alam sekitar dan kesihatan orang ramai. Dalam respon polisi radikal bagi menangani masalah alam sekitar, kerajaan negeri Kano telah mencadangkan untuk menswastakan perkhidmatan pengurusan sisa pepejal, melalui REMASAB, bagi memperbaiki perkhidmatan pengumpulan bagi mengelakkan risiko berkaitan dengan indiskriminasi longgokan sisa dan proliferasi ancaman kesihatan berkaitan dengan alam sekitar yang kotor, sebagai pilihan pengurusan yang lebih baik bagi memastikan kemampuan dalam pengurusan sisa pepejal di metropolis Kano .

Oleh itu, tujuan kajian ini adalah untuk menganggarkan nilai ekonomi dan determinan perkhidmatan pengumpulan sisa dan potensi mereka terhadap pengurusan sisa yang efektif di metropolis Kano. Teknik penilaian Eksperimen Pilihan (CE) dan Kaedah Penilaian Kontigen (CVM) telah digunakan dalam kajian ini. Dalam bahagian CVM, format elisitasi kesediaan untuk membayar (WTP) , pilihan dikotomi dan soalan tertutup telah digunakan. Dalam bahagian CE, lima kategori nilai bukan pasaran perkhidmatan pengumpulan sisa telah dihalusi, termasuk: kekerapan pengumpulan, kemudahan penyimpanan, kaedah disposal, perkhidmatan prapengumpulan, dan nilai pengumpulan. Sebanyak 400 responden telah ditemu duga dalam format bersemuka, menggunakan kaedah persampelan kluster. Di samping itu, teknik persampelan rawak

kluster pelbagai peringkat telah digunakan yang memerlukan tiga urutan persampelan untuk diguna pakai. Oleh itu, tiga peringkat telah digunakan untuk memilih kejiranan kajian:

Peringkat 1: Tiga majlis kerajaan tempatan (LGC) telah dipilih secara rawak. Mereka ialah Perbandaran Kano (KMC), Gwale, dan Nassarawa, daripada enam LGC di metropolis tersebut. Nama semua majlis kerajaan tempatan telah ditulis di atas sekeping kertas dan kemudian dimasukkan ke dalam sebuah bekas, kemudian digoncang, dan daripadanya tiga telah dipilih secara rawak dari bekas tersebut ($1 \times 3 = 3$).

Peringkat 2: Lima belas jiran dari majlis kerajaan tempatan tersebut (KMC, Nassarawa dan Gwale) telah dikenal pasti berdasarkan prosedur persampelan yang diguna pakai dari tiga majlis kerajaan tempatan, menjadikan lima jiran daripada setiap kerajaan tempatan. Daripada ini, sebuah jiran telah dipilih secara rawak. Mereka termasuk Gandu dari Majlis Kerajaan Tempatan Kano (KMC). Dorayi dari Gwale dan Hotoro dari Nassarawa melalui prosedur yang sama seperti peringkat pertama di atas ($1 \times 3 = 3$).

Dalam bahagian CVM, model logit telah digunakan berdasarkan pilihan dikotomi bagi penganggaran jumlah tawaran spesifik terhadap harga hipotetikal bagi perkhidmatan pengumpulan sisa pepejal. Model logit tersarang telah digunakan untuk mendapatkan nilai marginal dan lebihan kompensasi responden terhadap atribut nilai bukan pasaran bagi perkhidmatan pengumpulan sisa.

Dapatan min WTP telah dianggar menggunakan format penilaian Kontigen Pilihan Dikotomi Terikat Tunggal (DC-CVM), walau bagaimanapun, dapatan memperlihatkan respon terhadap WTP adalah positif bagi memperbaiki perkhidmatan pengumpulan sisa. Min anggaran masing-masing ialah WTP ₦2202.03 (\$11.7) per isi rumah, dan dari CE ialah ₦2490 (\$12.6) per isi rumah.

Oleh sebab itu, berdasarkan statistik isi rumah yang diperoleh dari data Banci Penduduk 2006 daripada Suruhanjaya Penduduk Nasional (NPC, 2006), metropolis Kano mempunyai keseluruhannya sebanyak 275,851 isi rumah. Perkara ini menandakan agregat keuntungan kebajikan bernilai ₦607,432,177.53 (\$3,08,412.06) setiap bulan, atau ₦7,289,186,130.4 (\$33,000,944.82) setiap tahun. Sesungguhnya, kajian ini menjana maklumat yang signifikan mengenai potensi praktikal bagi memperbaiki perkhidmatan pengumpulan sisa di metropolis Kano.

Umumnya, dapatan kajian ini memperlihatkan bahawa isi rumah tangga meletakkan nilai yang tinggi terhadap perkhidmatan pengumpulan, dan mereka bersedia untuk membayar bagi pengumpulan sisa mereka dalam bentuk yang mampan. Oleh itu,

dapatan ini dapat digunakan bagi kesedaran kemasyarakatan yang lebih luas mengenai perkhidmatan pengumpulan sisa dan faedah tertanggung yang diperoleh, termasuk faedah ekonomi. Di samping itu, dapatan kajian ini bermanfaat kepada penggubal polisi dan PSP untuk menentukan prioriti bagi memastikan bayaran prinsipal pencemar dikesan sewajarnya bagi memastikan kemampanan alam sekitar di Metropolis Kano.

Oleh itu, pembangunan mungkin menyumbang kepada keadaan kebersihan alam sekitar. Walau bagaimanapun, sumber semula jadi termasuk alam sekitar yang bersih merupakan bahagian pembangunan yang integral. Jadi, sekiranya kenaikan dalam faedah agregat melebihi kenaikan dalam kos agregat, pemuliharaan alam sekitar dapat diterjemahkan sewajarnya dari perspektif masyarakat umum. Namun, ini dikenali sebagai “pareto improvement” yang bermaksud bahawa faedah sepatutnya adalah besar yang secara prinsipalnya, bermaksud, setiap orang boleh menjadi lebih baik atau alternatifnya sesetengahnya boleh menjadi lebih baik tanpa seorang pun yang terkebelakang.

Kesimpulannya, analisis kajian telah menjana banyak maklumat untuk implikasi polisi bagi membimbing pelbagai pemegang taruh dalam sektor SWM, kedua-dua penggubal polisi dan penyedia perkhidmatan swasta.

Penggubal Polisi

Tahap peduli isi rumah yang sederhana terhadap kelestarian alam sekitar memerlukan lebih kepekaan dan pencerahan bagi mempromosikan dan mempertingkatkan kelestarian terhadap SWC di metropolis. Oleh sebab itu, isi rumah sebagai pengguna memerlukan kepekaan yang progresif dan positif bagi menyokong nilai kepedulian terhadap pencemaran. Pengkomputeran DAI menunjukkan bahawa terdapat prioriti dari segi pengurusan sisa terdekat yang memerlukan tindakan dan pelan persekitaran segera, seperti yang dinyatakan oleh penggabungan atribut perkhidmatan pengurusan sisa pepejal yang diharapkan oleh pengguna isi rumah dalam tinjauan tersebut.

Kajian ini telah berjaya memperlihatkan aspek permintaan penambahbaikan dalam kekerapan pengumpulan sisa. Oleh sebab itu, penambahbaikan dalam SWC merupakan proses kompleks yang memerlukan strategi yang dirancang dengan teliti. Hasil model bagi anggaran WTP menunjukkan hasil positif yang menyebabkan pengguna isi rumah bersedia untuk membayar. Oleh sebab itu, dapatan kajian memberikan suatu tanggapan untuk REMASAB bagi mengenal pasti sebarang ketidakpadanan antara apa yang sebenarnya isi rumah sanggup untuk membayar dan kemampuan REMASAB untuk menyediakan perkhidmatan tersebut.

Penyedia Perkhidmatan Swasta

Kajian ini menunjukkan atribut perkhidmatan paling diutamakan yang diharapkan oleh pengguna isi rumah berdasarkan kepentingan relatif teranggap mereka. Oleh sebab itu, sebelum melaksanakan pelaburan oleh sebarang penyedia perkhidmatan swasta yang berminat (PSP) untuk terlibat, sektor SWM perlu menentukan faktor atau atribut bagi segmen pasaran sisa pepejal yang dapat diakses sebelum pembelian peralatan dan mesin yang relevan disebabkan prioritisasi teralih bagi atribut perkhidmatan merentas segmen pasaran.

Kajian juga menunjukkan bahawa terdapat potensi bagi perkhidmatan pengumpulan sisa untuk memperbaiki kekerapannya. Ini merupakan salah satu cara untuk menghapuskan proliferasi tapak buangan haram serta memastikan persekitaran yang lebih bersih. Oleh sebab itu, firma baharu yang berminat dalam perkhidmatan pengumpulan di metropolis Kano patut mengambil kira manfaat ini. Dengan itu, pelabur prospektif patut melabur dalam kedua-dua trisikal bermotor dan truk penyedat yang dapat membantu dalam usaha perkhidmatan pengumpulan sisa. Hasil WTP dapat digunakan sebagai indikator berguna untuk menentukan kepentingan relatif perkhidmatan dan barangan yang sewajarnya dihargai oleh orang ramai.

ACKNOWLEDGEMENTS

All praises to the Almighty Allah (SWT), the most Gracious and Merciful, for giving me the life, strength and determination to complete this study. I sincerely wish to express my deepest gratitude to the entire members of my thesis supervisory committee who made the completion of this study possible. Specifically, Prof. (Madya) Dr. Mohd Rusli Bin Yacob (Committee Chairman), Prof. (Madya) Dr. Alias Bin Radam (Member), and Prof (Madya) Dr. Latifah Bint Abd Manaf (Member) who provided their guidance, support, and understanding during my candidature. Your scholarly guidance, good support, excellent supervision and great encouragement were most appreciated.

My heart-felt appreciation goes to my much-loved late parents, Mallam Hassan Maikaji Jahun and Mallam Aishatu Hassan Maikaji Jahun for their inestimable bold and concerted efforts as well as their sacrifices on my educational career is highly acknowledged. May Allah (SWT) reward you with Jannatil- Firdausi for your moral and spiritual trainings. Amin!

My profound gratitude also goes to my beloved wife, Amina Yahaya Inuwa, and my dearest children: Hawwa'u (Fadila), Aisha (Hajiya), Rabi'at (Husnah) and my little Amina (Ummul-Khairi) respectively, as well as my younger sister Hauwwa'u Hassan for their sacrifice, patience, understanding and support during the period. Indeed, I so much thank you. Special thanks goes to Hussein Adamu Federal Polytechnic, Kazaure - Jigawa State, Nigeria, and the Tertiary Education Trust Fund for the opportunity given to me and their financial supports for the study. Finally, a big thank to all my friends particularly Abdullahi Adamu who have supported me at the difficult time of this journey. May you be rewarded abundantly. Amin!

APPROVAL

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

Mohd Rusli Bin Yacob, PhD

Associate Professor
Faculty of Environmental Studies
Universiti Putra Malaysia
(Chairman)

Alias Bin Radam, PhD

Associate Professor
Faculty of Economics and Management
Universiti Putra Malaysia
(Member)

Latifah Bint Abd Manaf, PhD

Associate Professor
Faculty of Environmental Studies
Universiti Putra Malaysia
(Member)

ROBIAH BINTI YUNUS, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

Declaration by graduate student

I hereby confirm that:

- this thesis is my original work;
- quotations, illustrations and citations have been duly referenced;
- this thesis has not been submitted previously or concurrently for any other degree at any institutions;
- intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as according to the Universiti Putra Malaysia (Research) Rules 2012;
- written permission must be obtained from supervisor and the office of Deputy Vice-Chancellor (Research and innovation) before thesis is published (in the form of written, printed or in electronic form) including books, journals, modules, proceedings, popular writings, seminar papers, manuscripts, posters, reports, lecture notes, learning modules or any other materials as stated in the Universiti Putra Malaysia (Research) Rules 2012;
- there is no plagiarism or data falsification/fabrication in the thesis, and scholarly integrity is upheld as according to the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) and the Universiti Putra Malaysia (Research) Rules 2012. The thesis has undergone plagiarism detection software

Signature: _____ Date: _____

Name and Matric No: Hamisu Alhaji Basiru, GS40904

Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) were adhered to.

Signature: _____
Name of Chairman
of Supervisory Committee: Associate Professor
Dr. Mohd Rusli Bin Yacob

Signature: _____
Name of Member
of Supervisory Committee: Associate Professor
Dr. Alias Bin Radam

Signature: _____
Name of Member
of Supervisory Committee: Associate Professor
Dr. Latifah Bint Abd Manaf

TABLE OF CONTENTS

	Page
ABSTRACT	i
ABSTRAK	iii
ACKNOWLEDGEMENTS	vii
APPROVAL	viii
DECLARATION	x
LIST OF TABLES	xvi
LIST OF FIGURES	xviii
LIST OF ABBREVIATIONS	xix
 CHAPTER	
 1 GENERAL INRODUCTION	 1
1.1 Study Background	1
1.1.1 Geography of Kano Metropolis	6
1.1.2 Household Solid Waste Management Challenges	8
1.1.3 Households Solid Waste Management Practices	9
1.1.4 Households Waste Collection and Transportation	10
1.1.5 Households Waste Separation and Recycling	10
1.2 Problem Statement	11
1.3 Research Questions	14
1.4 General Objective	14
1.5 Specific Objectives	14
1.6 Significance of the Study	14
1.7 Scope and Limitation of the Study	15
1.8 Organization of the Thesis	15
 2 LITERATURE REVIEW	 17
2.1 Introduction	17
2.2 Economic Valuation Technique	17
2.2.1 Revealed Preference (RP) Techniques	18
2.2.2 Stated Preference (SP) Techniques	19
2.2.3 Advantage of SP over RP Approaches	20
2.2.3.1 Cost-Effectiveness	20
2.2.3.2 Demand for New Products	20
2.2.3.3 Demand of Products with no Observable Markets	21
2.2.4 Contingent Valuation Method (CVM)	21
2.2.4.1 Reliability and Validity of CVM	23
2.2.5 Choice Modelling (CM) Technique	23
2.2.6 Advantage of Choice Experiment (CE) Over Contingent Valuation Method (CVM)	25
2.3 Theoretical Framework	26
2.3.1 Welfare Measures	26

2.3.2	Environmental Concern and Theory of Value in Psychology	28
2.3.3	Participation Theory	30
2.4	Emperical Framework on SWM Valuation Studies	30
2.4.1	Attribute Determination in Choice Experiment Study	39
2.4.2	Attributes' Selection Procedure in CE Studies	40
2.4.3	Design-Attribute Relative Importance Index Computation Procedure	41
3	METHODOLOGY	43
3.1	Introduction	43
3.2	Conceptual Framework	43
3.3	Estimation Technique	46
3.3.1	Dichotomous Choice Contingent Valuation Method	46
3.3.1.1	Analysis of Contingent Valuation Data	48
3.3.1.2	Choice of Welfare Measure Mean or Median	51
3.3.1.3	Logit or Probit Models	52
3.3.1.4	Derivation of Willingness to Pay Model	53
3.3.1.5	Derivation of the Logit Equation	53
3.3.1.6	Bid Design	55
3.3.2	The Choice Experiment (CE) Method	57
3.4	Data Collection	61
3.4.1	Sample Size and Sampling Procedure	61
3.5	Selection of Respondents using the Systematic Random Sampling Technique	65
3.5.1	Sampling Unit	66
3.5.2	Survey Instrument	67
3.6	Pilot Testing	68
3.7	Validity and Reliability of the Instrument	68
3.7.1	Validity Test	68
3.7.2	Reliability Test	69
3.8	Questionnaire Design and Pre-test	70
3.8.1	Compilation of Focus Group Discussion (FGD) and Design Attributes	71
3.8.2	Questionnaire Design-Attributes	72
3.8.3	Questionnaire Structure and Measure for DARI Analysis	73
3.9	Sampling and Questionnaire Administration for DARI Analysis	73
3.10	Data Analysis and Discussions for DARI	74
3.10.1	Respondents' Profiles	74
3.10.2	DARI Computation Result	76
3.11	Choice Experiment Design	78
3.12	Contingent Valuation Design	85
3.13	Summary	87
4	RESULTS AND DISCUSSIONS	88
4.1	Introduction	88
4.2	Exploratory Factor Analysis (EFA)	88
4.3	Socio-economic Profiles of the Households	92

