

DIFFUSION OF INNOVATIONS

Fifth Edition

EVERETT M. ROGERS

H HOCHSCHULE
• LIECHTENSTEIN
Bibliothek -

FREE PRESS

New York London Toronto Sydney

Contents

<i>Preface</i>	xv
CHAPTER 1: ELEMENTS OF DIFFUSION	1
<i>Water Boiling in a Peruvian Village: Diffusion That Failed</i>	1
What Is Diffusion?	5
<i>Controlling Scurvy in the British Navy</i>	7
<i>Nondiffusion of the Dvorak Keyboard</i>	8
Four Main Elements in the Diffusion of Innovations	11
1. The Innovation	12
2. Communication Channels	18
3. Time	20
4. A Social System	23
<i>Diffusion of Hybrid Corn in Iowa</i>	31
Summary	35
CHAPTER 2: A HISTORY OF DIFFUSION RESEARCH	39
The Beginnings of Diffusion Research in Europe	40
"Gabriel Tarde and Imitation"	41
Georg Simmel's <i>Stranger</i>	42
The British and German-Austrian Diffusionists	42

The Rise of Diffusion Research Traditions	•	43
Paradigms and Invisible Colleges	.	46
The Anthropology Research Tradition	'	48
<i>Miracle Rice in Bali: the Goddess and the Computer</i>		50
Early Sociology	, , •	53
Rural Sociology	•	54
<i>The Diffusion of Modern Math in Pittsburgh</i>		62
<i>Worldwide Diffusion of the Kindergarten</i>	.	63
Public Health and Medical Sociology	• ">	64
<i>The Columbia University Drug Diffusion Study</i>		65
<i>The Taichung Field Experiment</i>	s	70
<i>STOP AIDS in San Francisco</i>		72
Communication	•	74
<i>Diffusion of News of the September 11 Terrorist Attacks</i>		79
Marketing	•	' 8 2
<i>Opinion Leaders and Mavens in the Diffusion of Electric Cars</i>		87
Geography	'	90
General Sociology	' . 9	1
<i>Networks in Recruitment to Freedom Summer</i>		91
Trends by Diffusion Research Traditions		93
A Typology of Diffusion Research		94
Summary	.	101
CHAPTER 3: CONTRIRUTIONS AND CRITICISMS OF DIFFUSION RESEARCH		102
The Status of Diffusion Research Today		102
Criticisms of Diffusion Research	•	105
The Pro-Innovation Bias of Diffusion Research		106
<i>Pure Drinking Water in Egyptian Villages</i>	'	107
<i>Preference for Sons in India and China</i>		117
The Individual-Blame Bias in Diffusion Research		118
The Recall Problem in Diffusion Research		126
The Issue of Ecjuality in the Diffusion of Innovations		130
' Summary •		134

CHAPTER 4: THE GENERATION OF INNOVATIONS	136
The Innovation-Development, Process	137
1. Recognizing a Problem or Need	137
2. Basic and Applied Research	139
: <i>Birth of the Laptop Computer at Toshiba</i>	144
3. Development	146
<i>How the Refrigerator Got Its Hum.</i>	147
<i>Classifying the Segway</i>	148
4. Commercialization	152
<i>Fumbling the Future at Xerox PARC</i>	153
5. Diffusion and Adoption	155
6. Consequences	157
<i>Serendipity in the Discovery of Warfarin</i>	157
Socioeconomic Status, Equality, and Innovation	159
Development	
<i>Hard Tomatoes in California</i>	159
Tracing the Innovation-Development Process	161
The Shortcomings of Tracer Studies	163
Future Research on the Innovation-Development Process	164
The Agricultural Extension Model-	165
Summary	166
CHAPTER 5: THE INNOVATION-DECISION PROCESS	168
A Model of the Innovation-Decision Process	169
The Knowledge Stage	171
Which Comes First, Needs or Awareness of an Innovation?	171
Three Types of Knowledge About an Innovation	172
Early Versus Late Knowers of Innovations	174
The Persuasion Stage	174
The Decision Stage	177
The Implementation Stage	179
Re-Invention	180

