## Index

access control using password and PIN, 121-22 tokens and smart cards, 122-23 access devices, 19 account aggregator, 22 Advantage mortgage, 31 aggregation, 21 aggregator, 19, 21-22, 60 AIG debacle, 60-61, 161-62 alternate system of trading, 109-10 Application Programming Interface (API), 23 Application Service Provider (ASP), 41-42 asymmetric cryptography, 125, 146-47 asymmetric key encryption, 124-26 automated scanning tools, 129 automated teller machine (ATM), 37, 43.83 Bankers' Book of Evidence Act, 1891, 112, 115-16, 141, 146, 156-57 Bank for International Settlement (BIS) guidelines for risk management, 99, 104-05, 114 Basel Committee on Risk for Electronic Banking, 91, 100-01, 106 biometrics authentication techniques, 123 black hackers, 94 Bombay Stock Exchange, 66, 71 book store effect, 78 Brick and Click model, 5, 13, 18, 28, 40, 56, 65, 74-89, 175 business planning, integration with marketing, 78 - 80Business-to-Consumer (B2C) segment, 31

card-based scheme, 30 Carnegie Mellon Software Engineering Institute Network Systems Survivability Program, 131 certification authority (CA), for digital signatures, 148-50 Civil Procedure Code, 141 Clearing Corporation of India, 10, 67, 71-73 click and brick marketing, See marketing Code of Criminal Procedure, 112 configuration issues, 133 connectivity risks, 108 control devices, in network security, 121 - 23corporate plans, marketing plan in, 79-80 cracker, 112 credit risk, 90-91 Cryptographically Strong Pseudo Random Number Generator (CSPRNG), 126 cryptographic keys, 113 customer service, 5, 29, 35, 39, 74, 76 cyber crime, 111-17 effects, 114 enforcement problems, 115-17 forms, 112 IT Act and, 113-14 real and hearsay evidence, 115 reasons, 112-13 cyber laws contract aspect, 144-45 evidence aspect, 149-57 functional equivalent approach, 145-49 intellectual property aspects, 158 jurisdiction, 143-44

data systems incompatibility, 108 data transmission reliability, 124 denial of service attacks, 129, 132 digital signatures certification, 148-50 creation of, 147 definition, 146 due diligence, and risk, 100, 105, 172 e-banking, 22-24, 37-59 access to, 37 ASP selection, 42 bankers perception, 38 bank websites, 42-45 B2B applications, 48 definition, 37 differentiation aspect, 52-53 efficacy evaluation, 52 impact assessment, 50-51 internet and non-internet banks, 56 mobile banking, 58-59 objectives, 46 planning and development, 39-45 problems encountered, 22-24, 39 products and services offered, 46-47 risks BIS recommendations for management, 99, 104-06 conduct of business, 108-09 connectivity, 108 data security, 108 factors, 53-54 management, 104-10, 164-65 operational, 107 transaction, 107-08 security measures, 109-10 to small- and medium-sized enterprises, 49 - 50stand-alone e-banking, 54-58 strategic risks, 106-07 structural deficiencies, 107 systems and services management, 137 - 40e-broking, 162-66 client-broker relationship, 163-64 contract notes, 165 cross trades, 165-66 operational and system requirements, 163

risk management, 164-65 STP framework, 165-66 e-commerce, See also e-banking attendant risks, 108-09 Economic Cycle Reserve, 92 e-finance competition and cost savings, 15-16 cost savings, 15 delivery channels, 10-16 enabling services and their importance, 8 institutions regulation, 159-62 internet pervasiveness and, 14-15 IT as infrastructure technology, 12-14 problems associated with, 19-20 returns on IT investments, 11-12 service, 37 transition to, 7 e-finance institutions competition policy, 170-71 e-broking, 162-66 insurance sector, 166-68 investor information and complaints, 164 management oversight and due diligence, 172 security controls, 171-73 monetary policy implications, 168-70 operational integrity, 163 order/trade confirmation, 164 personnel and procedures, 163 regulation, 159-62 regulatory contents, 161-62 risk management principles, 172 signature verification and authentication, 163 smart and debit cards, 170 system capacity, 163 e-insurance, 59-62 risk management for, 104-10 electronic fund collection, through e-trading, 69 - 70electronic system, and risk, 94 e-money, 30-32 encryption attacks, 132 e-procurement, 33-36 e-purse schemes, 30 equity markets, e-trading in, 33 e-security, in wireless network, 131