4.4	Households' Environmental Status Analysis	94
4.5	Analysis of Households' Opinion and Knowledge on Environmental Issues	95
4.5.1	Households' Opinion on the Relative Importance of Environmental Issues	95
4.5.2	Households' Environmental Knowledge	96
4.6	Procedure for the Descriptive Analysis	97
4.7	Households' Level of Awareness towards Solid Waste Collections	98
4.8	Households' Attitudinal Levels towards Solid Waste Collection	100
4.8.1	Households' Level of Cognitive Attitude towards Solid Waste Collection	100
4.8.2	Households' Level of Affective Attitude towards Solid Waste Collection	101
4.8.3	Households' Level of Behavioral Attitude towards Solid Waste Collection	102
4.9	Households' level of Perception towards Solid Waste Collection	103
4.10	Households' Level of Participation towards Solid Waste Collection	105
4.10.1	Level of Participation in Problems Identification and Goal Settings	105
4.10.2	Households' Level of Participation in Strategies Setting and Implementation	106
4.11	Dichotomous Choice Contingent Valuation Method Analysis	107
4.11.1	Variables Used in the CVM Analysis	110
4.11.2	Logit Regression Model Results	110
4.11.3	Willingness to Pay Estimation	111
4.11.3.1	Discuss of Regression Results	112
4.11.3.2	Log Likelihood and Convergence Iteration	113
4.11.3.3	Pseudo R^2 for Model Fit	114
4.11.3.4	Estimated Mean WTP Value and Aggregate value	115
4.11.3.5	Estimated Mean WTP Value Based on Educational Level	115
4.11.3.6	Estimated Mean WTP Value Based on Income Category	116
4.11.3.7	Estimated Mean WTP Value Based on Households Size	116
4.12	Choice Experiment Analysis	117
4.12.1	The Basic Multinomial Logit (MNL) Model	120
4.12.2	The Multinomial Logit (MNL) Interaction Model	120
4.12.3	The Random Parameters Logit (RPL)/Mixed Model	121
4.12.4	The Random Parameters Logit (RPL) Interactive Model	122
4.12.5	The Basic Latent Class Model (LCM)	123
4.12.6	The Latent Class Model (LCM) Interactive	124
4.12.7	Compensating Surplus	130
4.12.8	Estimation of Households' Marginal Willingness to Pay	130

4.12.9	Aggregate Value from the Households' Waste Collection Services	132
4.13	Summary	132
5	SUMMARY AND CONCLUSION	134
5.1	Introduction	134
5.2	Comparing DC-CVM and CE Results	135
5.3	Policy Implications	136
5.3.1	Policy Makers	136
5.3.2	Private Service Providers (PSPs)	137
5.4	Limitations of the Study	138
5.5	Recommendations for Further Studies	139
5.6	Conclusion	140
	REFERENCES	143
	APPENDICES	174
	BIODATA OF STUDENT	232
	LIST OF PUBLICATIONS	233

LIST OF TABLES

Table	Page
1.1 Transition of Responsibility for MSWM in Urban Kano from 1960 to Date	2
1.2 Waste Generation in Some Urban Cities in Nigeria	11
3.1 Sample size determination for main survey by neighborhoods	64
3.2 Selection of Respondents using Systematic Sampling Procedure	66
3.3 Reliability Coefficients for Pilot Test and Final Tests	70
3.4 Design-Attributes Structure for SWC Service Improvement	72
3.5 Sample Size Determination for DARII	74
3.6 Households' Socio-economic Profiles for DARII	75
3.7 Design- Attribute Relative Importance Index Determination	78
3.8 Attributes and Levels used for the Study	80
3.9 Summary of the current condition of SWC services in Kano Metropolis	84
4.1 Awareness	89
4.2 Attitude	90
4.3 Perception	91
4.4 Participation	92
4.5 Households' Socio-economic Profiles	93
4.6 Households' Level of Awareness toward Solid Waste Collection	99
4.7 Households' Level of Cognitive Attitude towards Solid Waste Collection	101
4.8 Households' Level of Affective Attitude towards Solid Waste Collection	102

4.9	Households' Level of Behavioral Attitude towards Solid Waste Collection	103
4.10	Households' Level of Perception towards Solid Waste Collection	104
4.11	Households' Level of Participation in Problems Identification and Goals Settings towards Solid Waste Collection	106
4.12	Households' Level of Participation in Strategies Setting and Implementation towards Solid Waste Collection	107
4.13	Households' Probability of WTP for Solid Waste Collection Services	109
4.14	Households' Summary of WTP Responses	109
4.15	Variables Used in the Study	110
4.16	Logit Regression Model Result	111
4.17	Mean Value of WTP Based on Educational Level	115
4.18	Mean WTP Based on Income Category	116
4.19	Estimated Mean WTP Based on Households Size	116
4.20	Descriptive Analysis of Main Attributes	118
4.21	Attributes and Attribute Levels	119
4.22	Basic Multinomial Logit (MNL) Model	120
4.23	Multinomial Logit Model with Interactions	121
4.24	The Basic Random Parameters Logit (RPL)/Mixed Model	122
4.25	Random Parameters Logit (RPL)/Mixed Model with Interactions	123
4.26	Basic Latent Class Model (LCM)	124
4.27	Latent Class Interactive Model	126
4.28	Marginal Values for All Attributes in the Three Models	131

LIST OF FIGURES

Figure	Page
1.1 1.1 Solid Waste Generation in Kano; Modified Raw Data from Nabegu, 2010	5
1.2 Map of the Study Area	7
2.1 Economic Valuation Technique Model	18
2.2 CV and EV Changes	26
2.3 Interpretation of the magnitudes for DARII	42
3.1 Conceptual Framework	44
3.2 A Chart of Multi-stage Cluster Sampling Procedure	65
4.1 Households' Environmental Status	95
4.2 Households' Opinion on environmental problems in Kano metropolis	96
4.3 Households' Environmental Knowledge	97
4.4 Households' Reasons for unwilling to pay	110

LIST OF ABBREVIATIONS

ABC	Averting Cost Behaviour
CD	Compensation Demand
CE	Choice Experiment
CF	Collection Frequency
CM	Choice Modelling
CVM	Contingent Valuation Method
DARII	Design Attribute Relative Importance Index
DCE	Dichotomous Choice Experiment
DM	Disposal Method
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
GHG	Greenhouse Gas
GRA	Government Reserved Area
HPM	Hedonic Pricing Method
IIA	Independence of Irrelevant Attribute
IID	Independence of Identically Distributed
IP	Implicit Price
LCM	Latent Class Model
LL	Log Likelihood
MC	Monthly Charges
MLE	Maximum Likelihood Estimator
MNL	Multinomial Logit
MRS	Marginal Rate of Substitution
MSW	Municipal Solid Waste

MSWM	Municipal Solid Waste Management
NOAA	National Oceanic and Atmospheric Administration
OLS	Ordinary Least of Square
PCS	Pre-Collection Service
PSP	Private Service Providers
REMASAB	Refuse Management and Environmental Sanitation Board
RP	Reveal Preference
SD	Standard Deviation
SF	Storage Facility
SP	Stated Preference
SSE	Sum of Square
SW	Solid Waste
SWC	Solid Waste Collection
SWC	Solid Waste Collection
SWM	Solid Waste Management
TCM	Travel Cost Method
TIOLI	Take-It or Live-It
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UNDB	United Nations Development Programme
WTA	Willingness To Accept
WTP	Willingness To Pay

CHAPTER 1

GENERAL INRODUCTION

1.1 Study Background

Solid waste (SW) refers to the valueless material to the individual who generates it, usually sourced from domestic, commercial, industrial, healthcare, agricultural and mining activities and dumped in streets and public places (Puri et al., 2008). The term 'garbage,' 'trash,' 'refuses' or 'rubbish' are often to be used interchangeably refer to some forms of households' solid wastes. According to Tchobanoglous, et al., (1993), SW is the wastes that source from the activities of human and animals which are discarded as useless or unwanted broadly refer as solid waste, which includes sewage slug, demolition wastes and mining residues, municipal garbage, wastes of agricultural and animal husbandry, as well commercial and industrial wastes.

While, Solid Waste Management (SWM) is defined as those practices which involve processing, and waste disposal in accordance with the best practices of public health, legal, environmental, economic and financial, engineering, as well as the administrative considerations, regarding waste control, generation, storage, collection, transfer and transport of wastes materials (Othman, 2002). Thus, municipal solid waste (MSW) denotes SW generated by households, commercial units (with exception of industrial units) and institutions. Such wastes are usually heterogeneous often been influenced by socio-geographical factors.

Hoornweg and Bhada-Tata (2012), reported that annually about 1.3 billion tons on the estimate of solid waste are collected globally, contributing about 5% emission of greenhouse gas (GHGs) of the organic component of the solid waste decayed, which gives rise to global warming. Solid waste generation in the world is expected to significantly increase to about 2.2 billion tons by 2025. However, inefficient waste management which consists of a poor collection system and ineffective disposal method results in pollutions of air, water, and land. Which eventually attribute to the contamination of drinking water sources, thus, spreading waterborne diseases and causing infections to the dwellers. As denoted by Nabegu, (2008), Nigeria produces about 25 million metric tons of solid waste per year, and 0.49 kg per capita per day. While, in Kano metropolis shows per capita generation of waste ranges from 0.75 kg/day in the suburban area, and 1.2 to 1.7kg/day in the city and government reserved areas (GRAs) respectively, perhaps due to variations in the socio-economic status of the residential zones. Nabegu, (2010) studied municipal solid waste and estimated that Kano Metropolis generates about 3085 metric tons daily or 1, 080, 5000 tons annually of solid waste. On projection, it implies that by 2025 the amount would probably raise up to 1,825,000 tons per annum, or 5000 tons daily.

Solid waste management in Kano Metropolis has a long history. Dated back from the colonial era to independence, waste management has been under the control of the local authorities – with Wakilin Tsafta as the counselor in- charge. During that time, there was a decentralized waste management- East, West, South and Northern areas of the metropolis. In the mid-1970s to 1990s, it shifted to several ministries and various special task forces to handle waste management in the metropolis. With the beginning of civil rule in 1990 management of solid waste became an integral issue for parties’ campaign to seek for an election in Kano state, therefore, it ends in the establishing the present Refuse Management and Sanitation Board (REMASAB) in 2003. Thus, the function of municipal solid waste management (MSWM) in Kano Metropolis was given intermittently to fourteen (14) different agencies as that can be seen from the table as below:

Table 1.1 : Transition of Responsibility for MSWM in Urban Kano from 1960 to Date

S/NO	Name of Agency Responsible for Waste Management	Period
1	Kano Native Authority	1960-1969
2	Local Government Authority	1969-1971
3	Kano Metropolitan Planning Board	1971-1973
4	Ministry of Health	1973-1976
5	Kano Municipal Local Government	1976-1982
6	Ministry of Housing and Environment	1982-1983
7	Ministry for Local Government and community Dev’t	1983-1984
8	Kano Municipal Council	1984-1985
9	Metropolitan Environmental Sanitation Task Force	1986-1988
10	Kano State Environmental Planning and Protection Agency	1989-1994
11	Refuse Disposal Agency (REDA)	1994-1997
12	Waste Disposal Company (WASCO)	1997-1999
13	Ministry of Environment	1999-2003
14	Refuse Management and Sanitation Board (REMASAB)	2003-Date

(Source: Sustainable Kano Project, 2004)

Accordingly, solid wastes collection (SWC) is identified as one of the SWM problems in most cities of developing countries in recent decade, this is as a result of high population growth, rapid urbanization, change in lifestyle and rising standard of people in Metropolis, these, however, influences the volume and diversity of wastes generated, eventually its generation becomes faster than they are collected, transported and disposed (Nguyen, 2003). Thus, one of the important aspects in households’ solid waste collection concern is addressing the problem of municipal solid waste management, for which its generation has significantly increased beyond proper control and effective management capacity of urban authorities over the years. Invariably, households’ solid waste collection system in Kano Metropolis is not sustainable and poses a lot of threats to the public health and the environment. However, Adeyinka, et. al., (2005) reported that collection, transportation, and disposal of households’ solid waste are largely capital intensive and require much

labour, which revealed about 70% to 80% of the total cost of the agencies for SWM in the country accounts for transportation including both machinery and labour. Despite that, agencies responsible for MSWM (indeed in most cities in Nigeria), charges no fees is imposed to individuals for its operations. Thus, waste management services in Kano Metropolis by the state are provided freely. Therefore, the cost for waste disposal are virtually not reflected in the prices households pay for daily activities, eventually, this trend would tend to generate more waste compared to payment for waste generated based on the health, social and environmental marginal cost (Linderhof, et al., 2001). However, Coffey and Coad, (2010) showed that SWM services in the urban centers as a source of public revenue is seriously depleting globally, the depletion account for 20% to 40% of urban revenue. Nabegu, (2010) observed that wastes collection in Kano Metropolis is slower compared to its generation which exceeds the current government's provisions for proper and effective SWM. The United Nations Centre for Human Settlements reported that only between 25% and 55% of all wastes generated in urban centers are usually collected by urban authorities. While, the United Nations Development Programme (UNDP) has estimated that more than five million people die yearly due to diseases related to poor and ineffective waste collection system (Srinivas, 2002). It is, therefore, necessary for individuals and communities to actively participate in decisions making and payment for waste management services (Kassim, & Ali, 2006).

In Kano Metropolis, large heaps of uncollected wastes are common; roads and streets are littered, drainages, streams, as well as gutters, are blocked with heaps. Dumpsites within the neighborhoods posed serious health threats to the surrounding residents. Thus, uncollected heaps of waste appears to be beyond the control of the urban authorities and is against the principles of sustainable development, (Ali, 2012). Invariably, these scenarios significantly causes flooding, transmitting and spreading of gastrointestinal diseases, such as dysenteries, typhoid fever, cholera, yellow fever, and plague among others, also, serve as a niche for breeding insects-pest such as flies, mosquitoes, cockroaches and rodent vectors, like rats, squirrel and so on, also it produces unpleasant odour which pollutes the atmospheric air.

Like in many other developing countries, waste collection, transportation and disposal is a sole function and responsibilities of urban and local government authorities for environmental protection in Nigeria, (Ogwueleka, 2009). Likewise, in Kano metropolis, waste collection, treatment, transfer, resource recovery, recycling, and disposal is a whole responsibility of the urban authority, that is, Refuse Management and Sanitation Board (REMASAB).

Conversely, waste collection by REMASAB in Kano Metropolis was found to be inadequate, insufficient and ineffective as observed by some studies, for example, Sha'Ato, et al., (2007), reported that less than 40% of households' wastes are collected, and less than 30% is properly disposed of. Waste collection services by the urban authority-REMASAB are ultimately insufficient and inadequate. The operation is only confined within a limited domain of the Government Reserved Areas (G.R.As) and some wealthy domains, (Ali, 2012). Moreover, Nabegu, (2008) shows the

collection coverage of solid waste by REMASAB, indicated that about 7% of the households receive 50% coverage collection, 23% of the people receive 30% of coverage collection and bulk of the residents about 70% have only 20% collection coverage, invariably, this trend hold the belief that households' waste generation in the metropolitan Kano is inversely proportional to the collection capability and capacity of the urban agency, as supported in a different study by Medina, (2003) revealed that households' waste collection services in cities of developing nations is beyond the capacity of the responsible urban authorities.

Consequently, SWM services in Kano Metropolis is always assessed based on the activities and performances of the service provider (REMASAB), which is just one side i.e. the "supply" and ignoring the other side i.e. the "demand" side. Contrary to the situations in the urban centers of advanced countries, private sector operations in waste management are well organized and regulated. In the case of Kano Metropolis in particular and in Nigeria as a whole, such private operators are often not to be closely monitored, most of them were not fully registered neither they were regulated properly to attain sustainability in waste management (Mukhtar, 2008).

The involvement of households who generate substantial amount of waste and often to be the potential victims of the threat posed by uncollected heaps of waste, should be an integral part to actively participate in the decision-making regarding policies on effective and efficient solid waste management, perhaps, this trend would allow private service providers in waste management stream to understand the willingness of the households "to pay" and actively participate. Hence, the important question is that; are the households willing to pay and how much are they willing to pay for an effective and efficient solid waste collection services for them?

According to the National Bureau of Statistics, (2012), Nigeria has an estimated population of about 163 million people of its thirty-six states including federal capital territory, Abuja. Nigeria like most developing countries has the issue of municipal solid management as one of the serious challenges facing her major cities including Kano Metropolis. These urban centers have suffered an unprecedented increase in a waste generation with escalating population figure, as such waste collection has become a serious problem to urban authorities, especially in Kano metropolis.

