## **Contents**

		Cybercrime Industry and Its Structure:
Rele		ors, Motivations, Threats, and Countermeasures
1.1	The Ra	apidly Rising Global Cybercrime Industry
	1.1.1	Cybercrime: Definitional Issues
1.2	Econor	nic, Social, and Political Impacts of Cybercrimes
	1.2.1	Social Impacts
	1.2.2	Political and National Security Impacts
1.3		dological, Conceptual, Logical, and Statistical
	Proble	ms in Estimating Cybercrime
1.4	Trends	in Cybercrimes
	1.4.1	Social Engineering Skills
1.5	Types :	and Classification of Cybercrimes
	1.5.1	Targeted vs. Opportunistic Attacks
	1.5.2	Predatory Cybercrimes vs. Market-Based Cybercrimes
1.6	Releva	nt Actors Associated with Cybercrimes
	1.6.1	Cyber-Criminals, Cyber-Terrorists, and State
		Actors Involved in Cyberattacks
	1.6.2	Cybercrime Victims and Targets
	1.6.3	Regulators and Governments
	1.6.4	Supranational Organizations
	1.6.5	Voluntary, Nonprofit, and Non-government
		Organizations
1.7	Motiva	tions Associated with Cybercrimes
	1.7.1	Intrinsic Motivation
	1.7.2	Extrinsic Motivation
	1.7.3	Combination of Motivations
	1.7.4	Trend Toward Extrinsically Motivated Crimes
1.8	Busine	sses' Countermeasures to Combat Cybercrimes
1.9	Conclu	ding Comments
Note	s	



x Contents

2	Simp	le Econo	mics of Cybercrime and the Vicious Circle	35
	2.1		ction	35
	2.2	Econom	nic Factors Affecting Crimes	36
		2.2.1	Target Attractiveness	36
		2.2.2	Economic Conditions Facing an Offender	37
	2.3		nic Processes Motivating a Cyber-Criminal's	
		Behavio		37
		2.3.1	Selection of Targets	38
	2.4	Structur	re of Cybercrimes: The Vicious Circle	38
		2.4,1	The Cybercrime Market	39
		2.4.2	Law-Enforcement Agencies	40
		2.4.3	Cyber-Criminals	41
		2.4.4	Cybercrime Victims	42
		2.4.5	Inter-jurisdictional Issues	44
	2.5	A Cybe	r-Criminal's Cost-Benefit Calculus	45
		2.5.1	The Benefit Side	46
		2.5.2	The Cost Side	46
	2.6		ding Comments	49
	Note			50
	Refer			50
_				
3			nal Perspective on Cybercrimes	57
	3.1	Introdu	ction	57
	3.2		ional Theory	58
		3.2.1	Regulative Institutions	58
		3.2.2	Normative Institutions	59
		3.2.3	Cognitive Institutions	59
		3.2.4	Interrelationships Among Institutional Pillars	59
		3.2.5	Exogenous and Endogenous Institutions	60
		3.2.6	Neoinstitutionalism	60
		3.2.7	Institutions Operating at Various Levels	61
	3.3	g Cybercrimes Through the Prism of the		
			are on Institutions	62
		3.3.1	Formal Constraints and Crimes	62
		3.3.2	Informal Constraints and Crimes	62
	3.4		ions at Different Levels Influencing Cyberattacks	63
		3.4.1	International-Level Institutions and Cyberattacks	63
		3.4.2	National-Level Institutions and Cyberattacks	64
		3.4.3	Institutions at the Industry/Professional/	
			Inter-organizational Level and Cyberattacks	66
		3.4.4	Institutions at the Network Level and Cyberattacks	67
		3.4.5	Institutions at the Intra-organizational Level	
			and Cyberattacks	68
	3.5	Conclu	ding Comments	69
	Note		• • • • • • • • • • • • • • • • • • • •	69
				60

