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Implications for Decision Making

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Mustapha Akinkunmi

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ABSTRACT

This book is written to address the issues relating to data gathering, data warehousing, and data analysis, all of which are useful when working with large amounts of data. Using practical examples of market intelligence, this book is designed to inspire and inform readers on how to conduct market intelligence by leveraging data and technology, supporting smart decision making. The book explains some suitable methodologies for data analysis that are based on robust statistical methods. For illustrative purposes, the author uses real-life data for all the examples in this book. In addition, the book discusses the concepts, techniques, and applications of digital media and mobile data mining.

Hence, this book is a guide tool for policy makers, academics, and practitioners whose areas of interest are statistical inference, applied statistics, applied mathematics, business mathematics, quantitative techniques, and economic and social statistics.

KEYWORDS

data mining, decision making, market intelligence, market pooling, survey

*To Dr. Sarah Omotunde Alade,
Former Deputy Governor (Economic Policy),
Central Bank of Nigeria*

Contents

	Foreword	xv
	Preface	xvii
	Acknowledgments	xix
	Acronyms	xxi
1	Introduction to Market Intelligence	1
1.1	Understanding the Link Between Marketing Insights and Decision Making ..	1
1.2	Transform Data into Insights for Decisions: Segmentation, Positioning, Product Development, etc.	2
1.3	Market Intelligence Tools	3
1.4	Scientific Method and Technology of Marketing Research	3
1.5	Innovative Solutions to Real-life Issues	4
1.6	Designing the Research Methodology, Questionnaire, Sampling Plan, and Data Analysis	5
1.7	Turning Data into Strategic Insights	7
1.8	Exercises	8
2	The Market Research Process	9
2.1	The Marketing Research Framework and Process	9
2.2	Research Problems and Correct Design Techniques	10
2.3	Data Collection Methods	11
2.4	Generating Marketing Insights	13
2.5	Exercises	13
3	Qualitative Techniques	15
3.1	Self-administered Method	15
3.2	Personal Interview or Face-to-Face Method	16
3.3	Exercises	17

4	Quantitative Techniques	19
4.1	Data Preparation and Descriptive Statistics	19
4.2	Fundamentals of Quantitative Methods and Their Applications	19
4.3	Concept of Distribution Pattern, Central Tendency, and Dispersion	20
4.3.1	Distribution Pattern	20
4.3.2	Measure of Central Tendency	20
4.3.3	Measure of Dispersion	25
4.4	Construction of Confidence Intervals	30
4.4.1	Application of Confidence Intervals	31
4.5	Other Descriptive Statistics	31
4.5.1	Skewness	32
4.5.2	Kurtosis	33
4.6	Exercises	35
5	Hypothesis Testing and Regression Analysis	39
5.1	Data Preparation and Evaluation for Quantitative Analysis	39
5.2	Constructing and Testing Data Hypotheses	40
5.3	Regression Analysis: Concept and Applications (Interpret Data Relationships and Forecasting)	42
5.3.1	Assumptions of Linear Regression	43
5.3.2	Simple Linear Regression	43
5.3.3	Multiple Regression	45
5.3.4	Assumptions of Multiple Regression	45
5.4	Exercises	48
6	Analyzing Survey Data	51
6.1	Quantitative Technique of Collecting Survey Data: Consumer Expenditure Survey	51
6.2	Types of Measurement Scales and Their Applications	51
6.3	Survey Research Rigor	54
6.4	Testing Data Quality: Survey Error Detection Procedures	55
6.5	Exercises	57
7	Index Methodology	59
7.1	bra Expectation Index: Principles, Techniques, and Applications	59
7.1.1	Objectives of bra Expectation Index	59
7.1.2	Methodology	59

	7.1.3 Calculation of bra Expectation Index	60
7.2	bra Consumer Confidence Index: Principles, Techniques, and Applications . .	61
	7.2.1 Components of braCCI	61
	7.2.2 Methodology	61
	7.2.3 Illustrative Example	62
	7.2.4 Index Maintenance	63
7.3	braIndex: Principles, Techniques, and Applications	63
	7.3.1 Basic Criteria for Selection of Constituent Stocks	63
	7.3.2 Technical Criteria	64
	7.3.3 Fundamental Selection Criteria	64
	7.3.4 Corporate Event	65
	7.3.5 Stock Splits Adjustment Barometer	66
	7.3.6 Free-float	66
	7.3.7 Calculation of braIndex	66
	7.3.8 Illustrative Example	67
	7.3.9 Measure of braIndex Volatility	75
	7.3.10 Index Maintenance	75
7.4	bra Producer Price Index: Principles, Techniques, and Applications	75
	7.4.1 Uses of braPPI	75
	7.4.2 Components of braPPI	76
	7.4.3 Scope and Coverage	76
	7.4.4 Collection of Data	77
	7.4.5 Index Calculation	77
	7.4.6 Illustrative Example	77
7.5	bra Bond Index: Principles, Techniques, and Applications	78
	7.5.1 Definition of Terms	78
	7.5.2 Basic Criteria for Constituent Bonds	79
	7.5.3 Index Calculation	80
	7.5.4 Sub-indices	81
	7.5.5 Illustrative Example	81
7.6	braInflation Index: Principles, Techniques, and Applications	85
	7.6.1 Uses of bra Inflation Index	86
	7.6.2 Classification of braII Items	86
	7.6.3 Period of the Survey	87
	7.6.4 Data Collection, Collation, and Processing	87
	7.6.5 Quality Adjustment	88
	7.6.6 Index Calculation	89