Furthermore, Kano region over the years has been witnessing substantial population growth due to its Agricultural, Commercial, and Industrial Activities, for instance, the population figure of Kano region was given at about 5.945 in 1963 people, the population figure increased in 1991 to about 8.686 million population, with current estimates of over 12 million population (Olofin et al., 2008). Recorded a 2.9% growth rate and has declined in mortality rate and a rapidly increased fertility rate in the region. In addition, the rate of population growth also increased from 2.51% per annum in 1960's to 3.3% in 1980's, and currently at the rate of 45% per annum and with annual growth rate of 5.5% (Gabriel & Abraham, 2011). These high population and rapid urbanization in the recent time posed a serious problem and confounded

wastes collections and disposals problems in the city. Its huge population, therefore, provide potentials for high households' waste generation, (Thanh, et al., 2011). While high concentration of population in the region is largely found in the Metropolis with about 275,851 households and about 2.83 million people National Population Commission, (N.P.C, 2006).

Thus, waste generation has substantially increased in the municipality over the years due to high population growth and rapid urbanization since early independence in 1960, Nabegu, (2008), shows the waste generation and distribution pattern of solid waste in the metropolis in which households significantly contributes with more than 63%, followed by the commercial sector, 27%, institutional 6%, industrial 3% and others 2% as represented in figure 1.1 below.

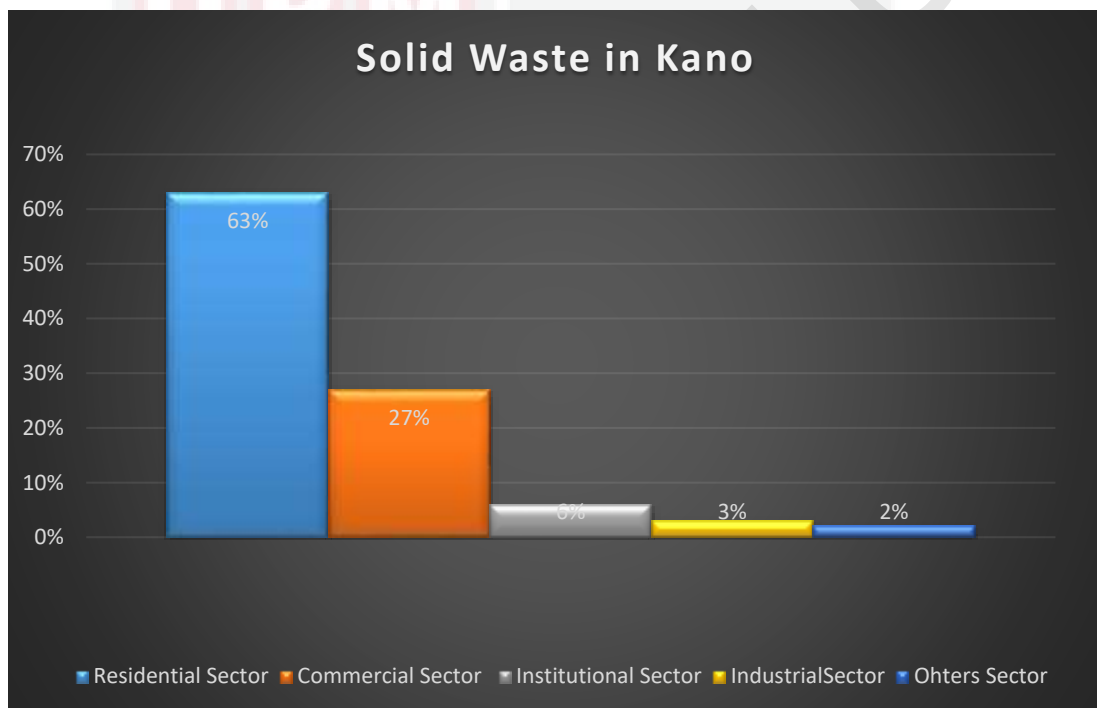


Figure 1.1 : Solid Waste Generation in Kano; Modified Raw Data from Nabegu, 2010

Poor households' waste collection is contributing elements for degrading the environmental quality and human health UNDESA, (2005), in Behzad, et al., (2011). Waste collections used to be the responsibility of municipal authorities in the past (Yusuf, et al., 2007), it is one of the services for which local governments are responsible for, precisely, it is a constitutional responsibility of the local governments in Nigeria (Adepoju, et al., 2013). This obligation is not mutually exclusive, because, none of the local governments in the country that meets the expense of the gigantic financial, technical, administrative and human resource requirements to efficiently carry out this constitutional obligation (Alabi, 2004). Although, government attached

importance to the health and environmental issues a priority in their development objectives, however, their ability to address the problems of waste collection depreciates with time, due to increase in capital costs for plant, equipment, operation and maintenance costs. Bearing in mind the rapid population and spatial growth of most urban areas and cities with increasing level of waste generation and decreasing coverage levels, confronted by ever increasing public demand for improved solid waste collection services (Sule, 1979; Solomon, 2009; Oyeniya, 2011), thus, there is need for the involvement of the private service providers in the provision of municipal solids waste services among households in Kano Metropolis. It is worth noting, however, there are many informal operators as private service providers in SWM or informal refuse collectors such as cart pushers. Therefore, it is deemed feasible to evaluate the household willingness to pay (WTP) for improved solid waste collection services in Kano metropolis. As such, the study examined the general features of the existing solid waste management practices, it estimates the households' willingness potential to pay for solid waste collection services improvement, and determinants influencing households' WTP for improved solid waste collection services were identified.

1.1.1 Geography of Kano Metropolis

The Metropolitan Kano is the capital of Kano State, it is located between longitude 8° and 9° East and latitude 10° and 12° North, it covers an area of about 600 km^2 . It has been observed that, far back to during the time of colonial masters in early 20th century, what constituted Kano city was contained within 17.55 km^2 . Now it has greatly expanded and declared urban area based on the 1978, land use Act, it contained within 60 km^2 , while the built-up metropolitan Kano is contained within 48 km^2 (Marafa, 2012). Indeed, these spatial spread has tremendous increased today undoubtedly. Hence, the location of Kano metropolis is depicted as shown in figure 1.2 below.

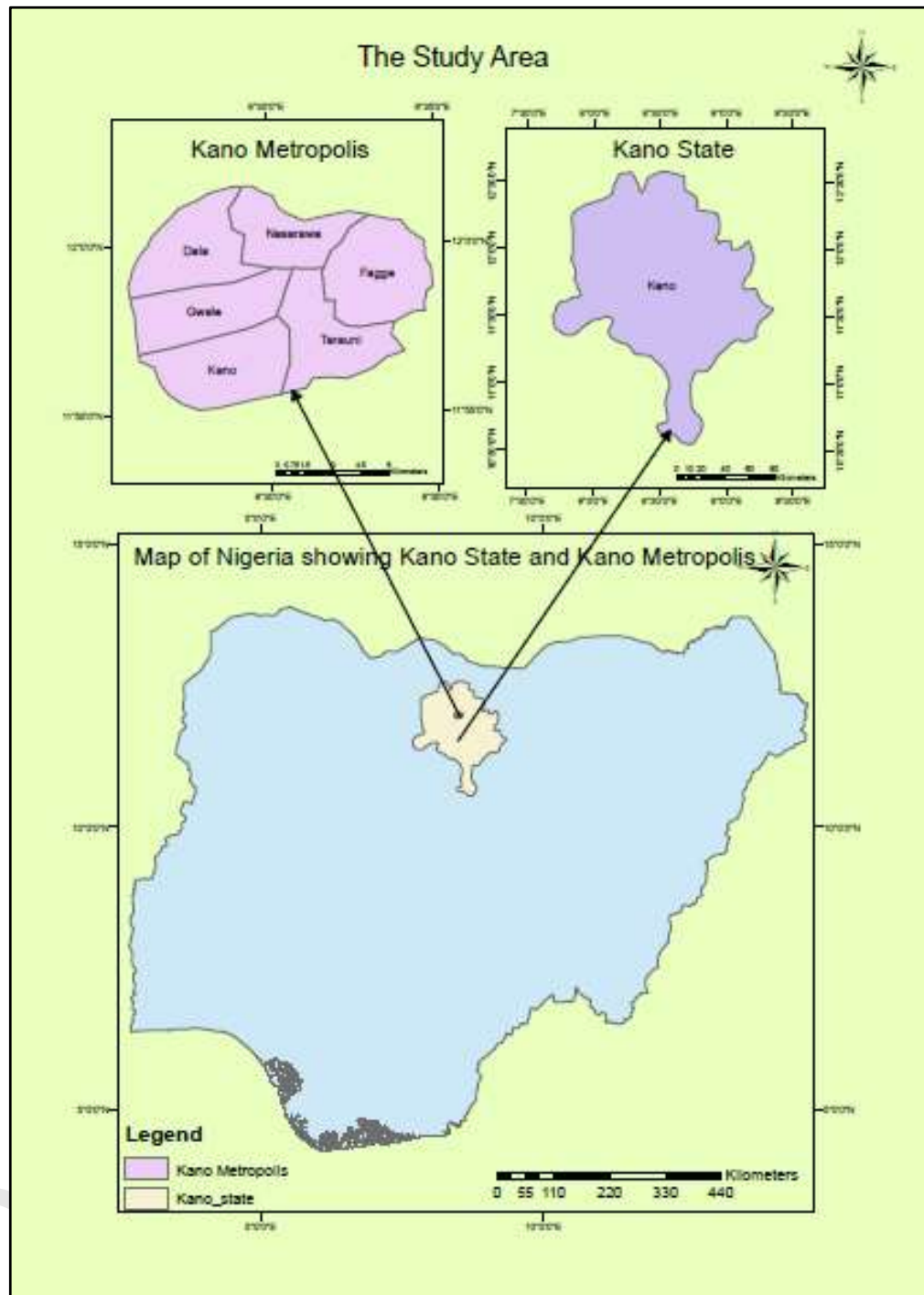


Figure 1.2 : Map of the Study Area (Source: Conceived by the Researcher, 2015)

Kano has been a center of trade and a popular hub of sub-Saharan trade and a rich agricultural region. Presently, the city is a major commercial, industrial, administrative, and religious center (Muhammad & Bichi, 2014). Kano metropolis is the largest city in the Northern part of the country, Nigeria, and ranked third (3rd) among Nigerian cities after Lagos and Ibadan. Kano city consists of Six Metropolitan

Local Government Areas and two dove-tailed out of forty-four Local Government areas in the state including; Municipal, Dala, Gwale, Nassarawa, Tarauni, and Fagge, while, Kumbotso and Ungogo are the dove-tailed Local Governments. Based on the National Population Commission (N.P.C 2006) national population census, Kano state was ranked the most populous state in the country with about 9,384,682 population, while the city itself has a population of about 2, 828, 861 (30.14% of the state population). The population growth, however, results from an influx of people from different places both from within and outside Nigeria due to its commercial and industrial activities. Thus, population growth in the city means an increase in the demand for infrastructural facilities, which seemed to be unattended by the local authorities (Muhammad & Bichi, 2014). The native tribes of the area are Hausa/Fulani, while, non-indigenous tribes were from other parts of the country. For example, non-indigenous tribes from the southern parts of the country include Igbos and Yorubas, while those from the northern parts were Kanuri, Nufe, Igbira, and Mangawa. These tribes in the city have engaged in various economic activities to support their families.

Demographically, metropolitan Kano is significantly influenced by its political development and economic growth, with an estimated population of about 4 million, the growth rate is at 3.9% per annum (Lynch et al., 2001). According to Ahmed and Ali, (2004), urban population expansion certainly puts more pressure on the existing urban infrastructures and services, hence, most of them have been dilapidated and very few were expanded to meet the rapid urban population sprawl.

Furthermore, inadequate housing provisions in Kano metropolis to accommodate for the increasing urban population is an integral issue of its own. Subsequently, development of slums and squalor settlements emerged with no adequate proper planning and mostly inaccessible for an emergency situation. Perhaps, such settlements considerably account for so many urban populace in Kano metropolis. Additionally, such settlements are commonly characterized by congestion, poor sanitation and indiscriminate dumping of refuse as well as general degradation of environmental quality (Ali, 2012).

1.1.2 Household Solid Waste Management Challenges

Medina, (2003); Nabegu, (2010); and Aliu et al., (2014), Observed that solid waste management is a great issue of concern facing developing and even the developed nations of the world, because of its adverse effects on human health and environmental quality. Equally, Nigeria is also battling with the issue of solid waste management like most developing nations, these challenges, however, ranges from poor collection coverage; inadequate transportation system; indiscriminate dumping of refuse and open burning; inadequate funding and institutional problems. Hence, these bottlenecks hamper with an effective and sustainable waste management systems and development.

According to Achankeng, (2003), about 20% to 50% of the annual budget of many urban areas spent on solid waste management, hence, collection is still low. SWM is poor and below standard in most developing nations, it is associated with poor waste storage and collection coverage, lack of accurate data on waste management, indiscriminate waste disposal. Ineffective and inefficient waste management significantly contributed to pollutions of air, water and land, and contaminate sources of water (WHO/UNICEF, 2012).

Urbanization largely due to population growth in Kano region, like in most urban cities of developing nations stand as bottleneck for the urban authorities in providing effective and efficient waste management services (Olanrewaju and Ilemobade, 2009). In which population expansion directly affects land uses pattern eventually if this scenario has not been checked it may lead to the advent of illegal structures creating slums within the neighborhoods and squalor settlements. Hence, it upsets the initial urban plan and eventually hinders effective and efficient waste collection services and brings about indiscriminate dumping of refuse. Such open illegal dumps gradually accumulate and become heap of mountain, releasing unpleasant odour, and serve as a niche for breeding insects and rodent pests. Moreover, illegal open dumps pose serious threat to human health, environmental quality, and contaminate sources of water through leaching from the dumpsites (Karunakaran et al., 2009).

Nabegu, (2010) denoted that waste generation and composition is influenced significantly by social behavior, income, population, season, economic growth, and climate. In Kano metropolis solid waste consists of heterogeneous compositions and mixed of both bio- degradable, and non-biodegradables materials, as well as hazardous and non-hazardous materials, therefore, waste segregation from the source is absolutely absent or during collection for final disposals.

Generally, the magnitude and diversity of solid waste generation and composition is significantly influenced by some factors in developing countries and even the developed ones, such as population expansion, change in consumption styles, and industrialization, climate, culture, seasonal variation and economic growth, Medina, (2003); Lau, (2004); Nhamo, et al., (2009). Comparably, however, solid waste generated per person is lower in developing countries as compared to that of developed countries due to population density, indeed, urban areas significantly differs in the characteristics and composition of waste, however, more developed nations comparably produce less organic waste than developing nations in the urban areas, bio- degradable waste consists of animal and human waste, (Ogwueleka, 2009; Nabegu, 2010).

1.1.3 Households Solid Waste Management Practices

Waste management in Kano metropolis is indeed unsustainable, perhaps it could be link to the inability and incapability of the urban authorities to handle, manage and regulate the dumps of wastes effectively and properly. Despite that curbside (trash

bins) were allocated in some designated points, and along the major streets and roadsides by urban authorities, yet wastes is commonly been dumped openly near houses, in public places, and near river sides, while some are being dumped directly into the near-by rivers or ponds especially in the city and the surrounding suburban areas this may be detrimental not only to the aquatic organisms, also the public health by contaminating the water table (Ogwueleka, 2009; Nabegu, 2010). It revealed that about two-third of the urban residents do not utilize official dumpsites for dumping their waste. Perhaps due to inaccessibility nature of some areas for waste collection because they are unplanned, even in the planned urban areas, waste collection is not immediate and frequent Nabegu, (2008).

1.1.4 Households Waste Collection and Transportation

A major cost in households' SWM services is the collection and transportation issues. Although, waste collection involves primary and secondary waste collections, thus; waste collection from households to the designated neighborhoods collection sites and from these points to the final disposal sites and landfills respectively by the urban authority. Though, there are some private operators in waste management, mainly operates on demand and therefore charges some fees, while, the urban authority handling SWM (REMASAB) operates freely, therefore, charges no fees from the households. Thus, in some place of their operations private operators collect waste from house-to-house on weekly basis, while, in most areas of their operations there is no consistency in waste collection services. Noticeable, among waste collectors, is the informal waste collectors who operate also on the house-to-house basis and scavenging for re-use and recyclable materials, however, scavenging in solid waste may pose a serious threat to the health condition of these scavengers (Chung and Poon, 2001). Informal waste collectors and Scavengers often to litter streets in an attempt to search and sort for some recyclable items from the waste collection containers, and this may lead to poor environmental sanitation and possibly may be a threat to public health (Yuan et al., 2006).

