Index

Aadhaar system, 51–52 Academics, 5 Account types, 213–214 Accounting classification, 277–278 Accredited investors, 181 Acorns, 239, 242 Advanced Computerized Execution System, 208 Advanced data analytics, 400 Adversarial attacks, 330 Adverse selection problems, 49 Adyen, 426 Affirm, 223 Aggregation, 425 Airwallex, 424 Aladdin Climate, 400-401 Algorithmic biases, 158 Algorithmic rebalancing, 275 Algorithmic trading (AT), 309 Alibaba, 98-99 Alpha decay, 227 Alternative data, 226-227, 303-304 applications in other areas of finance, 308-310 changing finance, 12 digital footprints and microdata, 307 in financial forecasting, 305-306 regulatory data, 307-308 standard financial data, 304-305 web scraping for sensory data, 306-307 Amazon, 316, 433 Amazon Simple Workflow Service (Amazon SWF), 261 Amazon Web Services (AWS), 226, 376, 432 American Stock Exchange study (1969), 222

Analysis elements, 149–152 Android Pay, 110 Angel Capital Association, The (ACA), 178–179 Angel investors, 177 Angels, 178-180 Anonymity, 253 Ant Financial, 47 Ant Group, 47 Anti-Cybersquatting Consumer Protection Act (ACPA), 295-296 Anti-money laundering (AML), 69-70, 162, 291-292, 426 AML-related fines, 67 detection of, 79 Apple Pay, 122, 238 Application programming interfaces (APIs), 37, 104, 207-208, 298-299, 354, 426-427 APY, 34-38 Archival data, 297-298 Arrow-Debreu economy, 93 Artificial intelligence (AI), 4, 12, 18, 39, 44, 71-72, 98, 158, 192–193, 224, 227, 229, 237, 285-286, 290, 292, 315-316, 346, 363-364, 381, 400, 420, 423-424 AI-powered credit scoring algorithms, 158-159 applications in finance, 323–327 benefits and opportunities, 324 challenges for regulation, 330-332 chatbots and robo-advisors, 325 cybersecurity and fraud detection, 326

emerging regulatory trends and best practices in AI governance, 332-334 financial trading and asset management, 326 generations, 316-318 generative, 319-321 governance, 316, 330-331 harnessing data with, 11 lifecycle in finance, 323 lifecycle of ML project, 321-323 Regtech, 326-327 risk management and credit scoring, 325 risks and regulatory considerations, 327-334 in robo-advisory, 200 Suptech, 327 system, 292 use cases, 324-325 Artificial neural networks (ANNs), 319 Asset (see also Cryptoassets) management, 326 recovery in case of default, 153-154 Assets under management (AUM), 48, 180, 195, 269, 383, 401 Asymmetric information, 218 Automated clearing house (ACH), 289 Automated market makers (AMMs), 229-230 Automated teller machines (ATMs), 96-97, 236, 289 Automation, 56 "automation bias" phenomenon, 329 automation/dynamic/submeter data, 307 Autonomy, 329 Aventus, 351 Average citations (AC), 19, 34, 38 Average publication year (APY), 19 Axis Bank, 258

Back-office solutions, 388–390 Bank credit loan portfolios, 154 Bank credit portfolios, risks of, 140 Banking, 6, 101, 285–286 Fintech's impact on, 7 path to digital transformation and future of, 102-105 Banking as a service (BaaS), 420 Basic economic theory, 139 Before-tax cash flow (BTCF), 365 Behavioral biases disposition effect, 198 home bias, 198 overconfidence, 198 robo-advisors, 197-199 Betterment, 236-237, 244 Betterview, 351 Bias. 328 **Bibliometrics** analysis, 5–6, 17 co-word analysis, 19 Bid-ask spread, 211 Big 4, 251-252 Big data(see also Alternative data), 285-286, 382-383, 388, 423 architectures in information supply chain, 296 Fintech technical architecture, 293-299 Fintech's big data history, 286–293 role in Fintech, 11 Big techs, 97 Binance, 245 Biometrics, 39, 53 authentication, 238 Bitcoin (BTC), 54-56, 237, 245, 253, 258-259, 271, 422 Black, indigenous, and people of color (BIPOC), 426-427 "Black box" problem, 319, 327-328 Blockchain, 10, 39, 55-56, 79, 245, 252, 254, 268, 400, 406 accounting, 251-252 adoption, 251-252, 261, 263 advantages, 256 applications, 251-252 in carbon trading, 404-405 disadvantages, 260-261 disrupts financial world, 255-260