7.6.7	bra Inflation Indices Publication	90
7.6.8	Expenditure Category Weight	91
7.6.9	Illustrative Example	92
7.7	Exercises	93
8	Digital Media Monitoring, Measurement, and Modeling	97
8.1	Understandings of Social Media Monitoring, Measurement, and Modeling	97
8.2	Strategic Insight of Social Media Monitoring	98
8.3	Social Media Measurement	98
8.4	Social Media Modeling	100
8.5	Exercises	108
9	Causal Methods	109
9.1	Marketing Mix Modeling: Concept, Principles, Methods, and Applications	109
9.2	Effective Communication of Research, Intelligence, and Analytic Insights	112
9.3	Exercises	114
10	Mobile Data Mining	115
10.1	Concept of Mobile Data Mining	115
10.2	Activities of Mobile Data Mining	117
10.3	Architecture of Mobile Data Mining	118
10.4	Algorithms of Mobile Data Mining	118
10.5	Application of Mobile Data Mining	118
10.6	Exercises	120
A	Questionnaires, Items Survey, and Weights of Elementary Items	121
A.1	Sample of Business Expectation Survey Questionnaire	121
A.2	List of Items Survey Monthly	130
A.3	Weights of Some Items	154
	Bibliography	157
	Author's Biography	159

Foreword

Data Mining and Market Intelligence: Implications for Decision Making, could not have been written at a more appropriate and relevant time. Central banking, especially monetary policy, is often regarded as boring and uninspiring; this erroneous conclusion is reached due to the visible outcome of monetary policy committees' decisions—whether to hold the policy rate steady or raise or drop the benchmark by a few basis points. Thus, the common belief is that there is limited scope for complex decision making and data management techniques in a central bank setting.

However, unbeknownst to many, a variety of analytical techniques including data mining and market intelligence—supported by extensive research and consumer polls—are employed by the staff of central banks. This is sometimes bolstered by the input from consultants before arriving at various policy options, the consequences of which are subject to extensive deliberations by policy makers.

Dr. Mustapha Abiodun Akinkunmi is an expert in macroeconomics and has been conducting data mining research through his consulting assignment with the Central Bank of Nigeria, spanning almost 10 years from March 2008 to December 2017. He has shared his expertise in great detail in this book, particularly regarding technical details including research methodology, market intelligence, and data collection methods. He exposes readers to qualitative tools and techniques deployed in processing data including hypothesis testing, regression analysis, and other methods.

The analysis of survey data using indices, including the author's customized “bra Bond index,” was also explained in great detail. He provides a comprehensive overview of digital media monitoring, measurement, and modeling, and explains the distinction between digital and social media. Methods of exploring cause and effect relationships—very useful in monitoring the impact of monetary policy decisions—are also thoroughly explored. Mobile data mining, featured in Chapter 10, should be of interest to younger experts.

As a member of the central Bank of Nigeria Monetary Policy Committee for 10 years, I greatly appreciate the positive impact of Dr. Akinkunmi's consulting assignments, and how profoundly his work has assisted us in conducting sound monetary policy in spite of the political and socio-economic constraints of the time.

This book is strongly recommended for researchers, statisticians, and policy makers, and can also serve as a textbook to support teaching data mining at universities and colleges.

Tunde Lemo, OFR
Former Deputy Governor
Central Bank of Nigeria

Preface

This book is written to address the issues relating to data gathering, data warehousing and data analysis. These are useful when working with large amounts of data. Using practical examples of market intelligence, this book is to inspire and inform readers on how to conduct market intelligence by leveraging data and technology, supporting smart decision-making. The book explains some suitable methodologies for data analysis that are based on robust statistical methods. For illustrative purposes, the author uses real-life data for all the examples in this book. In addition, the book discusses the concepts, techniques and applications of digital media and mobile data mining.

Hence, the book is a guide tool for policy makers, academics and practitioners whose areas of interest are statistical inference, applied statistics, applied mathematics, business mathematics, quantitative techniques and economic and social statistics.

Mustapha Akinkunmi
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Parts of this book were written while I was teaching at the Economics Department of Montclair State University and State University of New York—FIT during 2017. I would like to extend my appreciation to both institutions for their wonderful, supportive working environments and friendly atmosphere.

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Acronyms

AMA	American Marketing Association
ATM	Automated Teller Machine
braCCI	Brickfield Road Associates Consumer Confidence Index
BES	Business Expectation Index
bra	Brickfield Road Associates
braII	Brickfield Road Associates Inflation Index
braIndex	Brickfield Road Associates Index
braPPI	Brickfield Road Associates Producer Price Index
CBN	Central Bank of Nigeria
CES	Consumer Expenditure Survey
CI	Confidence Interval
CPI	Consumer Price Index
CPU	Central Processing Unit
DNA	Deoxyribonucleic Acid
EI	Expectation Index
ETL	Extract, Transform, and Load
EPS	Earnings Per Share
FDI	Foreign Direct Investment
FGD	Focus Group Discussion
GDP	Gross Domestic Products
GNI	Gross National Income
GRPs	Gross Rating Points

HTTP	Hypertext Transfer Protocol
IIR	Index of Interest Returns
INFL	Inflation
IPR	Index of Price Returns
IQR	Interquartile Range
ITR	Index of Total Returns
LBS	Location-Based Service
MMM	Marketing Mix Model
NBS	National Bureau of Statistics
NSE	Nigerian Stock Exchange
POS	Point of Sale
PSI	Present Situation Index
ROE	Return on Equity
ROI	Return on Investment
SOA	Service-Oriented Architecture
TRPs	Target Rating Points
WDI	World Database Indicator
XML	Extensible Markup Language