1.1.5 Households Waste Separation and Recycling

Source separation of waste materials reduces the solid waste quantity and ease recycling, it also minimizes the total cost of disposal. However, in Kano region, Nigeria, there is total absence of waste separation among the households from the source of generation, mostly generated waste are mixed off inside one single container, thus, source-separated materials among the household for collection is uncommon practice in Nigeria, particularly in Kano metropolis, Nabegu, (2008), Ogwueleka, (2009). Unlike in advanced nations where solid waste generated are usually separated and collected in a labeled and different containers of different colors, for example, papers, metals, plastics etc. are collected separately, (Chung and Poon, 2001; Yuan and Wang, 2006).

Waste recycling on the other hand, for the technologically advanced nations such as America, Japan, and Germany, because of their sophisticated technology have a tremendous utilization of generated solid waste into recycling, hence, in developing countries such as Nigeria, especially in Kano metropolis, there is a very few recycling rate due to low level in recycling technology, as solid waste recycling is observed to be highly labour and capital intensive, likewise, absent of recycling bins in most urban cities in developing nation like Nigeria prompt residents to dispose of their waste without prior source-separation of generated solid waste, also, re-used materials has low patronage by individuals, as such inadequate market for recyclable materials make recycling of waste materials little worth (Yuan et al., 2006).

Table 1.2 : Waste Generation in Some Urban Cities in Nigeria

City	Population	Agency	Tonnage/month	Density (kg/m ³)	Kg/capita/day
Kano	9,383,534	Refuse Management and Sanitation Board	626,704	1,160	0.56
Lagos	8,029,200	Lagos state management authority	255,556	294	0.63
Ibadan	307,840	Oyo state environmental protection commission	135,391	330	0.51
Kaduna	1,458,900	Kaduna state environmental protection agency	114,443	330	0.51
Port Harcourt	1,053,900	Rivers state environmental protection agency	117,825	300	0.60
Makurdi	249,00	Urban development board	24,242	340	0.48
Onitsha	509,500	Anambra state environmental protection agency	84,137	310	0.53
Nsukka	100,700	Enugu state environmental protection agency	12,000	370	0.48
Abuja	159,900	Abuja environmental protection agency	14,785	280	0.66

(Source: Ogwueleka, 2009).

1.2 Problem Statement

Solid waste generation and its management basically are the two major ways in handling solid waste (Coffey & Coad, 2010). The main focus in dealing with solid waste in Kano Metropolis was vehemently on the management of waste after it has been generated (Nabegu, 2010; Oke, 2008; Babayemi & Dauda, 2009; Agunwamba, 1998). Thus, solid waste management was basically on mere collection and disposal

operational model. Hence, the necessity to properly handle the increasing amount of solid waste generation globally and Kano inclusive, prompt the use of a more strategic and comprehensive approach referred to as integrated solid waste management- the ISWM (UNEP, 2009; Niaura, 2013; Tonglet, et al., 2004). The current SWM strategy in Kano Metropolis of collection and disposal approach causes three major impacts which include public health effects, environmental effects and shortening landfills' lifespan. Thus, it has exposed the city to some environmental threats such as public health problem, loss of aesthetic glory, bio-diversity threatening, an increase in land requirements, and a general reduction in the environmental quality. Consequently, individuals do not take into consideration how much waste they produce. Because the external cost of waste generation such as pollutions to the environment (land, water, and air) are often to be ignored by individuals and accordingly more waste is been generated and disposed of (Ferrara, 2003; Jenkins et al., 2003; Hong, 1999). Indeed, in Kano Metropolis and in some of the urban cities in Nigeria, individuals don't pay a penny for their disposed of wastes, it is perceived as a social responsibility for the government to deal with it. So, costs for waste management are not incurred or reflected in the households' price for a daily activities and thus would generate more waste than if cost was incurred for additional waste generated as in line with its social, health or environmental marginal costs (Zurbrügg and Ahmed, 2003; Linderhof et al., 2001). It is highly noticeable in Kano Metropolis a high competitive land uses (commercial, residential, industrial, administrative etc.) due to its high population growth (Nabegu, 2010).

Rapid population growth and urbanization in the metropolis influences generation of more wastes in the city, for instance, Kano Metropolis generates about 3085 metric tons daily or 1, 080, 5000 tons annually of solid waste. However, on a projection by 2025 this amount would probably raise up to 1,825,000 tons per annum, or 5000 tons daily, hence, more than 60% of municipal solid waste is generated by households (Nabegu, 2010).

This scenario makes it much more a herculean task for REMASAB to properly and effectively deal with heaps of wastes dumped indiscriminately on the major streets and open dumping sites. Thus, SWM in the metropolis is beyond the current capacity of REMESAB to collect the wastes effectively and properly, (Nabegu, 2010; Medina, 2003). However, over the years, inadequate infrastructural facilities, insufficient institutional system, inadequate financial and technical arrangement, have resulted in the inadequate and insufficient level of service provisions in the solid waste collection (SWC) at various communities. This is perhaps due to disparities with the growing rate of waste generation and poor awareness, and perception levels, as well as lack of proper attitude and participation levels among households towards sustainable SWM services in the metropolis. Hence, these, in turn, affects the environment in several ways ranging from drainage blockage, floods, the spread of environmentally related diseases such as Diarrhea, Cholera, Dysentery among others, as well as human displacement and loss of human lives and properties. For example, more than 10,000 cholera epidemic cases were recorded in 2010 alone in West African sub-region, and out of which 550 of them were in Kano metropolis largely associated due to a poor waste collection system (Hutin et al., 2003). Therefore, to address the problem of the

poor waste collection in Kano Metropolis, privatization of SWM market sector was initiated in 1999, basically aimed at attaining an efficient and integrated management system to system for enhancing and improving environmental quality by incorporating private service providers (PSP). Another serious concern is connected to the consumer demand (WTP) with the type of services characteristics along sides with the waste collection options for proper disposal to be offered by the PSPs.

Conceivably, based on the welfare theory, households would support any environmental change conditionally if they were not made worse-off. Thus, this is achievable through solid waste collection services improvement options that could add to a household and it is expected to have an increase in the societal net utility through pollution reduction (air, water and land), avoidance of environmental eyesores, emissions of greenhouse gases (GHGs emissions) from the dumpsites and landfills, requirements for landfills areas, etc. (Eshet et al., 2005).

Part of the important benefits of SWM policy improvement in Kano Metropolis is the big market opportunity for SWM service providers to incorporate PSPs in the provision of SWC services. It is obvious from the proliferation of informal waste collectors in the streets and markets place in the Metropolis. Thus, the existence of potentials for societal benefits is good enough to settle the additional costs accrued as a result of policy change (Morrison, 2000). This is, however, based on Kaldor-Hicks' compensation principle potentially on the interpersonal compensation of utility. In spite of welfare lost to losers due to policy change, hence, this principle states that policy could be 'welfare improving' only if it increases societal benefits where gainers compensate the losers (Kaldor, 1939; Hicks, 1939).

Hence, welfare impact assessment on SWC services produces non-market benefits, has to be computed using economic valuation of non-market benefits (Mitchell and Carson, 1989). Also, designing informed policies on waste collection services which have several potentials non-market service attributes needs understanding on the marginal rate of substitution (MRS) among service attributes (Agimass & Mekonnen, 2011). It would guide policymakers on alternative policies toward SWC services and their respective costs. Additionally, if the welfare gain from SWC services is known, it will give an input in the costs-benefits analysis (CBA) needed to evaluate the feasibility of service options improvement on SWC in the metropolis. This could be done by comparing aggregated welfare gain to the various stakeholders in SWM such as PSPs, REMASAB or other parties and policy-designated managers of MSWM services.

1.3 Research Questions

- i. What is the level of households' awareness, attitudes, perceptions, and participation towards solid waste collection?
- ii. What are the utmost important service attributes of solid waste collection services favored by the households in Kano metropolis?
- iii. Are the households willing to pay for improved SWC services, and what is their mean willingness-to-pay (WTP) for improved SWC services?
- iv. What are the households' preferences on SWC service improvement options to facilitate SWM practices?

1.4 General Objective

The general objective of this study is to estimate economic values and determinants of solid waste collection services among households in Kano Metropolis, Nigeria under the guide of the following specific objectives;

1.5 Specific Objectives

1. To describe households' levels of awareness, attitudes, perceptions, and participation towards sustainable solid waste collection services in Kano Metropolis.
2. To determine the most relevant choice influencing set of service attributes for solid waste collection services among households in Kano Metropolis.
3. To estimate households' mean willingness-to-pay (WTP) for improved solid waste collection services in Kano Metropolis.
4. To determine households' preferences for solid waste collection service improvement options to facilitate SWM practices in Kano Metropolis.

1.6 Significance of the Study

- The findings of this study provided baseline information on the aggregate benefits derivable from households' improved waste collections services not only to REMASAB but also to the prevailing and prospective private investors into the SWM.
- The information on the households' willingness to pay (WTP) provided by this research work unearthed the optimal and socially acceptable estimate of the economic value of households' solid waste collections in Kano metropolis.

- It served as guide to policy regulators for pro-active attitude on environment among the teeming urban populace towards solid waste pollution, attained via the investigation on households' level of awareness, attitudes, perceptions, and participation towards SWC, to guide decision/policy-makers on the possible segments to intervened and focused on its awareness and enlightens campaign and programs..
- It is significance for researchers as early information or as a reference point for future studies by providing a framework for the improvement of current policies and practices on SWC services among households in Kano metropolis.
- It will contribute to the existing micro level of literature on economic valuation of non-market cost/benefits related to SWM which might be applicable in Kano metropolis and similar urban cities elsewhere in developing countries.

1.7 Scope and Limitation of the Study

The research was conducted in Kano Metropolis, North-western, Nigeria, and assessed the economic values and determinants of SWC services among households, the study examined the households' level of awareness, attitude, perceptions, and participation towards sustainable SWC. This study also estimated the mean of household willingness to pay (WTP) for improved solid waste collection services. It also determined the preferences perceived by the households as the most favored ones, and also the households' marginal rate of substitution (MRS) among service attributes of SWC services was determined.

However, this work did not cover a detailed study on private sector participation in municipal SWM centrally due to time constraints and limited resources to cover such sector comprehensively and judiciously.

In this piece of work all bold and concerted efforts were made from the researcher's side to avoid as much as possible any political statement in an attempt to be objective, fair and unbiased, as one of the ethics and integral parts for empirical studies to conduct an objective research across the dimensions involves in a research.

1.8 Organization of the Thesis

This thesis is organized into five (5) chapters. Chapter 1 provides a global overview of solid waste management, and narrowed it down to some details on Nigeria, and then the case study of Kano region particularly the metropolis. It also discusses the problem statement, the objectives which outlined the specific aims of the study and finally, the contributions of the research were discussed under the significance of the study.

Chapter 2 presents the review of the literature on the methods adopted, thus, the stated preference (SP) approach using contingent valuation (CV) and choice experiment were reviewed.

Chapter 3 consists of the conceptual framework of the study, in addition to that, the survey design consisting the survey method, sampling method, sample size, questionnaire design, data collection as well as estimation methods were presented. Moreover, the pre-survey result was presented to address the first specific objective of the research, prior to the conduct of the main survey.

Chapter Four, in this chapter the results from the estimated models were reported, also the findings were discussed and interpreted. The final chapter, chapter five, consists of the summary of research results from the research in concise conclusion, along with the conclusion and implications for policy were also presented. On the whole, limitations of the study were highlighted, along with proposals for further studies.

REFERENCES

- Aadland, D., & Caplan, A. J. (2003). Willingness to pay for curbside recycling with detection and mitigation of hypothetical bias. *American Journal of Agricultural Economics*, (2)(85), 492–502.
- Aadland, D. M., & Caplan, A. J. (1999). Household valuation of curbside recycling. *Journal of Environmental Planning and Management*, 42(6), (6)(42), 781–799.
- Aadland, D. M., & Caplan, A. J. (2006). Curbside recycling: Waste resource or waste of resources? *Journal of Policy Analysis and Management*, (4)(25), 855.
- Achankeng, E. (2003). Globalization, urbanization and municipal solid waste management in Africa. In *the African Studies Association of Australasia and the Pacific 26th Annual Conference*.
- Adam, S. U., Shamsudin, M. N., Sidique, S. F., Abdul Rahim, K., & Radam, A. (2014). Determinants of privatized solid waste management service provision in Lagos. *Journal of Environmental Planning and Management*, 1–23.
- Adam, S. U., Shamsudin, M. N., Sidique, S. F., Rahim, K. A., & Radam, A. (2013). Attribute prioritization in choice experiment pre-design: suggested method and application to solid waste management service improvement. *Journal of Energy Technologies and Policy*, 3(11), 291–298.
- Adam, S. U., Shamsudin, M. N., Sidique, S. F., Abdul Rahim, K., & Radam, A. (2014). Determinants of privatized solid waste management service provision in Lagos. *Journal of Environmental Planning and Management*, 1–23.
- Adama, O. (2012). Urban governance and spatial inequality in service delivery: a case study of solid waste management in Abuja, Nigeria. *Waste Management & Research*.
- Adamowicz, W., Boxall, P., Williams, M., & Louviere, J. (1998). Stated preference approaches for measuring passive use values: choice experiments and contingent valuation. *American Journal of Agricultural Economics*, 1(80), 64–75.
- Adamowicz, W., Louviere, J., & Williams, M. (1994). Combining revealed and stated preference methods for valuing environmental amenities. *Journal of Environmental Economics and Management*, 3(26), 271–292.
- Adamowicz, W., Swait, J., Boxall, P., Louviere, J., & Williams, M. (1997). Perceptions versus objective measures of environmental quality in combined revealed and stated preference models of environmental valuation. *Journal of Environmental Economics and Management*, 1(32), 65–84.

- Adebo, G. M., & Ajewole, O. C. (2012). Gender and the urban environment: Analysis of willingness to pay for waste management disposal in Ekiti-State, Nigeria. *American International Journal of Contemporary Research*, (5)(2), 228–236.
- Adepitan, A. O. (2010). Waste Management Practice in Nigeria (Lagos State Model 1999-2009). *JIMSIF Limited, Lagos*, 1–98.
- Adepoju, A. A., & Salimonu, K. K. (2013). Household willingness to pay for improved solid waste management in Osun state, Nigeria. *Plenary Paper Session I: Water*, 51.
- Adeyinka, M. A., Bankole, P. O., & Olaye, S. (2005). Environmental statistics: situation in Federal Republic of Nigeria. Country Summary WASH Factsheet. Abuja: UN.
- Afroz, R., & Masud, M. M. (2011). Using a contingent valuation approach for improved solid waste management facility: Evidence from Kuala Lumpur,. *Waste Management*, (4)(31), 800–808.
- Afroz, R., Hanaki, K., & Hasegawa-Kurusu, K. (2009). Willingness to pay for waste management improvement in Dhaka city, Bangladesh. *Journal of Environmental Management*, 1(90), 492–503.
- Afroz, R., Masud, M. M., Akhtar, R., & Duasa, J. B. (2013). Survey and analysis of public knowledge, awareness and willingness to pay in Kuala Lumpur, Malaysia—a case study on household WEEE management. *Journal of Cleaner Production*, (52), 185–193.
- Agamuthu, P., & Hansen, J. a. (2007). Universities in capacity building in sustainable development: focus on solid waste management and technology. *Waste Management & Research*, 25(3), 241–246.
- Agimass, F., & Mekonnen, A. (2011). Low-income fishermen's willingness-to-pay for fisheries and watershed management: An application of choice experiment to Lake Tana, Ethiopia. *Ethiopia. Ecological Economics*, 71, (71), 162–170.
- Agunwamba, J. (1998). Solid Waste Management in Nigeria: Problems and Issues. *Environmental Management*, 22(6), 849–56.
- Ahlheima, M., & Buchholzb, W. (2000). WTP or WTA-Is that the Question?. Reflections on the Difference between “Willingness to Pay” and “Willingness to Accept”, *Journal of Environmental Economics and Management*, 1(32), 65–84.
- Ahmed, S. A., & Ali, M. (2004). Partnerships for solid waste management in developing countries: Linking theories to realities. *Habitat International*, 28(3), 467–479.