financial sector, 252 in Fintech. 10 R3 Corda, 252 real estate, 252 supply chain, 252 trustless environment, 270 works, 254-255 Blockchain technology, 6, 245, 251-252, 270, 303-304, 422 blockchain's advantages over legacy technologies, 253-254 blocks. 268 consensus algorithms, 268 cryptographic hashes, 270 51% attack (majority attack), 254 proof of stake (POS), 390 proof of transaction (POT), 258 proof of work (POW), 255 ripple, 269 token, 269 Blocks, 122-123, 252-253, 268 Bloomberg, 290 Bluetooth Low Energy (BLE), 110 BoardEx, 304 Bollinger bands, 213 Borrowers, 136 allocation of, 144-148 correlation, 148 implementing future correlated rating states of, 142-144 to independent segments, 146-147 marketplace lending platforms for, 7 - 8risk factors, 144-145 sectors, 145 single sector, 145–146 Boston Consulting Group (BCG), 420 Brand and reputation management, 52 - 53Bridgewater Associates, 383 Brokerage apps, 384-385 Budgeting, 238, 244 Budgets, 238-239 Bulge-bracket bank, 390 Burning rate, 272 Business logic, 367–368

Business model, 136–137 Business use of digital payments, 123–124 Business-to-business (B2B), 7, 123, 290.424 Business-to-consumer (B2C), 99 Buy now, pay later (BNPL), 421 California Consumer Privacy Act (CCPA), 162 Candlestick chart, 212-213 Capital asset pricing model (CAPM), 197 Capital formation, 8 angels, 178-180 friends and family, 178 private equity and venture capital, 180 regulatory framework of capital formation, 180-184 traditional methods of, 178-180 Capital markets, 388 fintech in, 13 Carbon credit marketplaces, 407 Carbon credits, 404–405 Carbon trading(see also Securities trading), 404-405 blockchain and distributed ledger technology in, 404-405 need for transparency and traceability, 404 platforms, 400 Card fraud, 126 Cash App (Square), 110, 122-123 Cash flows on defaulted and nondefaulted exposures, 153 Center for Research in Securities Prices (CRSP), 290, 304 Central bank digital currencies (CBDCs), 79, 105, 277, 291 Central limit order book (CLOB), 209-210 Centralization, 217-218 Challenger banks, 384 Charting tools, 212-213 Chatbots, 325

ChatGPT, 200, 228-229, 363-364 ChatGPT, 200, 228-229, 363-364 "Chatification" of money, 99 Chebyshev tensors (CTs), 140 Cheche Technology, 351 Chief executive officer (CEO), 137, 382-383 Chief investment officers (CIOs), 193 China, 27 Citation patterns, 20, 40 Clearbank, 424 Cleo, 239 Climate change, 400 Climate risk assessment tools, 400-401 awareness, 408-416 data, 408-409 findings, 409-413 greenwashing or green talking, 414-416 methodology, 409 Cloud cloud computing, 290, 303-304 cloud services, 52 Co-citation network analysis, 27-33 Co-location, 215-216, 225, 386 Co-word analysis, 20 Coinbase, 245 Coins, 393 Collaboration coefficient (CC), 25, 27 Collaboration index (CI), 25, 27 Commercial real estate, 364, 373, 375 Commodity Futures Trading Commission (CFTC), 291, 432 Comparative analysis of risk management frameworks in Fintech. 166-167 COSO ERM Framework, 166 FAIR Risk Quantification Framework, 166-167 NIST Cybersecurity Framework, 167 Competition, 127, 425 Complexity, 328–329 Compliance, 66-67, 73