How Much Re-Invention Occurs?	181
Re-Invention Is Not Necessarily Bad	184
Why Does Re-Invention Occur?	186
<i>Re-Invention of Horse Culture by the Plains Indians</i>	188
The Confirmation Stage	189
Dissonance	189
Discontinuance	190
<i>The Discontinuance of Smoking</i>	192
<i>Forced Discontinuance and the Rise of Organic Farming</i>	193
Are There Stages in the Innovation-Decision Process?	195
Process Versus Variance Research	196
Evidence of Stages	197
The Hierarchy-of-Effects	198
Stages-of-Change	198
<i>Communication Channels in the Innovation-Decision Process for Tetracycline</i>	202
Communication Channels by Stages in the Innovation-Decision Process	204
Categorizing Communication Channels	204
Mass Media Versus Interpersonal Channels	205
Cosmopolite Versus Localite Channels	207
The Bass Forecasting Model	208
Communication Channels by Adopter Categories	211
The Innovation-Decision Period	213
The Rate of Awareness-Knowledge and Rate of Adoption	213
The Length of the Innovation-Decision Period by Adopter Category	214
How the Internet Is Changing the Innovation-Decision Process	215
Summary	216

CHAPTER 6: ATTRIBUTES OF INNOVATIONS AND THEIR RATE OF ADOPTION	219
<i>Black Music in White America: Rap</i>	220
Rate of Adoption	221
Research on the Attributes of Innovations	223
Measuring the Attributes of Innovations	223
Organizations as the Units of Adoption	225
Postdiction Versus Prediction	227/
<i>An Agricultural Innovation That Failed</i>	227
Relative Advantage	229
Economic Factors and Rate of Adoption	230
Status Aspects of Innovations'	230
Overadoption	231
Relative Advantage and Rate of Adoption	232
Preventive Innovations	234
The Effects of Incentives	236
Mandates for Adoption	239
Compatibility	240
Compatibility with Values and Beliefs	241
Compatibility with Previously Introduced Ideas	243
Compatibility-with Needs	246
<i>Photovoltaics on a Million Roofs</i>	246
<i>The Daughter-in-Law Who Doesn't Speak</i>	247
Compatibility and Rate of Adoption	249
Technology Clusters	249
Naming an Innovation	250
- Positioning an Innovation'	251
Acceptability Research	253
Indigenous Knowledge Systems	254
Complexity	257
Trialability	258
Observability	258
<i>Cellular Telephones and the Lifestyle Revolution</i>	259
Summary	265

CHAPTER 7: INNOVATIVENESS AND ADOPTER CATEGORIES	267
<i>Diffusion of Farm Innovations in a Colombian Village in the Andes</i>	268
Classifying Adopter Categories on the Basis of Innovativeness	272
The S-Shaped Curve of Adoption and Normality	272
Measuring Organizational Innovativeness	275
Who Adopts?	277
Adopter Categorization	279
Adopter Categories as Ideal Types	282
Innovators: Venturesome	282
Early Adopters: Respect	283
Early Majority: Deliberate	283
Late Majority: Skeptical	284
Laggards: Traditional	284
<i>People Who Said No to Innovation: The Old Order Amish</i>	285
Characteristics of Adopter Categories	287
Socioeconomic Characteristics	288
Personality Variables	289
Communication Behavior	290
Audience Segmentation and Adopter Categories	292
<i>Cell Phone Laggards in Hong Kong</i>	294
The Innovativeness/Needs Paradox and the Strategy of Least Resistance	295
Network Influences on Innovativeness	296
Summary	297
CHAPTER 8: DIFFUSION NETWORKS	300
<i>Opinion Leadership in the Diffusion of Modern Math</i>	300
Models of Communication Flows	303
The Hypodermic Needle Model	303
The Two-Step Flow Model	304
Homophily and Heterophily in Communication Networks	305
Homophily and Heterophily	305
Homophily as a Barrier to Diffusion	306