- Ahmed, S. U., & Gotoh, K. (2006). *Cost-Benefit Analysis of Environmental Goods by Applying the Contingent Valuation Method*. Springer Japan.
- Ajzen, I., & Driver, B. L. (1991). "Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the theory of planned behavior." *Leisure Sciences*, (3)(13), 185–204.
- Ajzen, I., & Driver, B. L. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research*, (3)(24), 207.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, (5)(84), 888.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. *Pringer Berlin Heidelberg*, 11–39.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, (2)(50), 179–211.
- Ajzen, I. (2011). The theory of planned behaviour: reactions and reflections. *Psychology & Health*, (9)(26), 1113–1127.
- Alabi, M. (2004). *Waste products survey for identification and quantification of different wastes generated in Nigeria*. University of Ibadan., Alberini, A., & Cooper, J. (2000). *Applications of the contingent valuation method in developing countries: A survey*.
- Alberini, A. (1995a). Efficiency vs bias of willingness-to-pay estimates: bivariate and interval-data models. *Journal of Environmental Economics and Management*, (2)(29), 169–180.
- Alberini, A. (1995b). Optimal designs for discrete choice contingent valuation surveys: Single-bound, double-bound, and bivariate models. *Journal of Environmental Economics and Management*, (3)(28), 287–306.
- Alberini, A. (1995c). Testing willingness-to-pay models of discrete choice contingent valuation survey data. *Land Economics*, 83–95.
- Aldrich, J. H., & Nelson, F. D. (1984). *Linear probability, logit, and probit models* (Vol. 45). Sage.
- Alemu, M. H., Mørkbak, M. R., Olsen, S. B., & Jensen, C. L. (2013a). Attending to the reasons for attribute non-attendance in choice experiments. *Environmental and Resource Economics*, (3)(54), 333–359.
- Alemu, M. H., Mørkbak, M. R., Olsen, S. B., & Jensen, C. L. (2013b). Attending to the reasons for attribute non-attendance in choice experiments. *Environmental and Resource Economics*, (3)(54), 333–359.

- Ali, A. F. (2012). *Groundwater Pollution Threats of Solid Waste Disposal in Urban Kano , Nigeria*.
- Aliu, I. R., Adeyemi, O. E., & Adebayo, A. (2014). Municipal household solid waste collection strategies in an African megacity: Analysis of public private partnership performance in Lagos. *Waste Management & Research : The Journal of the International Solid Wastes and Public Cleansing Association, ISWA*, 32(9 Suppl), 67–78.
- Alpizar, F., Carlsson, F., & Martinsson, P. (2003). Using choice experiments for non-market valuation. *Economic issues-stoke on trent*, 1 (8), 83–110.
- Alvarez-Farizo, B., Hanley, N., Barberan, R., & Lazaro, A. (2007). Choice modeling at the “market stall”: Individual versus collective interest in environmental valuation. *Ecological Economics*, 4(60), 743–751.
- Amirnejad, H., Khalilian, S., Assareh, M. H., & Ahmadian, M. (2006). Estimating the existence value of north forests of Iran by using a contingent valuation method. *Ecological Economics*, 4(58), 665–675.
- Arrow, K., Solow, R., portney, P.R., Learner, E.E., Radner, R., and Schuman, H. (1993). *Report of the NOAA panel on contingent valuation*.
- Awunyo-Vitor, D., Ishak, S., & Seidu Jasaw, G. (2013). Urban Households’ Willingness to Pay for Improved Solid Waste Disposal Services in Kumasi Metropolis, Ghana. *Urban Studies Research*,.
- Aziz, R. F. (2013). Ranking of delay factors in construction projects after Egyptian revolution. *Alexandria Engineering Journal*, (3)(52), 387–406.
- Babaei, A. A., Alavi, N., Goudarzi, G., Teymouri, P., Ahmadi, K., & Rafiee, M. (2015). Household recycling knowledge, attitudes and practices towards solid waste management. *Resources, Conservation and Recycling*, (102), 94–100.
- Babayemi, J. O., & Dauda, K. T. (2009). Evaluation of solid waste generation, categories and disposal options in developing countries: a case study of Nigeria. *Journal of Applied Sciences and Environmental Management*, (3)(13).
- Babbie, E. R. (2013). *The basics of social research*. Cengage Learning.
- Balana, B. B., Catacutan, D., & Mäkelä, M. (2013). Assessing the willingness to pay for reliable domestic water supply via catchment management: results from a contingent valuation survey in Nairobi City, Kenya. *Journal of Environmental Planning and Management*, (10)(56), 1511–1531.
- Banga, M., Lokina, R. B., & Mkenda, A. F. (2011). Households’ willingness to pay for improved solid waste collection services in Kampala city, Uganda. *The Journal of Environment & Development*, (4)(20), 428–448.

- Barbier, E. B., Acreman, M., & Knowler, D. (1997). *Economic valuation of wetlands: a guide for policy makers and planners*.
- Bari, N. A. A., Yusuff, R., Ismail, N., Jaapar, A., & Ahmad, R. (2012). Factors Influencing the Construction Cost of Industrialised Building System (IBS) Projects. *Procedia-Social and Behavioral Sciences*, (35), 689–696.
- Barro, S. C., Manfredo, M. J., Brown, T. C., & Peterson, G. L. (1996). Examination of the predictive validity of CVM using an attitude-behavior framework. *Society & Natural Resources*, (2)(9), 111–124.
- Barton, D. N., & Bergland, O. (2010). Valuing irrigation water using a choice experiment: an “individual status quo” modelling of farm specific water scarcity. *Environment and Development Economics*, 3(15), 321–340.
- Basili, M., Di Matteo, M., & Ferrini, S. (2006). Analysing demand for environmental quality: A willingness to pay/accept study in the province of Siena (Italy). *Waste Management*, (3)(26), 209–219.
- Bateman, I., Willis, K., & Garrod, G. (1994). Consistency between contingent valuation estimates: a comparison of two studies of UK National Parks. *Journal of the Regional Studies Association*, (5)(28), 457–474.
- Bateman, I. J., & Munro, A. (2009). Household versus individual valuation: What’s the difference? *Environmental and Resource Economics*, 1(43), 119–135.
- Bateman, I. J., & Turner, R. K. (1992). *Evaluation of the environment: the contingent valuation method*. CSERGE, School of Environmental Sciences, University of East Anglia.
- Bateman, I. J., Carson, R. T., Day, B., Hanemann, M., Hanley, N., Hett, T., ... & Swanson, J. (2002). *Economic valuation with stated preference techniques: a manual*. *Economic valuation with stated preference techniques: a manual*. Edward Elgar Publishing.
- Behzad, N., Ahmad, R., Saied, P., Elmira, S., & Mazlin, M. (2011). Challenges of Solid Waste Management in Malaysia. *Research Journal of Chemistry and Environment*, 12(15), 650–652.
- Ben-Akiva, M. E., & Lerman, S. R. (1985). *Discrete choice analysis: theory and application to travel demand* (Vol. 9). Cambridge, MA: The MIT Press.
- Bennett, J., & Birol, E. (Eds.). (2010). *Choice experiments in developing countries: Implementation, challenges and policy implications*. Cheltenham, UK: Edward Elgar.
- Bennett, J., & Blamey, R. (Eds.). (2001). *The choice modelling approach to environmental valuation*. Edward Elgar Publishing.

- Bennett, J., & Blamey, R. (Eds.). (2001). *The choice modelling approach to environmental valuation*. Edward Elgar Publishing.
- Birol, E., & Cox, V. (2007). Using choice experiments to design wetland management programmes: The case of Severn Estuary Wetland, UK. *Journal of Environmental Planning and Management*, 3(50), 363–380.
- Birol, E., Karousakis, K., & Koundouri, P. (2006). Using a choice experiment to account for preference heterogeneity in wetland attributes: the case of Cheimaditida wetland in Greece. *Ecological Economics*, 1(60), 145–156.
- Bishop, R. C., & Heberlein, T. A. (1979). Measuring values of extramarket goods: Are indirect measures biased?. *American Journal of Agricultural Economics*, 926–930.
- Bishop, R. C., & Heberlein, T. A. (1989). The Contingent Valuation Method. In Economic Valuation of Natural Resources: Issues, Theory and Application, eds. In V. J. Rebecca L. Johnson and Cary (Ed.), *The Contingent Valuation Method. In Economic Valuation of Natural Resources: Issues, Theory and Application*, (eds). Boulder, Colorador: West Views Press.
- Biswas, D., & Venkatachalam, L. (2015). Farmers’ Willingness to Pay for Improved Irrigation Water—A Case Study of Malaprabha Irrigation Project in Karnataka, India. *Water Economics and Policy*, (01)(1).
- Blackburn, R. M., Jarman, J., & Brooks, B. (2000). The puzzle of gender segregation and inequality: A cross-national analysis. *European Sociological Review*, (2)(16), 119–135.
- Blaikie, N. (2003). Analyzing quantitative data: From description to explanation. *Sage*, 1–353.
- Blaine, T. W., Lichtkoppler, F. R., Jones, K. R., & Zondag, R. H. (2005). An assessment of household willingness to pay for curbside recycling: A comparison of payment card and referendum approaches. *Journal of Environmental Management*, (1)(76), 15–22.
- Blamey, R. K., Bennett, J. W., Louviere, J. J., Morrison, M. D., & Rolfe, J. (2000). A test of policy labels in environmental choice modelling studies. *Ecological Economics*, 2(32), 269–286.
- Bliemer, M. C., & Rose, J. M. (2011). Experimental design influences on stated choice outputs: an empirical study in air travel choice. *Transportation Research Part A: Policy and Practice*, (1)(45), 63–79.
- Bockstael, N. E., & McConnell, K. E. (1993). Public goods as characteristics of non-market commodities. *The Economic Journal*, 1244–1257.

- Böhm, M., Collen, B., Baillie, J. E., Bowles, P., Chanson, J., Cox, N., ... & Rhodin, A. G. (2013). The conservation status of the world's reptiles. *Biological Conservation*, (157), 372–385.
- Bolt, Katherine; Ruta, Giovanni; Sarraf, M. (2005). *Estimating the cost of environmental degradation : a training manual in English, French and Arabic*. Washington, DC: World Bank.
- Boxall, P. C., Adamowicz, W. L., Swait, J., Williams, M., & Louviere, J. (1996). A comparison of stated preference methods for environmental valuation. *Ecological Economics*, 3(18), 243–253.
- Boyle, K. J., & Bishop, R. C. (1988). Welfare measurements using contingent valuation: a comparison of techniques. *American Journal of Agricultural Economics*, (1)(70), 20–28.
- Boyle, K. J., Welsh, M. P., & Bishop, R. C. (1988). “Validation of empirical measures of welfare change: Comment”. *Land Economics*, (1)(64), 94–98.
- Bradley, M. (1988). Realism and adaptation in designing hypothetical travel choice concepts. *Journal of Transport Economics and Policy*, 121–137.
- Brookshire, D. S., Thayer, M. A., Schulze, W. D., & d'Arge, R. C. (1982). Valuing public goods: a comparison of survey and hedonic approaches. *American Economic Review*, 165–177.
- Bryan, S., & Dolan, P. (2004). Discrete choice experiments in health economics. *The European Journal of Health Economics, Formerly: HEPAC*, (3)(5), 199–202.
- Butu, A. W., & Mshelia, S. S. (2014). Municipal solid waste disposal and environmental issues in kano metropolis, nigeria. *British Journal of Environmental Sciences*, 1(2), 1–16.
- Calia, P., & Strazzer, E. (2000). Bias and efficiency of single versus double bound models for contingent valuation studies: a Monte Carlo analysis. *Applied Economics*, (10)(32), 1329–1336.
- Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: methods and applications*. Cambridge University Press.
- Cameron, T. A., & Quiggin, J. (1994). Estimation Using Contingent Valuation Data from a Dichotomous Choice With Follow-up Questionnaire. *Journal of Environmental Economics and Management*, (27), 218–234.
- Cameron, T. . (1988). New Paradigm for Valuing Non-Market Goods Using Referendum Data: Maximum Likelihood Estimation by Censored Logistic Regression. *Journal of Environmental Economics and Management*, (15), 355–379.

- Cameron, T. A. (1992). Nonuser resource values. *American Journal of Agricultural Economics*, 5(74), 1133–1137.
- Caplan, A. J., Grijalva, T. C., & Jakus, P. M. (2002). Waste not or want not? A contingent ranking analysis of curbside waste disposal options. *Ecological Economics*, (2)(43), 185–197.
- Carlsson, F., & Martinsson, P. (2001). Do hypothetical and actual marginal willingness to pay differ in choice experiments?: Application to the valuation of the environment. *Journal of Environmental Economics and Management*, 2(41), 179–192.
- Carson, R. T., Flores, E.N., & Meade, F. N. (2001). Contingent Valuation: Controversies and Evidence. *Environmental and Resource Economics*, (19), 173–210.
- Carson, R. T., & Steinberg, D. (1990). Experimental design for discrete choice voter preference surveys. *American Statistical Association*, 821–822.
- Carson, R. (1985). *Three essays on contingent valuation (welfare economics, non-market goods, water quality)*. University of California, Berkeley.
- Casey J.F, Kahn J.R, and R. A. (2005). Willingness to pay for improved water services in Manausa. *Journal of Ecological Economics*, (58), 365–372.
- Challcharoenwattana, A., & Pharino, C. (2016). Wishing to finance a recycling program? Willingness-to-pay study for enhancing municipal solid waste recycling in urban settlements in Thailand. *Habitat International*, 51, 23-30.
- Chawla, L. (1998). Significant life experiences revisited: A review of research on sources of environmental sensitivity. *The Journal of Environmental Education*, (3)(29), 11–21.
- Cheng, T. M., & Wu, H. C. (2015). How do environmental knowledge, environmental sensitivity, and place attachment affect environmentally responsible behavior? An integrated approach for sustainable island tourism. *Journal of Sustainable Tourism*, (4)(23), 557–576.
- Cheraghi-Sohi, S., Hole, A. R., Mead, N., McDonald, R., Whalley, D., Bower, P., & Roland, M. (2008). What patients want from primary care consultations: a discrete choice experiment to identify patients' priorities. *The Annals of Family Medicine*, 2(6), 107–115.
- Choe, K., Whittington, D., & Lauria, D. T. (1996). The economic benefits of surface water quality improvements in developing countries: a case study of Davao, Philippines. *Land Economics*, 519–537.

- Chowdhury, A. N. (1996). *Let grassroots speak: people's participation, self-help groups, and NGOs in Bangladesh*. Dhaka: University Press Limited.
- Chung, S. S., & Poon, C. S. (2001). A comparison of waste-reduction practices and new environmental paradigm of rural and urban Chinese citizens. *Journal of Environmental Management*, 1(62), 3–19.
- Clayton, S., & Myers, G. (2009). *Conservation psychology. Understanding and promoting human care for nature*. EUA: Wiley-Blackwell.
- Coast, J., & Horrocks, S. (2007). Developing attributes and levels for discrete choice experiments using qualitative methods. *Journal of Health Services Research & Policy*, (1)(12), 25–30.
- Coffey, M., & Coad, A. (2010). *Collection of municipal solid waste in developing countries*.
- Cohen, J. M., & Uphoff, N. T. (1977). *Rural development participation: concepts and measures for project design, implementation and evaluation*.
- Cohen, J. M., & Uphoff, N. T. (1980). Participation's place in rural development: seeking clarity through specificity. *World Development*, (3)(8), 213–235.
- Cohen, J. (2013). *Statistical Power Analysis for the Behavioral Sciences*. Routledge Academic.
- Collins, A., O'Doherty, R., & Snell, M. C. (2006). Household participation in waste recycling: Some national survey evidence from Scotland. *Journal of Environmental Planning and Management*, (1)(49), 121–140.
- Cooper, J. C., Hanemann, M., & Signorello, G. (2002). One-and-one-half-bound dichotomous choice contingent valuation. *Review of Economics and Statistics*, (4)(84), 742–750.
- Cooper, C. L. (1998). The changing nature of work [1]. *Community, Work & Family*, (3)(1), 313–317.
- Cooper, J. C. (1993). Optimal Bid Selection for Dichotomous Choice Contingent Valuation Surveys. *Journal of Environmental Economics and Management*.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- Croke, K., Fabian, R., & Brenniman, G. (1986). Estimating the value of natural open space preservation in an urban area. *Journal of Environmental Management*, 4(23), 317–324.