management, 77 risks in Fintech, 162-163 Compound (DeFi platform), 99-100 Compound annual growth rate (CAGR), 56 Comprehensive machinery, 124–125 Compustat, 290 Computerization, 289-290 Computers, 208, 210-211, 214-215 vision applications, 71-72 Condor Capital Wealth Management, 194 Consensus algorithms, 254 **Consumer Financial Protection Bureau** (CFPB), 432 Consumer-to-business activity in digital payments, 123 Continuous integration/continuous delivery (CI/CD) pipelines, 170 "Conversational AI" agents, 325 Copy trading, 244 Corona-Crash, 194-195 Corporate reputation, 52 Corporate social responsibility, 14 Corporate venture capital (CVC), 309-310 Correlations allocation of, 144-148 coefficient, 144 focus, 328 COSO Enterprise Risk Management (COSO ERM), 8, 166 CoStar.com, 375 Counter-terrorism financing (CTF), 69-70, 162 detection of, 79 Counterparty risk, 141 COVID-19 pandemic, 46 Creative destruction, 104 Credit cards, 236 Credit default swaps (CDS), 217 Credit history, 369 Credit Karma, 240 Credit portfolio analysis applicable to MPL, 141-154

Credit ratings, 136 Credit risk. 141 Credit scores, 239-240 Credit scoring, 325 Credit Sesame, 240 Credit spread (CS), 141 Critical infrastructures, 285-286 Crowdfunding, 8, 181-182, 184-185, 244 - 245climate projects, 407 crowdfunding & CO, 390-393 JOBS Act, 182 platforms, 185 regulation crowdfunding, 182 transactions, 184 Crowdstrike, 430 Crunchbase sources, 305, 428 Crypto mining, 290-291 Cryptoassets, 268, 270, 275 accounting classification, 277-278 advantages, 271 applications on fintech ecosystem, 276-277 blockchain technology, 270 cryptocurrencies, 271 data, 308-309 disadvantages, 271 and fintech, 11 institutional challenges, 278-279 regulatory challenges/issues, 277-279 reserves, 275 risks, 271 security tokens, 273 stablecoins, 274-275 tokenized assets, 273-274 use cases and examples, 276 utility tokens, 271-273 Cryptocurrencies, 6, 10-11, 55-56, 183-184, 229-230, 245, 251-252, 268, 271 Cryptocurrency exchanges binance, 421-422 coinbase, 245 Cryptographic assets, 78–79 Cryptographic hashes, 270

Cryptographic principles, 422 Custodia Bank, 279 Customer acquisition, 433 Customer due diligence (CDD), 70, 429 Customer-to-business (C2B), 7 Customer-to-customer (C2C), 99 Cyberattacks, 160, 429, 431 Cybersecurity, 53, 165-166, 326 Data access and storage, 375-379 Data acquisition, 296-297 and preprocessing, 321-322 Data analysis, 298-299 Data breaches, 160 Data dependency, 328 Data encryption, 168 Data management, 426 Data mining, 298 Data poisoning, 330 Data privacy and security, 331, 428 violations, 160-161 Data processing, 298–299 Dealer-to-customer market (D2C market), 209 Debanking, 70 and other social and geopolitical drivers, 69-71 Debt, 287-288 crowdfunding, 184-185 Decentralization, 55, 217-218 Decentralized compliance, 79 Decentralized finance (DeFi)(see also Personal finance), 25, 38, 68, 99-100, 257, 276, 292, 382, 400, 421-422 challenges in DeFi's support for climate initiatives, 407-408 and climate initiatives, 406-408 platforms, 99-100 platforms supporting climate action, 406-407 Deep learning (DL), 319 Deep Neural Networks (DNNs), 140, 151

Default, asset recovery in case of, 153 - 154Defaulted exposures, valuation and cash flows on, 153 Deloitte. 251-252 Democratization of finance, 383 Designated Order Turnaround (DOT), 97 Digit, 244 Digital Apple pay, 122, 238 digital assets, 4, 11, 78–79, 183–184, 268 digital banking, 246, 420 digital currency, 245, 421-422 digital exclusion, 126 digital finance, 33, 66 digital footprints, 307 digital insurance (insurtech), 49-50 digital lending, 7, 47-48, 420 digital payments and transfers, 48, 124 digital service providers, 122–123 digital transformation, 103 digital wallets, 238 digital wealth management, 9, 48-49 Google pay, 122, 238 Samsung pay, 238 Digital Advisor, 196 Digital age, 52-53 Digital banking, 246, 420 business use of digital payments, 123 - 124competition, 127 digital and mobile payments in North America, 124 digital service providers in United States, 122-123 Fintech and market for payments, 124 - 126individual and digital payment market, 126-127 integrity, 127 mobile growth trends, 120–122 rise of smart payments, 110-112