Measuring Opinion Leadership and Network Links	308
<i>The Role of Alpha Pups in the Viral Marketing of a Cool Electronics Game</i>	313
Monomorphic and Polymorphic Opinion Leadership	314
<i>Paul Revere's Ride</i>	314
Characteristics of Opinion Leaders	316
External Communication	316
Accessibility	317
Socioeconomic Status	318
Innovativeness	318
Innovativeness, Opinion Leadership, and System Norms	318
Opinion Leader Organizations	319
Do Opinion Leaders Matter?	321
<i>i. Networks in the Diffusion of a Medical Drug</i>	326
Diffusion Networks	330
<i>Building a Network for the Diffusion of Photovoltaics in the Dominican Republic</i>	331
Cluster Studies	333
<i>Dr. John Snow and the Cholera Epidemic in London</i>	335
Communication Network Analysis	337
The Strength-of-Weak-Ties Theory	339
Who Is Linked to Whom in Networks?	341
Social Learning Theory	341
The Critical Mass in the Diffusion of Interactive Innovations	343
<i>The Critical Mass in the Diffusion of Fax</i>	345
<i>Diffusion of the Internet</i>	346
The Concept of Critical Mass	349
Watching While Being Watched	352
<i>The Sleeper</i>	354
Individual Thresholds for Adoption	355
Why Do Individuals Adopt Prior to the Critical Mass?	357
Networks and the Turbocharger Effect	360
Strategies for Getting to Critical Mass	361
Summary	362

CHAPTER 9 : THE CHANGE AGENT	365
Targeting	366
Change Agents as Linkers	368
The Sequence of Change Agent Roles	369
<i>Coercion in Norplant Diffusion Safaris in Indonesia</i>	371
Factors in Change Agent Success	373
Change Agent Efforts	373
Client Orientation	374
Compatibility with Clients' Needs	375
<i>Sustainability: "Chicken" Davis in Nigeria</i>	376
Change Agent Empathy	376
Communication Campaigns	377
<i>The ORT Campaign in Egypt</i>	380
Homophily and Change Agent Contact	381
Change Agents' Contact with Lower-Status Clients	383
Para-Professional Aides	384
Change Agent Credibility	384
Inauthentic Professionalization of Aides	386
<i>The Baltimore Needle-Exchange Project</i>	387
The Use of Opinion Leaders	388
The Role of Demonstrations	389
Clients' Evaluative Ability	390
<i>The Agricultural Extension Service</i>	391
Centralized and Decentralized Diffusion Systems	394
Advantages and Disadvantages of Decentralized Diffusion	398
Summary	400
CHAPTER 10: INNOVATION IN ORGANIZATIONS	402
Types of Innovation-Decisions	403
Organizations	404
Virtual Organizations	405

Organizational Innovativeness	407
Size and Organizational Innovativeness	409
Structural Characteristics and Organizational Innovativeness	411
The Role of Champions	414
The Innovation Process in Organizations	417
<i>Adoption of New Communication Technologies</i>	419
Stages in the Innovation Process	420
1. Agenda-Setting	422
2. Matching	423
3. Redefining/Restructuring	424
4. Clarifying	427
5. Routinizing	428
<i>The Santa Monica Freeway Diamond Lane Experiment: Implementation Failure</i>	430
New Communication Technologies in Organizations	433
Summary	433
CHAPTER II CONSEQUENCES OF INNOVATIONS	436
<i>Snowmobile Revolution in the Arctic</i>	437
Studying Consequences	440
Classifications of Consequences	442
Desirable Versus Undesirable Consequences	442
Direct Versus Indirect Consequences	445
<i>ORT: The Consequences of Consequences</i>	446
Anticipated Versus Unanticipated Consequences	448
<i>Steel Axes for Stone-Age Aborigines</i>	449
Form, Function, and Meaning of an Innovation	451
<i>The Irish Potato Famine</i>	452
Achieving a Dynamic Equilibrium	452
<i>The Mosquito Killer</i>	453
Equality in the Consequences of Innovations	456
The Communication Effects Gap	457
Gap-Widening Consequences of the Diffusion of Innovations	460
Social Structure and the Equality of Consequences	462
Strategies for Narrowing Gaps	464

Wider Gaps Are Not Inevitable	,	~.	467
<i>The Digital Divide</i>			468
Summary	• •	,	470
<i>Glossary</i>		.	473
<i>Bibliography</i>		~.	477
<i>Name Index</i>		'	537
<i>Subject Index</i>	•	<i>i</i>	543