- Cummings, R. G., Brookshire, D. S., Bishop, R. C., & Arrow, K. J. (1986). *Valuing environmental goods: an assessment of the contingent valuation method*. Totawa, New Jersey: Rowman & Littlefield Pub Incorporated.
- Czajkowski, M., Kądziela, T., & Hanley, N. (2014). We want to sort! Assessing households' preferences for sorting waste. *Resource and Energy Economics*, (1)(36), 290–306.
- Danso, G., Drechsel, P., Fialor, S., & Giordano, M. (2006). Estimating the demand for municipal waste compost via farmers' willingness-to-pay in Ghana. *Waste Management*, (12)(26), 1400–1409.
- Das, S., Birol, E., & Bhattacharya, R. N. (2010). *Informing Efficient Solid Waste Management to Improve Local Environmental Quality and Public Health in West Bengal, India. Choice Experiments in Developing Countries: Implementation, Challenges and Policy Implications*. USA: Edward Elgar Publishing.
- David, E. L. (1971). Public perceptions of water quality. *Water Resources Research*, 3(7), 453–457.
- de Ayala, A., Hoyos, D., & Mariel, P. (2015). Suitability of discrete choice experiments for landscape management under the European Landscape Convention. *Journal of Forest Economics*.
- de Bekker-Grob, E. W., Ryan, M., & Gerard, K. (2012a). Discrete choice experiments in health economics: a review of the literature. *Health Economics*, 2(21), 145–172.
- de Bekker-Grob, E. W., Ryan, M., & Gerard, K. (2012b). Discrete choice experiments in health economics: a review of the literature. *Health Economics*, (2)(21), 145–172.
- DeShazo, J. R., & Fermo, G. (2002). Designing choice sets for stated preference methods: the effects of complexity on choice consistency. *Journal of Environmental Economics and Management*, (1),(44), 123–143.
- Desvousges, W. H., Johnson, F. R., & Banzhaf, H. S. (1998). Environmental policy analysis with limited information: principles and applications of the transfer method. *Edward Elgar Publishing*.
- Diamond, P. A., & Hausman, J. A. (1994). Contingent valuation: Is some number better than no number?. *The Journal of Economic Perspectives*, (4)(8), 45–64.
- Dolisca, F., McDaniel, J. M., & Teeter, L. D. (2007). Farmers' perceptions towards forests: A case study from Haiti. *Forest Policy and Economics*, (6),(9), 704–712.
- Drost, E. A. (2011). Validity and reliability in social science research. *Education Research and Perspectives*, 38(1), (1)(38), 105.

- Dubourg, W. R., Jones-Lee, M. W., & Loomes, G. (1994). Imprecise preferences and the WTP-WTA disparity. *Journal of Risk and Uncertainty*, (2)(9), 115–133.
- Duffield, J. W., & Patterson, D. A. (1991). Inference and optimal design for a welfare measure in dichotomous choice contingent valuation. *Land Economics*, (2)(67), 225–239.
- Eberle, W. D., & Hayden, F. G. (1991). Critique of contingent valuation and travel cost methods for valuing natural resources and ecosystems. *Journal of Economic Issues*, 649–687.
- El-Sayegh, S. M. (2008). Risk assessment and allocation in the UAE construction industry. *International Journal of Project Management*, (4)(26), 431–438.
- Eshet, T., Ayalon, O., & Shechter, M. (2005). A critical review of economic valuation studies of externalities from incineration and landfilling. *Waste Management & Research*, (6)(23), 487–504.
- Eshet, T., Ayalon, O., & Shechter, M. (. (2006). Valuation of externalities of selected waste management alternatives: A comparative review and analysis. *Resources, Conservation and Recycling*, (4)(46), 335–364.
- Ezebilo, E. E. (2011a). Economic valuation of private sector waste management services. *Journal of Sustainable Development*, (4)(4), p38.
- Ezebilo, E. E. (2011b). Economic valuation of private sector waste management services. *Journal of Sustainable Development*, (4)(4), p38.
- Ezebilo, E. E., & Animasaun, E. D. (2012). Public-private sector partnership in household waste management as perceived by residents in south-west Nigeria. *Waste Management & Research*, 30(8), 781–788.
- Farber, S. C., Costanza, R., & Wilson, M. A. (2002). Economic and ecological concepts for valuing ecosystem services. *Ecological Economics*, (3)(41), 375–392.
- Ferrara, I. (2003). Differential provision of solid waste collection services in the presence of heterogeneous households. *Environmental and Resource Economics*, (2)(26), 211–226.
- Ferrini, S., & Scarpa, R. (2005). *Experimental designs for environmental valuation with choice-experiments: a Monte Carlo investigation*. (No. 8/05).
- Field, A. (2009). *Discovering statistics using SPSS*. (3rd edition, Ed.). Sage publications.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. (4th editio). London: Sage publications Ltd.

- Finger, M. (1994). *NGOs and transformation: beyond social movement theory. Environmental NGOs in world politics: Linking the local and the global*, London, Routledge.
- Fischer, A., & Glenk, K. (2011). One model fits all?—On the moderating role of emotional engagement and confusion in the elicitation of preferences for climate change adaptation policies. *Ecological Economics*, 6(70), 1178–1188.
- Font, A. R. (2000). Mass tourism and the demand for protected natural areas: a travel cost approach. *Journal of Environmental Economics and Management*, (1)(39), 97–116.
- Fonta, W. M., Ichoku, H. E., Ogujiuba, K. K., & Chukwu, J. O. (2008). Using a contingent valuation approach for improved solid waste management facility: Evidence from Enugu State,. *Journal of African Economies*, (2)(17), 277–304.
- Foster, B. A. (1989). Valuing Recreational Outdoor Activity: A Methodolical Survey. *Journal of Leisure Research*, 2(21), 181–201.
- Fowkes, T., & Wardman, M. (1988). The design of stated preference travel choice experiments: with special reference to interpersonal taste variations. *Journal of Transport Economics and Policy*, 27–44.
- Freeman III, A. M. (1992). The measurement of environmental and resource values. *Resources for the Future*, Washington.
- Frimpong, J. A. (2013). *Housing And Household Characteristics And Payment For Solid Waste Disposal In The Greater Accra Region, Ghana*. University of Ghana.
- Fujii, S., & Gärling, T. (2003). “Application of attitude theory for improved predictive accuracy of stated preference methods in travel demand analysis.” *Transportation Research Part A: Policy and Practice*, (4)(37), 389–402.
- Gabriel, F., & Abraham, T. (2011). Urbanization , housing and infrastructural facilities in lagos , nigeria. *Dimensi (Journal of Architecture and Built Environment)*, (1)(37), 9.
- Gaglias, A., Mirasgedis, S., Tourkolias, C., & Georgopoulou, E. (2016). Implementing the Contingent Valuation Method for supporting decision making in the waste management sector. *Waste Management*, 53, 237-244.
- Gärling, T., Fujii, S., Gärling, A., & Jakobsson, C. (2003). Moderating effects of social value orientation on determinants of proenvironmental behavior intention. *Journal of Environmental Psychology*, (1)(23), 1–9.
- Garrod, G., & Willis, K. G. (1999). *Economic valuation of the environment: methods and case studies*. Cheltenham: Edward Elgar Publishing.

- Gen Sheldon. (2004). *Mete-Analysis of Enviromental Valuation Studies*. Georgia Institute of Technology.
- Giraud, K. L., Loomis, J. B., & Cooper, J. C. (1993). Optimal bid selection for dichotomous choice contingent valuation surveys. *Journal of Environmental Economics and Management*, (1),(24), 25–40.
- Giraud, K. L., Loomis, J. B., & Cooper, J. C. (2001). A comparison of willingness to pay estimation techniques from referendum questions. *Environmental and Resource Economics*, ., (4)(20), 331–346.
- Giusti, L. (2009). review of waste management practices and their impact on human health. *Waste Management*, (8)(29), 2227–2239.
- Glasgow, R. E., & Emmons, K. M. (2007). How can we increase translation of research into practice? Types of evidence needed. *Annu. Rev. Public Health*, (28,), 413–433.
- Grosjean, P., Kontoleon, A., & Zhang, S. (2010). *Assessing the Sustainability of the Sloping Land Conversion Programme: A Choice Experiment Approach. Choice Experiments in Developing Countries: Implementation, Challenges and Policy Implications*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar.
- Guber, D. L. (1996). Environmental concern and the dimensionality problem: A new approach to an old predicament. *Social Science Quarterly*, 644–662.
- Guerrero, L. A., Maas, G., & Hogland, W. (2013). Solid waste management challenges for cities in developing countries. *Waste Management*, (1)(33), 220–232.
- Guikema, S. D. (2005). An estimation of the social costs of landfill siting using a choice experiment. *Waste Management*, (3)(25), 331–333.
- Guttman, R., Castle, R., & Fiebig, D. G. (2009). *Use of discrete choice experiments in health economics: An update of the literature* (No. 2009/2).
- Haab, T. C., & McConnell, K. E. (2002a). *Valuing environmental and natural resources: the econometrics of non-market valuation*. Edward Elgar Publishing.
- Haab, T. C., & McConnell, K. E. (2002b). *Valuing environmental and natural resources: the econometrics of non-market valuation*. Edward Elgar Publishing.
- Hair, J. F. (2009). *Multivariate data analysis*. (7th editio). Upper Saddle River: prentice Hall International Inc.
- Hall, J., Viney, R., Haas, M., & Louviere, J. (2004). Using stated preference discrete choice modeling to evaluate health care programs. *Journal of Business Research*, (9)(57), 1026–1032.

- Hanemann, M., Loomis, J., & Kanninen, B. (1991). Statistical efficiency of double-bounded dichotomous choice contingent valuation. *American Journal of Agricultural Economics*, (4)(73), 1255–1263.
- Hanemann, M. (1991). Willingness to Pay and Willingness to Accept: How Much Can Differ? *American Economic Review*, (81), 635–647.
- Hanemann, W. M. (1984). Welfare evaluations in contingent valuation experiments with discrete responses. *American Journal of Agricultural Economics*, 3(66), 332–341.
- Hanemann, W. M. (1999). Welfare Analysis With discrete Choice Models. A working paper, 435–462.
- Hankin, D. G. (1984). Multistage sampling designs in fisheries research: applications in small streams. *Canadian Journal of Fisheries and Aquatic Sciences*, (11)(41), 1575–1591.
- Hanley, N., Barbier, E. B., & Barbier, E. (2009). *Pricing nature: cost-benefit analysis and environmental policy*. Edward Elgar Publishing.
- Hanley, N., MacMillan, D., Wright, R. E., Bullock, C., Simpson, I., Parsisson, D., & Crabtree, B. (1998). Contingent valuation versus choice experiments: estimating the benefits of environmentally sensitive areas in Scotland. *Journal of Agricultural Economics*, 1(49), 1–15.
- Hanley, N., Mourato, S., & Wright, R. E. (2001). Choice modelling approaches: a superior alternative for environmental valuation?. *Journal of Economic Surveys*, 3(13), 435–462.
- Hanley, N., Spash, C., & Walker, L. (1995). Problems in valuing the benefits of biodiversity protection. *Environmental and Resource Economics*, 3(5), 249–272.
- Hanley, N., Wright, R. E., & Adamowicz, V. (1998). Using choice experiments to value the environment. *Environmental and Resource Economics*, 3(11), 413–428.
- Hanley, N., Wright, R. E., & Koop, G. (2002). Modelling recreation demand using choice experiments: climbing in Scotland. *Environmental and Resource Economics*, 3(22), 449–466.
- Hasan-Basri, B., & Abd Karim, M. Z. (2016). Can Benefits in Recreational Parks in Malaysia Be Transferred? A Choice Experiment (CE) Technique. *International Journal of Tourism Research*, (1),(18), 19–26.
- Hassan, M. ., Chong, T. ., M.Rhman, Salleh, M. ., Zakaria, Z., & Awang, M. (2001). Solid Waste Management in Southeast Asian Countries With Special Attention To Malaysia. *Eighth International Waste Management and Landfill Symposium*.

- Heberlein, T. A., & Bishop, R. C. (1986). Assessing the validity of contingent valuation: Three field experiments. *Science of the Total Environment*, (56), 99–107.
- Hensher, D. A., & Greene, W. H. (2003). The mixed logit model: the state of practice. *Transportation*, (2),(30), 133–176.
- Hensher, D. A., Rose, J. M., & Greene, W. H. (2005). *Applied choice analysis: a primer*. Cambridge University Press.
- Hess, S., & Hensher, D. A. (2013). Making use of respondent reported processing information to understand attribute importance: a latent variable scaling approach. *Transportation*, (2)(40), 397–412.
- Hess, S. (2014). Impact of unimportant attributes in stated choice surveys. *EJTIR*, (4)(14), 349–361.
- Hicks, J. R. (1939). The foundations of welfare economics. *The Economic Journal*, 696–712.
- Hoehn, J. P., & Randall, A. (1987). A satisfactory benefit cost indicator from contingent valuation. *Journal of Environmental Economics and Management*, 3(14), 226–247.
- Hoehn, J. P., & Randall, A. (1989). Too many proposals pass the benefit cost test. *The American Economic Review*, 544–551.
- Hoetker, G. (2007). The use of logit and probit models in strategic management research: Critical issues. *Strategic Management Journal*, (4),(28), 331–343.
- Hoevenagel, R. (1994). *The Contingent Valuation Method: Scope and Validity*. Vrije, University, Amsterdam, Netherland.
- Hong, S. (1999). The effects of unit pricing system upon household solid waste management: The Korean experience. *Journal of Environmental Management*, (1)(57), 1–10.
- Hoornweg, Daniel; Bhada-Tata, P. (2012). *What a Waste : A Global Review of Solid Waste Management*. World Bank, Washington, DC. © World Bank. Hoyos, D. (2010). The state of the art of environmental valuation with discrete choice experiments. *Ecological Economics*, 8(69), 1595–1603.
- Hrubes, D., Ajzen, I., & Daigle, J. (2001). “Predicting hunting intentions and behavior: An application of the theory of planned behavior.” *Leisure Sciences*, (3)(23), 165–178.

- Huhtala, A. (1999). How much do money, inconvenience and pollution matter? Analysing households» demand for large-scale recycling and incineration. *Journal of Environmental Management*, 55(1), 27-38.
- Huhtala, A. (2000). Binary choice valuation studies with heterogeneous preferences regarding the program being valued. *Environmental and Resource Economics*, 3(16), 263–279.
- Hutin, Y., Luby, S., & Paquet, C. (2003). A large cholera outbreak in Kano City, Nigeria: the importance of hand washing with soap and the danger of street-vended water. *J Water Health*, 1(1), 45–52.
- Hwang, B. G., Zhao, X., & Gay, M. J. S. (2013). Public private partnership projects in Singapore: Factors, critical risks and preferred risk allocation from the perspective of contractors. *International Journal of Project Management*, (3)(31), 424–433.
- Ichoku, H. E., Fonta, W. M., & Kedir, A. (2009). Measuring individuals' valuation distributions using a stochastic payment card approach: application to solid waste management in Nigeria. *Environment, Development and Sustainability*, (3)(11), 509–521.
- Imam, A., Mohammed, B., Wilson, D. C., & Cheeseman, C. R. (2008). Solid waste management in Abuja, Nigeria. *Waste Management*, 2(28), 468–472.
- Iqbal, M. (2010). *Concept and implementation of participation and empowerment: Reflection from coffee IPM-SECP. MAKARA of Social Sciencies and Humanities Series* (Vol. (2)). Geneva: ILO, Social Finance Unit.
- Israel, G. D. (1992). *Determining Sample Size. University of Florida, IFAS Extension* (Vol. PE0D6). University of Florida Cooperative Extension Service, Institute of Food and Agriculture Sciences, EDIS.
- Jago-on, K. A. B., Kaneko, S., Fujikura, R., Fujiwara, A., Imai, T., Matsumoto, T., ... & Taniguchi, M. (2009). Urbanization and subsurface environmental issues: an attempt at DPSIR model application in Asian cities. *Science of the Total Environment*, (9)(407,), 3089–3104.
- Jalil, M. A. (2010). Sustainable development in Malaysia: A case study on household waste management. *Journal of Sustainable Development*, (3)(3), p91.
- Janet M. Thomas and Scott J. Callan. (2012). *Environmental Economics and Management: Theory, Policy and Applications*. USA: Cengage Learning.
- Jenkins, R. R., Martinez, S. A., Palmer, K., & Podolsky, M. J. (2003). The determinants of household recycling: a material-specific analysis of recycling program features and unit pricing. *Journal of Environmental Economics and Management*, (2)(45), 294–318.