services, 7 Swish, 127 worldwide digital activity, 112-120 Digital banks, 400 Digital commerce, 112 Digital disruption, Fintech narrative and accompanying, 95-102 Digital financial regulation, 73 Digital identity, 51-52 Digital ledger technology (DLT), 422 Digital payments, 48, 124 business use of, 123-124 country trends in, 115-117 individual and digital payment market, 126-127 methods, 51 in North America, 124 and transfers, 46-47 Digital Payments Survey, The, 123 Digital platforms, 44 Digital Remittances, 112, 115 Digital service providers in United States, 122-123 block, 122-123 PayPal and Venmo, 122 Zelle, 123 Digital technologies, 104 Digital transaction methods, 46-47 Digital transformation, 103 Fintegration and road ahead, 104 - 105and future of banking, 102-105 response of traditional FIs in changing ecosystem, 102-103 Digitalization, 129 Digitalized payment systems, 7 Digitally ambidextrous, 104 Digitization process, 92, 158 Diners Club, 420 Disaster recovery planning, 170 Disintermediation, 98–99 Disruption, 98-99, 344 Distributed denial-of-service (DDoS), 160

Distributed ledger technologies (DLTs), 79, 241, 253, 389, 400 in carbon trading, 404–405 Domain names system (DNS), 295-296 Donation-based crowdfunding, 184 Dow Jones Industrial Average (DJIA), 224 Down payment, 369-370 E*Trade, 9–10, 236 Early AI systems, 317 Eco-friendly staking, 407 Ecopia, 351 Ecosystem, 344, 351, 354-355 response of traditional FIs in changing, 102-103 Edelman Financial Engines, 196-197 Electronic Brokering Services (EBS), 208 Electronic communication networks (ECNs), 97, 208, 222 Electronic Data Gathering, Analysis, and Retrieval system (EDGAR system), 55, 290, 382 Electronic data interchange (EDI), 290 Electronic funds transfers (EFT), 288 Electronic identification tool (e-ID), 125 Electronic Know Your Customer (e-KYC), 51-52, 102 Electronic trading, 211–212 Electronification, 223 of trading, 224 Embedded compliance, 79 Embedded finance, 421 Emerging technologies, 71, 159 Encryption, 238, 241 Enterprise Resource Planning (ERP), 375-376 "Envelopment" strategy, 99 Environmental, social, and governance (ESG), 6, 37, 67, 105, 201, 293

challenges, 403-404 importance, 403-404 integration, 402-403 metrics. 400 robo-advisory and, 2013 sustainability and humanitarian regulation, 80-81 Equity crowdfunding, 185 Equity financing, 420 Ernst & Young (EY), 251–252 Ether (ETH), 245 Ethereum blockchain, 258–259, 272 eToro, 244, 382 European Union (EU), 100, 293 Exchange-traded funds (ETFs), 192, 214, 223 Explainability, 331 Explainable AI (xAI), 330 Exponential moving average (EMA), 213Extensible business reporting language (xBRL), 298–299 Extensible markup language (XML), 298-299 EY Global e-Wealth Management Research Report, 49 Facebook, 305-306 Facial width to height ratio (fWHR), 306 Fair Isaac Corporation (FICO), 369 FAIR Risk Quantification Framework, 8, 166–167 Fairness, 331 Fairness, Ethics, Accountability, and Transparency (FEAT), 333 Family, 178 Federal Deposit Insurance Corporation (FDIC), 432 Federal government, 181 Federal National Mortgage Association (FNMA), 369 Federal Reserve Economic Data (FRED), 304-305 Fedwire, 420 Few-shot learners, 228–229