Contents

4	Incre	asing Re	eturns and Externality in Cybercrimes	75			
	4.1	Introdu	ction	75			
	4.2	Increas	ing Returns and Feedback Loops in Cybercrimes	76			
		4.2.1	Economic Feedback	76			
		4.2.2	Sociopolitical Feedbacks	77			
		4.2.3	Cognitive Feedback	78			
	4.3	Mechai	nisms Associated with Externality in Cybercrimes	78			
		4.3.1	Path Dependence and Externality	78			
	4.4	Ineffici	ency and Congestion in the Law-Enforcement System	81			
	4.5		on of Cybercrime Know-How and Technology	84			
	4.6		ed Predisposition Toward Cybercrime	86			
	4.7		ding Comments	88			
	Notes			88			
				89			
_							
5			Field Evolved Around Cybercrimes	95			
	5.1	Introdu	ction	95			
	5.2		eoretical Framework: Institutional Field	97			
	5.3		ional Field Change Mechanisms	100			
		5.3.1	Exogenous Shocks	100			
		5.3.2	Changes in Organizational Logics	101			
		5.3.3	Gradual Change in Field Structure	101			
	5.4		ional Evolution	102			
		5.4.1	Regulative Pillar Related to Cybercrime	102			
		5.4.2	Normative and Cognitive Pillars Related				
			to Cybercrime	102			
	5.5		ional Field Formed Around Cybercrimes	103			
		5.5.1	The Formation of Regulative Pillar				
			Around Cybercrime	103			
		5.5.2	The Formation of Normative Pillar				
			Around Cybercrime	107			
		5.5.3	The Formation of Cognitive Pillar				
			Around Cybercrime	109			
	5.6	Conclu	ding Comments	110			
	Notes	Notes					
	Refer	ences .		112			
6	Infor	mation :	and Communications Technologies,				
U			, and Strategic Asymmetry	119			
	6.1		ction	119			
	6.2	Strategic Asymmetry and ICTs					
	6.3	Institutional and Organizational Factors Linked					
	0.5	with Positive and Negative Asymmetries					
		6.3.1	Institutions, ICTs, and National Security	126 127			
		6.3.2	Ability to Create Positive Asymmetry and	141			
		0.5.2	Minimize Vulnerabilities of Negative Asymmetry	131			
			PRODUCTE VIRGINISTADIBLICA OF INCLUSE ANY HOUGH V	1.71			

xii Contents

			ing Comments	133 134 134			
7	Globa	Global Heterogeneity in the Pattern of the Cybercrime Industry 13					
	7.1		tion	139			
	7.2	The Glo	bal Digital Security Threat: A Brief Survey	140			
	7.3	Pattern o	of the Global Cyber-War and Crime: A Proposed Model	142			
		7.3.1	Characteristics of the Source Nation	142			
		7.3.2	Profile of Target Organization	154			
	7.4	Conclud	ing Comments	156			
	Notes			158			
	Refere	ences		159			
8	Struc	ture of C	ybercrime in Developing Economies	165			
	8.1		tion	165			
	8.2		Survey of Cybercrimes in Developing Countries	168			
		8.2.1	Broadband Connections and Increase in Cybercrimes	169			
	8.3	Econom	ic and Institutional Factors Related to				
		Cybercri	imes in Developing Economies	170			
		8.3.1	Formal Institutions: Permissiveness of				
			Regulatory Regimes	170			
		8.3.2	Informal Institutions: Social Legitimacy and				
			Cybercrime	172			
		8.3.3	Defense Mechanisms Against Cybercrimes	173			
		8.3.4	Concentration of Crimes	175			
		8.3.5	Path Dependence Externalities Generated by				
			Conventional Crimes and Cybercrimes	176			
		8.3.6	Cybercrime Business Models in Developing				
			Economies	177			
		8.3.7	Motivations Behind Cybercrimes	178			
	8.4		ling Comments	179			
				183			
	Keler	ences		183			
9			and Economic Foundations				
			Business Models	189			
	9.1		l Entrepreneurship and Business Models				
			igital World	189			
	9.2		s Model and Their Components: Applying				
			ontext of the Cybercrime Industry	191			
		9.2.1	Configuration of Competencies	19			
	0.2	9.2.2	Company and Firm Boundaries	194			
	9.3		ernet and Organized Crime Groups' Reinvention	104			