- Jin, J., Wang, Z., & Ran, S. (2006). Estimating the public preferences for solid waste management programmes using choice experiments in Macao. *Waste Management & Research*, (4)(24), 301–309.
- John V. Krutilla. (1967). Conservation Reconsidered. *The American Economic Review*, 57(4), 777–786.
- Johnston, R. J., Grigalunas, T. A., Opaluch, J. J., Mazzotta, M., & Diamantedes, J. (2002). Valuing estuarine resource services using economic and ecological models: the Peconic Estuary System study. *Coastal Management*, 1(30), 47–65.
- Jones, P. S. (2003). Urban regeneration's poisoned chalice: is there an impasse in (community) participation-based policy?. *Urban Studies*, (3)(40), 581–601.
- Joppe, M. (2000). The research process. [https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Joppe%2C+M.+%282000%29.+The+research+process.+&btnG=Accessed on 24th May, 2014.](https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Joppe%2C+M.+%282000%29.+The+research+process.+&btnG=Accessed+on+24%sup+May,+2014.)
- Jung, C. G. (2014). *Psychological types*. Routledge. https://books.google.com.my/books?hl=en&lr=&id=OrrCBQAAQBAJ&oi=fnd&pg=PP1&dq=Psychological+types.+Routledge.&ots=Lnj4nX Zxn&sig=CZ3gOaZ98ZLPe2gQ2zxcMPauLU&redir_esc=y#v=onepage&q=Psychological%20types.%20Routledge.&f=false. Accessed on 5th, August, 2014.
- Junge, X., Lindemann-Matthies, P., Hunziker, M., & Schüpbach, B. (2011). Aesthetic preferences of non-farmers and farmers for different land-use types and proportions of ecological compensation areas in the Swiss lowlands. *Biological Conservation*, (5),(144), 1430–1440.
- Just, R. E., Hueth, D. L., & Schmitz, A. (2005). *e welfare economics of public policy: a practical approach to project and policy evaluation*. Edward Elgar Publishing.
- Kaffashi, S., Shamsudin, M. N., Radam, A., Rahim, K. A., & Yacob, M. R. (2013). We are willing to pay to support wetland conservation: local users' perspective. *International Journal of Sustainable Development & World Ecology*, 2, 4(20), 325–335.
- Kaldor, N. (1939). Welfare propositions of economics and interpersonal comparisons of utility. *The Economic Journal*, 549–552.
- Kamaludin, M., Rahim, K. A., & Radam, A. (2013). Assessing consumer's willingness to pay for improved domestic water services in Kelantan, Malaysia. *The International Journal of Social Sciences*, (1),(8), 45–53.
- Kamri, T., & Radam, A. (2013). Visitors' visiting motivation: Bako national park, Sarawak. *Procedia-Social and Behavioral Sciences*, (101,), 495–505.

- Kanninem, B. J. (1995). Bias in Discrete Response Contingent Valuation. *Journal of Environmental Economics and Management*, (28), 114–125.
- Kanninen, B. J., & Kriström, B. (1993). Sensitivity of willingness-to-pay estimates to bid design in dichotomous choice valuation models: comment. *Land Economics*, (2),(69), 199–202.
- Kanninen, B. J. (1993). Optimal experimental design for double-bounded dichotomous choice contingent valuation. *Land Economics*, 138–146.
- Kanninen, B. J. (2002). Optimal design for multinomial choice experiments. *Journal of Marketing Research*, (2),(39), 214–227.
- Kansal, A. (2002). Solid waste management strategies for India. *Indian Journal of Environmental Protection*, (4)(22), 444–448.
- Karousakis, K., & Birol, E. (2008). Investigating household preferences for kerbside recycling services in London: A choice experiment approach. *Journal of Environmental Management*, (4)(88), 1099–1108.
- Karunakaran, K., Thamilarasu, P., & Sharmila, R. (2009). Statistical study on physicochemical characteristics of groundwater in and around Namakkal, Tamilnadu, India. *Journal of Chemistry*, 3(6), 909–914.
- Kassim, S. M., & Ali, M. (2006). Solid waste collection by the private sector: Households' perspective—Findings from a study in Dar es Salaam city, Tanzania. *Habitat International*, (4),(30), 769–780.
- Keally, M.J., Montgomery, M., and Dovidio, J. F. (1990). Reability and Predictive Validity of Contingent Values, does the nature of good mattres? *Journal of Environmental Economics and Management*, (19), 244–263.
- Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of Behavioral Research*. New York.
- Kiel, K. A. (1995). Measuring the impact of the discovery and cleaning of identified hazardous waste sites on house values. *Land Economics*, 428–435.
- Kløjgaard, M. E., Bech, M., & Søgaaard, R. (2012). Designing a stated choice experiment: the value of a qualitative process. *Journal of Choice Modelling*, (2)(5), 1–18.
- Kloos, J. (2009). *A latent class model for domestic water services in the Middle Olifants sub-basin of South Africa*. University of Hamburg, Germany.

- Kohansal, M. R., Karmozdi, K. M., Sarani, S., Rahimi, M., & Kalashami, M. K. (2013). The process of estimating the recreational value of Sarein spas using visitors' welfare changes. *International Journal of Agriculture and Crop Sciences*, (14)(6), 975.
- Kometa, S. T., Olomolaiye, P. O., & Harris, F. C. (1994). Attributes of UK construction clients influencing project consultants' performance. *Construction Management and Economics*, (5)(12), 433–443.
- Kong, F., Xiong, K., & Zhang, N. (2014). Determinants of Farmers' Willingness to Pay and Its Level for Ecological Compensation of Poyang Lake Wetland, China: A Household-Level Survey. *Sustainability*, (10)(6), 6714–6728.
- Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educ Psychol Meas.*
- Kriström, B. (1990). A non-parametric approach to the estimation of welfare measures in discrete response valuation studies. *Land Economics*, 135–139.
- Krutilla, J. V. (1967). Conservation reconsidered. *The American Economic Review*, (4)(57), 777–786.
- Kumar, S., Bhattacharyya, J. K., Vaidya, A. N., Chakrabarti, T., Devotta, S., & Akolkar, A. B. (2009). Assessment of the status of municipal solid waste management in metro cities, state capitals, class I cities, and class II towns in India: An insight. *Waste Management*, (2)(29), 883–895.
- Lamsal, P., Atreya, K., Pant, K. P., & Kumar, L. (2015). An analysis of willingness to pay for community-based conservation activities at the Ghodaghodi Lake Complex, Nepal. *International Journal of Biodiversity Science, Ecosystem Services & Management*, (4)(11), 341–348.
- Lau, V. L. (2004). Case study on the management of waste materials in Malaysia. *In Forum Geookol*, 15(2), 7–14.
- LaVeist, T. A., & Nuru-Jeter, A. (2002). Is doctor-patient race concordance associated with greater satisfaction with care?. *Journal of Health and Social Behavior*, 296–306.
- Leby, J. L., & Hashim, A. H. (2010). Liveability dimensions and attributes: Their relative importance in the eyes of neighbourhood residents. *Journal of Construction in Developing Countries*, (1)(15), 67–91.
- Levy, P. S., & Lemeshow, S. (2013). *Sampling of populations: methods and applications*. John Wiley & Sons.

- Liefländer, A. K., Fröhlich, G., Bogner, F. X., & Schultz, P. W. (2013). Promoting connectedness with nature through environmental education. *Environmental Education Research*, (3),(19), 370–384.
- Linderhof, V., Kooreman, P., Allers, M., & Wiersma, D. (2001). Weight-based pricing in the collection of household waste: The Oostzaan case. *Resource and Energy Economics*, 23(4), 359–371.
- Lindhjem, H., & Navrud, S. (2009). Asking for Individual or Household Willingness to Pay for Environmental Goods? *Environmental and Resource Economics*, 1(43), 11–29.
- List, J. A., Sinha, P., & Taylor, M. H. (2006). Using choice experiments to value non-market goods and services: evidence from field experiments. *Advances in Economic Analysis & Policy*, (2).(5).
- Lohri, C. R., Camenzind, E. J., & Zurbrugg, C. (2014). Financial sustainability in municipal solid waste management—Costs and revenues in Bahir Dar, Ethiopia. *Waste Management*, (2)(34), 542–552.
- Loomis, J. B., & White, D. S. (1996). Economic benefits of rare and endangered species: summary and meta-analysis. *Ecological Economics*, (3),(18), 197–206.
- Loomis, J. (1988). Contingent Valuation Using Dichotomous Choice Model. *Journal of Leisure Research*, (20), 46–56.
- Loomis, J. B. (1988). Contingent valuation using dichotomous choice models. *Journal of Leisure Research*, (1),(20), 46–56.
- Loomis, J. B. (1990). Comparative reliability of the dichotomous choice and open-ended contingent valuation techniques. *Journal of Environmental Economics and Management*, (1)(18), 78–85.
- Louviere, J., & Eagle, T. (2006). Confound it! That pesky little scale constant messes up our convenient assumptions. In *Sawtooth Software Conference* (pp. 211–228).
- Louviere, J. J., & Hensher, D. A. (1982). . *Design and analysis of simulated choice or allocation experiments in travel choice modeling*.
- Louviere, J. J., & Woodworth, G. (1983). Design and analysis of simulated consumer choice or allocation experiments: an approach based on aggregate data. *Journal of Marketing Research*, 350–367.
- Louviere, J. J., Pihlens, D., & Carson, R. (2011). Design of discrete choice experiments: a discussion of issues that matter in future applied research. *Journal of Choice Modelling*, (1)(4), 1–8.

- Louviere, J. J., Street, D., Burgess, L., Wasi, N., Islam, T., & Marley, A. A. (2008). Modeling the choices of individual decision-makers by combining efficient choice experiment designs with extra preference information. *Journal of Choice Modelling*, 1(1), 128–164.
- Louviere, J. J. (1988). *Analyzing decision making: Metric conjoint analysis*. sage.
- Lynch, K., Binns, T., & Olofin, E. (n.d.). Urban agriculture under threat: the land security question in Kano, Nigeria. *Cities*, (3)(18), 159–171.
- Lynne, G. D., Casey, C. F., Hodges, A., & Rahmani, M. (1995). Conservation technology adoption decisions and the theory of planned behavior. *Journal of Economic Psychology*, (4)(16), 581–598.
- Mangham, L. J., Hanson, K., & McPake, B. (2009). How to do (or not to do)... Designing a discrete choice experiment for application in a low-income country. *Health Policy and Planning*, 24(2), (2)(24), 151–158.
- Manomaivibool, P., & Vassanadumrongdee, S. (2012). Buying back household waste electrical and electronic equipment: Assessing Thailand's proposed policy in light of past disposal behavior and future preferences. *Resources, Conservation and Recycling*, (68), 117–125.
- Marafa, I. S. (2012). *Access to Residential Land in Kano Metropolis*. *African Scientist*, 11(4), 225–234.
- Martinez-Sanchez, V., Kromann, M. A., & Astrup, T. F. (2015). Life cycle costing of waste management systems: Overview, calculation principles and case studies. *Waste Management*, (36), 343–355.
- Martinsson, P., Carlsson, F., & Alpizar, F. (2001). *Design Choice Experiments for Non-Market Valuation*. rapport nr.: Working Papers in Economics, nr.,
- Marzouk, M. M., & El-Rasas, T. I. (2014). Analyzing delay causes in Egyptian construction projects. *Journal of Advanced Research*, 5(1), (1)(5), 49–55.
- Mazzanti, M. (2003). Discrete choice models and valuation experiments. *Journal of Economic Studies*, 6(30), 584–604.
- Mazzotta, M. J., & Opaluch, J. J. (1995). Decision making when choices are complex: a test of Heiner's hypothesis. *Land Economics*, 500–515.
- McConnell, K. E., & Tseng, W. C. (2000). Some preliminary evidence on sampling of alternatives with the random parameters logit. *Marine Resource Economics*, (2)(57), 330–335.

- McConnell, K. E. (1990). Models for referendum data: the structure of discrete choice models for contingent valuation. *Journal of Environmental Economics and Management*, 1(18), 19–34.
- McFadden, D., & Leonard, G. K. (1993). *McFadden, D., & Leonard, G. K. (1993). Issues in the contingent valuation of environmental goods: methodologies for data collection analysis. In Contingent Valuation: A critical Assessment, ed. Hausman, J.A. Amsterdam: Elsevier.,*
- Medina, M. (2002). Globalization, development, and municipal solid waste management in third world cities. *Ijuana, Mexico: El Colegio de La Frontera Norte*, 199.
- Midgley, J. (2006). Developmental social policy: Theory and practice. *Asian Journal of Social Policy*, (1)(2), 1–22.
- Mitchell, R. C. and Carson, R. T. (1989). *Using Surveys to Value Public Goods: The Contingent Valuation Method*. Washington DC.: Resources for the Future.,
- Mogas, J., Riera, P., & Bennett, J. (2006a). A comparison of contingent valuation and choice modelling with second-order interactions. *Journal of Forest Economics*, 1(12), 5–30.
- Mogas, J., Riera, P., & Bennett, J. (2006b). A comparison of contingent valuation and choice modelling with second-order interactions. *Journal of Forest Economics*, 1(12), 5–30.
- Mohamed, N., Shamsudin, M. N., Ghani, A. N. A., Radam, A., Kaffashi, S., Rahim, N. N. R. N. A., & Hassin, N. B. (2012). Willingness to Pay for Watershed Conservation at Hulu Langat, Selangor. *Journal of Applied Sciences*, (17)(12), 1859.
- Moisseinen, E. M. (1999). *On behavioural intentions in the case of the Saimaa Seal. Comparing the contingent valuation approach and the attitude-behaviour research. O'Connor, M. Spash, CL (Eds.): Valuation and the Environment. theory, method and practice. Cheltenham, Edward Elgar, .*
- Momoh, J. J., & Oladebeye, D. H. (2010). Assessment of awareness, attitude and willingness of people to participate in household solid waste recycling programme in Ado-Ekiti, Nigeria. *Journal of Applied Sciences in Environmental Sanitation*, (1)(5), 93–105.
- Morrison, M., Bennett, J., & Blamey, R. (1999). Valuing improved wetland quality using choice modeling. *Water Resources Research*, (9)(35), 2805–2814.
- Morrison, G. C. (1998). Understanding the disparity between WTP and WTA: endowment effect, substitutability, or imprecise preferences?. *Economics Letters*, (2)(59), 189–194.

- Morrison, M. (2000). Aggregation biases in stated preference studies. *Economic Papers*, (2)(39), 215–230.
- Mroz, C. (2012). Parks and protected areas in Canada: Planning and management edited by Philip Dearden and Rick Rollins. *The Canadian Geographer/Le Géographe Canadien*, (1),(56), 152–153.
- Muhammad, M., & Bichi, A. M. (2014). Constraints and challenges on housing provision in Kano city, Nigeria. *International Journal of Advancements in Research & Technology*, (6)(3), 4–23.
- Mühlbacher, A. C., & Bethge, S. (2015). Reduce mortality risk above all else: a discrete-choice experiment in acute coronary syndrome patients. *PharmacoEconomics*, (1)(33), 71–81.
- Mukhtar, M. (2008). *Analysis of Plastic Waste Recycling in Kano Nigeria*. A Ph.D. Thesis Submitted to Department of Economics, Bayero University Kano.
- Munro, A. (2005). Household willingness to pay equals individual willingness to pay if and only if the household income pools. *Economics Letters*, 2(88), 227–230.
- Murtagh, F., & Heck, A. (2012). *Multivariate data analysis (Vol. 131)*. Springer Science & Business Media.
- Nabegu, A. . (2008). An Assesment of Refuse Management and Sanitation Board (REMASAB) Waste Management in Kano Metropolis. *Techno Science Africana Journal*, 1.
- Nabegu, A. . (2010a). An Analysis of Municipal Solid Waste in Kano Metropolis , Nigeria. *Analysis*, 31(2), 111–119.
- Nabegu, A. . (2010b). Response of the Jakara stream channel to urbanisation. *African Scientist*, 11(4), 225–234.
- National Bureau of Statistics. (2012). Nigerian General Household Survey: Basic Information Document, Abuja, Nigeria. Retrieved September 30, 2014, from www.nigerianstart.gov.ng
- National Population Commission. (2006). *National Population Commission,(NPC,2006). Nigeria Population Census Report, NPC Abuja.*
- National Population Commission (N.P.C). (2009). Population and Housing Census of the Federal Republic of Nigeria Priority Tables (Volume 1):National and States Population and Housing Tables, Abuja, Nigeria.
- Navrud, S., & Ready, R. C. (Eds.). (2002). *Valuing cultural heritage: applying environmental valuation techniques to historic buildings, monuments and artifacts*. Edward Elgar Publishing.