ethical hackers, 94 e-trading, 63-73 advantages, 64-65 electronic fund collection, 69-70 in equity markets, 33 in fixed-income securities, 70-72 in foreign exchange, 72-73 indicative or tradable, 68 pre-trade transparency, 68-69 price quantity real-time or delayed, 68 - 69services, 64 in shares. 69 systems, 33 transparency, 67-69 Federal Deposit Insurance Corporation (FDIC), 39, 171-73 guidelines, 93-94, 99, 101, 105 Financial Market Directive (MIFID), European Union, 67-68 firewall, 126, 128

fixed-income securities, e-trading in, 70–72 floor-based trading, 64 foreign exchange trading, 33, 72–73 fraudulent data misuse, 94

General Packet Radio Service (GPRS) vulnerability, 135 Grameen Bank, Bangladesh, 7, 33 Gray bank, e-banking at, 44 Groupe Spécial Mobile (GSM) and network security, 134–37 security solutions for, 136–37 vulnerability GPRS, 135 SIM cards, 134–35 SMS, 135–36 WAP weaknesses, 136

hackers, 43, 94, 97–98, 112–13, 120, 122, 132 hedge funds, 92

IDS alert notifications, 129 I-Flex solutions, 41–42 incident response, in network security, 129–30 Indian Contract Act, 141 Indian Evidence Act 1872, 112, 115, 141, 146, 150-56 Indian Penal Code, 1860, 112, 146 information security risk assessment, 95 Information Technology (IT) Act, 2000, 112-13, 115, 141, 145-46, 149-56 in-house work done, 24-26 insertion attacks, 132 Insurance Regulatory and Development Authority (IRDA), 35, 59, 61, 166 insurance sector, 106, 166-68 intangible products marketing, 77-78 Intellectual Property Rights (IPR), 116, 158 International Association of Insurance Supervisors, 106, 166-68 internet banking, See e-banking characteristics, 4 economics, 175-78 enabled insurance, 61-62 evolution, 2-4 impact assessment, 5-7 interaction and personal interaction, 176 and non-internet banks dynamic analysis, 55-56 objectives, 175 pervasiveness and e-finance, 14-15 potential, 174-78 trading, See e-trading for underdeveloped countries, 7 users growth, 2-3 Internet Protocol (IP) spoofing, 98 internet services clean slate approach, 29 continual evolver approach, 28-29 e-money, 30-32 e-procurement, 33-36 e-trading, 33, 63-73 factoring and leasing, 32-33 problems associated, 28 reasons retarded developments of, 27 - 28traditional migrator approach, 28 intrusion detection systems (IDS), 95, 127

liquidity regulation, 92 risk, 90-91 majeure risks, 103 malicious attacks, and network security, 123-24 Management Information System (MIS), 49 management oversight and due diligence, 172 of risks, 100, 105 security controls, 171-73 managers' check list in marketing, 85-86 for network security, 127-29 market risk, 90-91 turbulence, 87-88 marketing, 76-88 customers and, 76, 84-86 grievance redressal, 87 intangible products, 77-78 integrating with business planning, 78-80 managers' check list, 85-86 market turbulence, 87-88 max-e-imperatives, 84-85 objectives, 80-85 plan in corporate plans, 79-80 strategy evaluation, 86-87 supplier reach, 82-83 market would take care approach, 92-93 micro finance agencies, 49 mobile banking, 58-59 mobile node to mobile node attack, 133 Mobitrack service, 66 Model Law on Commercial Arbitration. 145 - 46Multilateral Trading Facilities (MTFs), 67-68 National Infrastructure Protection Center (NIPC), 131 National Stock Exchange, 10, 71 Negotiated Dealing System of RBI, 70