Fiat-backed stablecoins, 274–275 Fibonacci retracement, 213 51% attack, 254 Filecoin, 272 Finance, 285–286, 426–427 alternative data changing, 12 industry, 381 Financial Accounting Standards Board (FASB), 277-278 Financial crime counter-terrorist financing, 162 fraud, 158 money laundering, 162-163 Financial Crimes Enforcement Network (FinCEN), 291-292, 432 Financial goals with fintech, 242-243 Financial inclusion (FI), 45, 105-106 through technology, 158-159 Financial Industry Regulatory Authority (FINRA), 182, 222, 290 Financial infrastructure, 289-290 Financial innovation and regulation, 71 Financial institutions (FIs), 7, 54, 66, 78-79, 83, 92, 208, 316, 400 financial institutions management, 57 Financial intermediaries (FIs), 92 Financial intermediation, 93 framework of, 93-95 genetic code of, 92-95 as information business, 95 Financial landscape, 157–158 Financial literacy, 126, 195 Financial management, 44 Financial markets, 192, 209, 218, 289-290 regulation of, 216 Financial regulation, 66 Financial sector, 256–258 Financial services, 44, 101 Fintech use cases advance, 45-50 Fintech's impact on, 7 industry, 3, 67, 95-96

Financial Stability Board, 401 Financial system, 193-194 Financial technology (fintech), 3, 5, 17, 43-44, 46, 51, 71, 91-92, 100, 157-158, 235, 267-268, 285-286, 316, 384, 388, 399-400, 419-420 access controls, 169 access to account, 126 advance financial services, 45-50 AI and ML, 12 alternative data changing finance, 12 applications, 12, 276–277 Betterment, 193-194, 244 big data's role in, 11 birth, 98 blockchain, 10, 55-56 book's structure, 5 brand and reputation management, 52 - 53budgeting and savings, 244 building operational resilience in, 169 - 170business models, 70-71 capital formation and crowdfunding, 8 in capital markets, 13 carbon trading and carbon credits, 404-405 challenges for, 427-432 citation patterns, 5-6 climate risk assessment tools, 400-401 climate risk awareness, 408-416 companies, 47, 172 comparative analysis of risk management frameworks in, 166-167 comparative analysis of risk profiles in. 165 compliance risks in, 162-163 computerization, 289-290 Credit Karma, 240 credit scores, 239 Credit Sesame, 240

crowdfunding, 244-245 cryptoassets and, 11 cryptocurrencies, 55-56 customer acquisition, 433 data encryption, 168 Defi and climate initiatives, 406-408 demystifying robo-advisors, 9 digit, 242 digital banking, 246 digital insurance, 49-50 digital lending, 47-48 digital payments and transfers, 46-47 digital wealth management, 48-49 disruption, 98-101 distinguishing features, 4-5 dynamic landscape, 165 emerging innovations, 10 ESG integration, 402-403 essential defense measures in, 168–169 eToro. 244 evolution of. 35 financial goals with, 242-243 findings, 20–33 firms. 223 fraud detection, 53 Funding Circle, 245 future, 14, 292–293 future research directions, 39 "genetic code" of financial intermediation, 92–95 GoFundMe, 245 green bonds and sustainable investment tools, 401–402 harnessing data With AI and ML, 11 history, 286-293 impact on banking industry and financial services, 7 incident response plans, 169 Indiegogo, 245 industrialization, 288-289 insurance (insurtech), 12-13, 245 intended audience, 5 investment and trading, 244

Kickstarter. 245 knowledge foundation of Fintech research, 27-29, 33 KYC and identity authentication, 51 - 52landscape, 5-6 Lemonade, 49 LendingClub, 245 leveraging fintech to minimize financial mistakes and maximize savings, 241–242 and market for payments, 124–126 marketplace lending platforms for borrowers and investors, 7-8 methodology, 18–20 Metromile, 245 Mint, 243 mobile payments and digital banking services, 7 Monzo, 246 N26, 246 narrative and accompanying digital disruption, 95-102 obstacles, 125-126 online trading, 9–10 operational risks in, 161-162 opportunities for, 420-427 overview of Fintech's Corpus, 21 path to digital transformation and future of banking, 102-105 payment processing, 246 peer-to-peer (P2P) lending, 235 person-to-person money transfers, 238 personal banking with, 238 Personal Capital, 243 personal finance applications, 10, 235 practical recommendations for enhanced technology risk management in, 171–173 preindustrial period, 287-288 Prosper, 245 publication trends, 19 purpose, 4 Oapital, 242