- Naz, A. C. C., & Naz, M. T. N. (2006). Ecological solid waste management in suburban municipalities: User fees in Tuba, Philippines. *ASEAN Economic Bulletin*, (1)(25), 70–84.
- Nguyen, H. T. L. (2003). *Health & Social Needs of Waste Pickers in Vietnam. Report for Canadian International Development Agency.*
- Nhamo, G., Oelofse, S. H. H., Godfrey, L., & Mvuma, G. (2009). *Unpacking Governance Opportunities and Challenges for Integrated Municipal Waste Management in South Africa.*
- Niaura, A. (2013). Using the theory of planned behavior to investigate the determinants of environmental behavior among youth. *Environmental Research, Engineering and Management*, (1)(63), 74–81.
- Nunnes P.A.L. (2002). *The Contingent Valuation of National Parks: Assessing the Warm glow Propensity Factor. New Horizons in Enviromental Economics.* Cheltenham, U.K: Edward Elgar.
- Nuva, R., Shamsudin, M. N., Radam, A., & Shuib, A. (2009). Willingness to pay towards the conservation of ecotourism resources at Gunung Gede Pangrango National Park, West Java, Indonesia. *Journal of Sustainable Development*, (2)(2), 173.
- Ofiara, D. D., & Seneca, J. (2001). *Economic losses from marine pollution: a handbook for assessment.* Washigton: Island Press.
- Ogu, V. I. (2000). Private sector participation and municipal waste management in Benin City , Nigeria. *Environment and Urbanization*, 12(2), 103–117.
- Ogwueleka, T. C. (2009). Municipal Solid Waste Characteristics and Management in Nigeria, 6(3), 173–180.
- Oke, I. A. (2008). Management of immunization solid wastes in Kano State, Nigeria. *Waste Management*, (12)(28), 2512–2521.
- Olanrewaju, O. O., & Ilemobade, A. A. (2009a). Waste to wealth: a case study of the Ondo State Integrated waste recycling and treatment project, Nigeria. *Euro. J. Soc. Sci.*, 1(8), 7–16.
- Olanrewaju, O. O., & Ilemobade, A. A. (2009b). Waste to wealth: A case study of the Ondo State integrated wastes recycling and treatment project, Nigeria. *European Journal of Social Sciences*, (1)(8), 7–16.
- Olofin, E. A., Nabegu, A. B., & Dambazau, A. M. (2008). *Wudil within Kano region: a geographical synthesis.* Adamu Joji Publishers.

- Olorunfemi, F. B. (2011). Landfill development and current practices in Lagos metropolis, Nigeria. *Journal of Geography and Regional Planning*, (12)(4), 656–663.
- Othman, J. (2002). *Household preferences for solid waste management in Malaysia. Economy and Environment Program for Southeast Asia*. Malaysia.
- Othman, J. (2007). Economic valuation of household preference for solid waste management in Malaysia: A choice modeling approach. *International Journal of Management Studies (IJMS)*, (1)(14), 189–212.
- Oyeniyi, B. A. (2011). Waste management in contemporary Nigeria: the Abuja example. *International Journal of Politics and Good Governance*, (2.2)(2), 1–18.
- Palatnik, R., Ayalon, O., & Shechter, M. (2005). Household demand for waste recycling services. *Environmental Management*, (2)(35), 121–129.
- Pallant, J. (2011). *SPSS Survival Manual 4th edition: A step by step guide to data analysis using SPSS version 18*. (4th editio). Maidenhead, Berkshire: Open University Press.
- Pan American Health Organization. (2005). Regional Evaluation of Municipal Solid Waste Management Services in Latin America and the Caribbean.
- Pate, J., & Loomis, J. (1997). The effect of distance on willingness to pay values: a case study of wetlands and salmon in California. *Ecological Economics*, (3)(20), 199–207.
- Pattanayak, et al. (2009). *Joint estimation of Revealed and Stated Preference Averting Behavior: An Application to Improve Water Supply in Kathmandu, Nepal*. Kathmandu, Nepal.
- Patterson, D. A., & Duffield, J. W. (1991). Comment on Cameron's censored logistic regression model for referendum data. *Journal of Environmental Economics and Management*, (3)(20), 275–283.
- Pearce, D. W., & Turner, R. K. (1990). *Economics of natural resources and the environment*. JHU Press.
- Pek, C. K., & Jamal, O. (2011). A choice experiment analysis for solid waste disposal option: A case study in Malaysia. *Journal of Environmental Management*, (11)(92), 2993–3001.
- Pires, A., Martinho, G., & Chang, N. B. (2011). Solid waste management in European countries: A review of systems analysis techniques. *Journal of Environmental Management*, (4)(92), 1033–1050.

- Portney, P. R. (1994). The contingent valuation debate: why economists should care. *The Journal of Economic Perspectives*, 3–17.
- Puri, A., Kumar, M., & Johal, E. (2008). Solid waste management in jalandhar city and its impact on community health. *Indian Journal of Occupation and Enviroment*, 12(2), 76.
- Radam, A., Yacob, M. R., & Sharifuddin, J. (2008). Use of dichotomous choice contingent valuation method to value the Putrajaya Wetland Park. *ISSN 0127-8983 Universiti Utara Malaysia*, (2)(15), 81–96.
- Rahji, M. A. Y., & Oloruntoba, E. O. (2009). Determinants of households' willingness-to-pay for private solid waste management services in Ibadan,. *Waste Management & Research*, (10)(27), 961–965.
- Randall, A., Hoehn, J. P., & Brookshire, D. S. (1983). Contingent valuation surveys for evaluating environmental assets. *Nat. Resources J.*, (23), 635.
- Rashev, B. (2003). *Alternative economic valuation of Pirin National Park, Bulgaria. Application of contingent valuation and travel cost method*. Brandenburg University of Technology, Cottbus, Germany.
- Rekola, E. P. M. (2001). The theory of planned behavior in predicting willingness to pay for abatement of forest regeneration. *Society & Natural Resources*, (2)(14), 93–106.
- Ren, X., Che, Y., Yang, K., & Tao, Y. (2016). Risk perception and public acceptance toward a highly protested Waste-to-Energy facility. *Waste Management*, 48, 528–539.
- Robert Cameron Mitchell, R. T. C. (1989). *Using Surveys to Value Public Goods: The Contingent Valuation Method*. Resources for the Future, Washington DC.
- Robinson, A., & Thomson, R. (2001). Variability in patient preferences for participating in medical decision making: implication for the use of decision support tools. *Quality in Health Care*, suppl 1(10), i34–i38.
- Rolfe, J., Bennett, J., & Louviere, J. (2002). Choice modelling and its potential application to tropical rainforest preservation. *Ecological Economics*, 2(35), 289–302.
- Rolfe, J., Bennett, J., & Louviere, J. (2000). Choice modelling and its potential application to tropical rainforest preservation. *Ecological Economics*, 35(2), 289–302.
- Rose, J. M., & Bliemer, M. C. (2009). Constructing efficient stated choice experimental designs. Constructing efficient stated choice experimental designs. *Transport Reviews*, (5)(29), 587–617.

- Rose, J. M., Bliemer, M. C., Hensher, D. A., & Collins, A. T. (2008). Designing efficient stated choice experiments in the presence of reference alternatives. *Transportation Research Part B: Methodological*, (4),(42), 395–406.
- Rose, J. M., Bliemer, M. C. J., Hensher, D. a., & Collins, A. T. (2008). Designing efficient stated choice experiments in the presence of reference alternatives. *Transportation Research Part B: Methodological*, 42(4), 395–406.
- Rowe, R. D., d'Arge, R. C., & Brookshire, D. S. (1980). An experiment on the economic value of visibility. *Journal of Environmental Economics and Management*, 1(7), 1–19.
- Rushton, L. (2003). Health hazards and waste management. *British Medical Bulletin*, (1)(68), 183–197.
- Ruto, E., & Garrod, G. (2009). Investigating farmers' preferences for the design of agri-environment schemes: a choice experiment approach. *Journal of Environmental Planning and Management*, 5(52), 631–647.
- Ryan, M., & Farrar, S. (2000). Using conjoint analysis to elicit preferences for health care. *BMJ: British Medical Journal*, 320(7248), 1530.
- Ryan, M., & Gerard, K. (2003). Using discrete choice experiments to value health care programmes: current practice and future research reflections. *Applied Health Economics and Health Policy*, (1)(2), 55–64.
- Ryan, M., & Hughes, J. (1997). Using conjoint analysis to assess women's preferences for miscarriage management. *Health Economics*, 3(6), 261–273.
- Sakata, Y. (2007). A choice experiment of the residential preference of waste management services—The example of Kagoshima city, Japan. *Waste Management*, (5)(27), 639–644.
- Sasao, T. (2004). An estimation of the social costs of landfill siting using a choice experiment. *Waste Management*, (8)(24), 753–762.
- Scarpa, R., Willis, K. G., & Acutt, M. (2007). Valuing externalities from water supply: Status quo, choice complexity and individual random effects in panel kernel logit analysis of choice experiments. *Journal of Environmental Planning and Management*, (4),(50), 449–466.
- Sekaran, U. (2003). *Research Methods for Business*. New York: John Milley and Sons:Inc.
- Sellar, C., Chavas, J. P., & Stoll, J. R. (1986). Specification of the logit model: The case of valuation of nonmarket goods. *Journal of Environmental Economics and Management*, (4)(13), 382–390.

- Sen, A. (2011). *The idea of justice*. Harvard University Press.
- Sha'Ato, R., Aboho, S. Y., Oketunde, F. O., Eneji, I. S., Unazi, G., & Agwa, S. (2007). Survey of solid waste generation and composition in a rapidly growing urban area in Central Nigeria. *Waste Management*, 3(27), 352–358.
- Shuib, A. M. R. Y. A. R. (2008). Economic Valuation of Marine Park Ecotourism Malaysia: The case of Redang Island Marine Park.
- Smith, V. K, and Pattanayak, S. K. (2002). Is Meta-Analysis A Noah's Ark For Non-Market Valuation? *Environmental and Resource Economics*, (22), 231–247.
- Smith, V. K., & Desvousges, W. H. (2012). *Measuring water quality benefits (Vol. 3)*. Springer Science & Business Media.
- Solomon, U. U. (2009). The state of solid waste management in Nigeria. *Waste Management*, (10)(29), 2787–2788.
- Song, Q., Wang, Z., & Li, J. (2016). Residents' Attitudes and Willingness to Pay for Solid Waste Management in Macau. *Procedia Environmental Sciences*, 31, 635-643.
- Srinivas, H. (2002). Urban Waste Management. Retrieved February 26, 2014, from <https://www.gdrc.org/uem/waste/z-doc.html>
- Srivastava, V., Ismail, S. A., Singh, P., & Singh, R. P. (2005). Urban solid waste management in the developing world with emphasis on India: challenges and opportunities. *Reviews in Environmental Science and Bio/Technology*, 1–21.
- Strand, J. (2007). Public-good valuation and intra-family allocation. *Environmental and Resource Economics*, 4(38), 527–543.
- Studenmund, A. H. (2011). *Using econometrics: A practical guide*. New York: Addison Wesley. Inc.,.
- Sule, O. R. (1979). The deterioration of the Nigerian environment: Problems of solid wastes disposal in the metropolitan Lagos. *GeoJournal*, (60)(3), 571–577.
- Sumukwo, J., Kiptui, M., & Cheserek, G. J. (2012). Economic valuation of improved solid waste management in Eldoret Municipality. *Journal of Emerging Trends in Economics and Management Sciences*, (6)(3), 962–970.
- Swait, J., & Adamowicz, W. (1996). *The effect of choice environment and task demands on consumer behavior: discriminating between contribution and confusion*.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics*. (5th edn.). Boston,: Pearson Education, Inc.

- Taylor, S., & Todd, P. (1995). Decomposition and crossover effects in the theory of planned behavior: A study of consumer adoption intentions. *International Journal of Research in Marketing*, (2)(12), 137–155.
- Tchobanoglous, G., Theisen, H., & Vigil, S. (1993). *Integrated solid waste management: engineering principles and management issues*. N.Y.: McGraw-Hill, Inc..
- Thanh, N. P., Matsui, Y., & Fujiwara, T. (2011). Assessment of plastic waste generation and its potential recycling of household solid waste in Can Tho City, Vietnam. *Environmental Monitoring and Assessment*, 14(175), 23–35.
- Thomas, D. H., Ayache, F., & Hollis, G. E. (1991). Use and non-use values in the conservation of Ichkeul National Park, Tunisia. *Environmental Conservation*, (02)(18), 119–130.
- Thomas, J. M., & Callan, S. (2006). *Environmental Economics and Management: Theory, Policy and Applications*. USA: Cengage Learning.: South-Western.
- Tiller, K. H., Jakus, P. M., & Park, W. M. (1997). Household willingness to pay for dropoff recycling. *Journal of Agricultural and Resource Economics*, 310-320.
- Tonglet, M., Phillips, P. S., & Read, A. D. (2004). Using the Theory of Planned Behaviour to investigate the determinants of recycling behaviour: a case study from Brixworth, UK. *Resources, Conservation and Recycling*, (3)(41), 191–214.
- Turner, R. K., & Brooke, J. (1988). Management and valuation of an environmentally sensitive area: Norfolk Broadland, England, case study. *Environmental Management*, (2)(12), 193–207.
- Turner, T. M. (2004). The Measurement of Environmental and Resource Values. *Journal of Environmental Quality*, 6(33), 2385–2385.
- Tyrväinen, L. (1997). The amenity value of the urban forest: an application of the hedonic pricing method. *Landscape and Urban Planning*, 3(37), 211–222.
- Ukoha, O. M., & Beamish, J. O. (1997). Assessment of residents' satisfaction with public housing in Abuja, Nigeria. *Habitat International*, (4)(21), 445–460.
- UNEP. Developing Solid Waste Management Plan: Training Manual. (2009).
- United Nations. (2005). *World Population Trends and Reports*. Newyork Vol 1.
- Uphoff, N. E., & MJ Krishna, A. (1998). *Reasons for success: Learning from instructive experiences in rural development*. West Hartford: Kumarian Press.
- Venkatachalam, L. (2004). The contingent valuation method: a review. *Environmental Impact Assessment Review*, 1(24), 89–124.

- Viney, R., Lancsar, E., & Louviere, J. (2002). Discrete choice experiments to measure consumer preferences for health and healthcare. *Expert Review of Pharmacoeconomics & Outcomes Research*, (4)(2), 319–326.
- Weber, M. A., & Stewart, S. (2009a). Public values for river restoration options on the Middle Rio Grande. *Restoration Ecology*, (6)(17), 762–771.
- Weber, M. A., & Stewart, S. (2009b). Public values for river restoration options on the Middle Rio Grande. *Restoration Ecology*, (6)(17), 762–771.
- Weisbrod, B. A. (1964). Collective-consumption services of individual-consumption goods. *The Quarterly Journal of Economics*, 3(78), 471–477.
- Whittington, et al. (2008). “Sanitation and Waste” Copenhagen Consensus. Copenhagen, Denmark.
- WHO/UNICEF. (2012). *Joint Monitoring Programme for Water Supply and Sanitation. Progress on Drinking Water and Sanitation:*
- Wistowsky, W. (2007). *Canada’s National Parks: What are They Worth to Canadians and Why?* University of Guelph, Canada.
- Wistowsky, W. J. (2008). Canada’s National Parks: What are They Worth to Canadians and Why? ProQuest.
- Worldbank. (2012). *A Global Review of Solid Waste Mangement.*
- Xu, Q. (2007). Community participation in urban China: Identifying mobilization factors. *Nonprofit and Voluntary Sector Quarterly*, (4)(36), 622–642.
- Yacob, M. R., Radam, A., & Awang, K. W. (2008). Economic valuation of marine parks ecotourism Malaysia: the case of Redang Island Marine Park. *Universiti Putra Malaysia Press*.
- Yacob, M. R., Radam, A., & Shuib, A. (2009). contingent valuation study of marine parks ecotourism: The case of Pulau Payar and Pulau Redang in Malaysia. *Journal of Sustainable Development*, (2)(2), 95.
- Young R.A. (2005). *Determinig the Economic Value of Water : Concepts and Methods*. Washigton, DC: Rersource for the Future.
- Yuan H., Wang, L., Su, F., H. G. (2006). Urban solid waste management in chongqing: challenges and opportunities. *Solid Waste Management*, 26, 1052–1062.
- Yusof, N. A., & Abidin, N. Z. (2011). Does organizational culture influence the innovativeness of public-listed housing developers?. *American Journal of Applied Sciences*, (7)(8), 724.

Yusuf, S. A., Ojo, O. T., & Salimonu, K. K. (2007). Households' willingness to pay for improved solid waste management in Ibadan North local government area of Oyo state, Nigeria. *Journal of Environmental Extension*, (1)(6), 57–63.

Yusuf, S. A., Salimonu, K. K., & Ojo, O. T. (2007). Determinants of willingness to pay for improved household solid waste management in Oyo state, Nigeria. *Research Journal of Applied Sciences*, (3)(2), 233–239.

Zikmund, B., & Carr, G. (2010). *Business Research Methods* (8th Editio). USA: Cengage Learning.: South-Western. Cengage Learning.

Zurbrügg, C. (2003). Urban Solid Waste Management in Low-Income Countries of Asia: How to Cope with the Garbage Crisis. *Urban Solid Waste Management Review Session, Durban, South Africa, November 2002*, (February), 1–13.