Contents xiii

	9.4		ime Operators and Legitimate Businesses:	
		Selling (	Concept vs. Marketing Concept	197
		9.4.1	Marketing Mix of C2C vs. C2V Operators	198
	9.5		Uncertainty, Technological Information,	
		and Mar	ket Information	198
		9.5.1	The Problem of Quality Uncertainty	
			in an e-Marketplace	198
		9.5.2	Technological Information and Market	
			Information in an e-Marketplace	199
	9.6	Develop	ment of Dynamic Capabilities	200
	9.7	Conclud	ing Comments	201
	Refer	rences		202
10	The (	Clobal Cli	ick Fraud Industry	207
10	10.1		tion	207
	10.1	Clicke	nd Value Creation in the Internet Economy	208
	10.2	A Curvo	y of Click Fraud	209
	10.3		Fraudster's Cost–Benefit Calculus	212
	10.4	10.4.1	The Offenders	212
		10.4.1		212
	10.5		The Victims	219
	10.5		ing Comments	221
				222
11	Conc	luding Re	emarks and Implications	227
	11.1	Where D	Oo We Go from Here?	227
	11.2	Implicati	ions for Businesses	228
		11.2.1	All Firms Are Not Equally Susceptible	
			to the Vulnerability of Various ICT-Created	
			Security Risks	229
		11.2.2	Some Firms Are More Affected by the	
			Government's Measure	229
		11.2.3	Consideration of Security Risks in ICT	
			and Competitive Strategies	229
		11.2.4	The Rank Effect	230
		11.2.5	Importance of Reporting	230
		11.2.6	Measures to Avoid Positive Feedbacks to	
			Cyber-Criminals	230
		11.2.7	Combining Technological and	
			Behavioral/Perceptual Measures	231
		11.2.8	Managing Market Information	231
		11.2.9	Collaborating with Government Agencies	231
		11.2.10	Harnessing the Power of Attachment	
			in Online Communities	232
		11.2.11	Employing Online Security as a Competitive	
			Advantage Tool	232

xiv Contents

11.3	Implicati	ions for Consumers	233
	11.3.1	Revisiting a Cognitive Framework Related	
		to Cybercrimes	233
	11.3.2	Tracking the Performance Indicators Frequently	234
	11.3.3	Minimizing Activities, Websites, Channels,	
		and Networks Associated with Cybercrimes	234
	11.3.4	Understanding Communication Modes of	
		Legitimate and Criminal Enterprises	234
	11.3.5	Need to Be Watchful for e-Commerce	
		Activities That Have Relatively High	
		Incidence of Cybercrimes and Cyber-frauds	234
	11.3.6	Staying Safe Offline	235
	11.3.7	Monitoring Children's Online Activities	235
	11.3.8	Assessing the Credibility and Reputation of	
		Parties Involved in Economic Transactions	235
	11.3.9	Knowing About How Information Is Handled	
		by Parties Involved in Various Transactions	236
11.4	Implicat	ions for Policy Makers	236
	11.4.1	Cooperation and Collaboration Among	
		National Governments, Computer Crime	
		Authorities, and Businesses	236
	11.4.2	Paying Attention to Wider Institutional Fields	237
	11.4.3	Measures to Increase Reporting Rate	237
	11.4.4	Certainty vs. Severity of Punishment	237
	11.4.5	Developing Economies' Negative	
		International Image and Exclusion from the	
		Digital World	238
	11.4.6	Helping Small and Poor Countries Develop	
		Anti-cybercrime Capabilities	239
	11.4.7	Collaborations with Businesses	239
	11.4.8	Measures to Educate Consumers and Increase	
		the Distribution of and Access to Information	240
	11.4.9	Broadband Penetrations and Cybercrime	
		in Developing Economies	240
	11.4.10	Dealing with Various Types of Online	
		Communities	241
11.5	Direction	ns for Future Research	241
	11.5.1	Institutional Analysis of Cybercrime	241
	11.5.2	Empirical Analysis	243
	11.5.3	Inter-organizational Studies	243
	11.5.4	ICT-Created Positive and Negative Asymmetries	243
	11.5.5	Modus Operandi of Various Types	
		of Cyber-Criminals	244
	11.5.6	Examination of Non-state Actors	245
	11.5.7	Longitudinal Analysis of Hackers	245

Contents xv

	11.5.8	The Nature of Hot Products	245
	11.5.9	Portability in Cybercrimes	245
	11.5.10	Applying a Game-Theoretic Approach	245
	11.5.11	Developing a Typology of Cybercrimes	246
	11.5.12	Country-Level Case Studies of Cybercrimes	246
	11.5.13	Cybercrime Operations as a Born	
		Global Phenomenon	246
11.6	Final The	ought	247
			247