key encryption, 122, 125-26

network security, 118-40 access control using password and PIN, 121-22 tokens and smart cards, 122-23 asymmetric key encryption, 125-26 best practices in use, 128-29 control devices, 121-23 data transmission reliability, 124 e-banking systems and services, 137-40 e-security, 131 failures, 119-21 GSM and, 134-37 incident response, 129-30 malicious attacks, 123-24 managerial checklist, 127-29 manager's laptop problem, 132-33 random numbers use, 126-27 survivable system development, 130-31 war driving, 132-34, 136 wireless networks, 131-33 online client interface categories, 18 on-line payment systems, 169 online trading, implementation stage difficulties, 22-24 online value chain, 19-21 operational integrity, 163 risk, 90-91, 107 organizational control, risk beyond, 102-03 outsourcing, 24-26 e-finance systems and services management, 137-40 risk of, 102 password access control using, 121-22 generation, 121 theft, 98, 112 penetration analysis, 95 testing, 126

personal digital assistant (PDA), 37, 43

personal identification number (PIN), access control using, 121–22 pre-trade transparency, in e-trading, 68–69

Project Entropia, 30-31

## 188 E-finance

pseudo-random number generators (PRNG), 126 pseudo-random numbers (PRN), 126 public key infrastructure (PKI) system, 128 random numbers, use in network security, 126 - 27RBI Act of 1934, 141, 146 regulatory framework, for telecommunication, 8-9 Reserve Bank of India (RBI), 70-72, 74, 99, 160, 170-71 risk analysis, 90-91, 105 assessment, 95-97 beyond organizational control, 102-03 conduct of business, 108-09 connectivity, 108 data security, 108 due diligence, 100, 105, 172 electronic system, 94 elements, 90-91 institutional and geographic regulation, 92-94 management aspects, 90-103 Basel committee and, 100-01, 106 BIS guidelines, 99, 104-06 for e-banking and e-insurance, 104 - 10FDIC guidelines, 93-94, 99, 101, 171-72 mechanism, 99 oversight, 100, 105, 171-73 principles, 100-01, 172 operational, 90-91, 107 of outsourcing, 102 potential threat, 97-100 preventive measures, 94-95 security controls, 100-02, 105, 171-73 strategic, 106-07 transaction, 107-08 Turner recommendations to manage, 91\_92 vulnerabilities, 96-97 RSA asymmetric cipher, 125 Scare Socket Layer (SSL) protocol, 125-26,

136

securities, e-trading in, 33 Securities and Exchange Board of India (SEBI), 65, 69, 71-73, 109-10, 162-63, 165 security controls and risk, 100-02 security failures, 119-21 self-help groups (SHGs), 49 shares, e-trading in, 69 short message services (SMS) vulnerability, 135-36 signature verification and authentication, 163 Simple Network Management Protocol (SNMP), 128 small- and medium-sized enterprises, e-banking to, 49-50 smart cards, 170 access control using, 122-23 sniffing, 113 social engineering, 98, 113 South Africa's Standard Bank, 32 stand-alone e-banking, 54-58 State Bank of India, 34 stealers, 112 strategic risks, 106-07 subscriber identification module (SIM) card vulnerability, 134-35 supplier reach, in marketing, 82-83 survivable network security system, development of. 130-31 Swedish Financial Supervisory Authority, 30 symmetric key encryption, 124 telecommunication, regulatory framework for, 8-9 telenet, 128 telephone-based trading, 64 threat, to computer security, 97-100 tokens, access control using, 122-23 trading, See also e-trading alternate system, 109-10 traffic interception and monitoring, 132, See also war driving transaction risks, 107-08 transparency, in e-trading, 67-69 Trojan horses, 98-99, 123-24

Uncitral Model Law, 115, 149 United Nations Commission for Contracts for International Sale of Goods, 146, 149 VAR measures, 91 virtual private networks (VPN), 126, 136–37 viruses, 99, 129 voice-over IP, 129 vulnerabilities assessment tools, 95 risk assessment and, 96–97

war dialing, 98, 133 war driving, 132–34, 136 websites access devices, 19 aggregator, 21–22 attacks on, 43–45 design strategy, 20–21 development of, 17–18

e-banking, 22-24, 42-45 online trading, 22-24 online value chain, 19-21 outsourcing and doing it yourself, 24-26 portals, 19, 21-22 weightless economy, 77 wide area network (WAN), 137 Wireless Application Protocol (WAP) weaknesses, 136, 165 Wireless Equivalent Protocol (WEP), 132 Wireless Markup Language (WML), 136 wireless network (WLAN), e-security in, 129, 131-33 Wireless Transport Layer Security (WTLS), 136 Worms, 123-24