raising funds with, 7 Regtech, 6, 54-55 regulation, 101-102 reinventing banking and payments industry, 6 reputational risks in, 164-165 research hotspots, 27 research landscape, 39-40 research trends, 20-22 Revolut, 246 revolution, 171–172 revolutionizing real estate industry with, 13 risk assessment and management, 50 - 51risk management in, 8 Robinhood, 244 role in green bond market, 402 selection criteria, 19 shaping future of, 13–14 Square, 246 Square Cash, 238 Starling Bank, 246 strategic risks in, 163-164 Stripe, 246 sustainable banking, 405-406 tech in Fin and legacy hurdle, 96–97 technical architecture, 293-299 technologies and emerging trends shaping, 14 technology risks in, 160-161 temporal evolution of Fintech themes and future research directions, 39 thematic clusters (themes), 18–19 themes, 34-39 top articles, 22–25 top authors, 25–27 top co-cited references, 30-33 top talent, 432-433 transforming financial industry, 45 transforming personal finance with, 9 use cases in, 6, 50, 53-54, 56 Venmo, 238 ventures, 163-165

vulnerability assessments, 169 Wealthfront, 244 You Need a Budget (YNAB), 244 Zelle, 238 Zeta, 244 Financial trading, 326 Financing methods, 178 Fintech 50 companies, 243–246 budgeting and saving, 244 cryptocurrencies and blockchain, 245 digital banking, 246 Insurtech, 245 investment and trading, 244 payment processing, 246 peer-to-peer lending and crowdfunding, 244-245 personal finance management, 243 - 244Fintegration, 102, 104–106 Firm data, 408-409 Firm management, 50-53 Flash crash, 214, 386–387 FloodFlash, 351 Follow the money, 424 For sale by owner (FSBO), 368-369 Foreign exchange market (FX market), 208 Fractional reserve, 275 Fragmentation, 218 Fraud, 124 detection, 53, 79, 326 prevention, 53 reduction, 257 Friends, 178 FRISS, 351 Front-running strategy, 224 FTX, 269 Funding Circle, 245 g-index, 21, 25, 27 "Garbage-in-garbage-out" principle, 322 Gaussian Copula Model, 142 General Data Protection Regulation (GDPR), 162, 199–200, 227

General partners (GPs), 180 Generally accepted accounting principles (GAAP), 277-278 Generative AI models, 78, 319, 321 "Genetic code" of financial intermediation, 92–95 Global financial crisis (GFC), 43-44, 66, 98, 136, 193, 236-237, 420 Global Regtech Industry, 71 Global robo-advisors, 195-196 Global Web 3.0, 78–79 Globex, 222-223 GoFundMe, 245 Google, 316 Google Cloud Platform, 78, 226 Google Pay, 122, 238 Google Wallet, 110 Google Workspace, 426 Government-to business and consumers (G2B/C), 7 Governments, 428 Graphics processing units (GPUs), 226 Great Depression, 288-289 Green bonds, 400–402 on DeFi, 407 fintech's role in green bond market, 402 Green investments, 201 green bonds, 400–402 Green talking, 414-416 Greenwashing, 414-416 Gross domestic product (GDP), 45, 68, 198, 252–253, 382–383 h-index, 21–22, 25, 27 Hard fork, 261 HazardHub, 351 Hedge funds, 154 High inflation, MPL and, 139 High interest rates, MPL and, 137-138 High-frequency traders/trading (HFT), 211, 215–216, 225, 309, 386-387 algorithms, 97 system, 382-383

Holistic integration, 167–168 Home bias, 198 Howey Test (1946), 183–184, 393 HSBC Sustainability Tracker, 401 HuggingFace, 229 Human advisors, 48 robo-advisors disrupting, 196-200 Human control and oversight, 332 Human error, 161-162 Human financial advisors, 48-49 robo-advisor, 199-200 "Human-in-the-loop" approaches, 321, 332 "Human-on-the-loop" approaches, 332 Hybrid models, 192 i-10 index, 21, 25, 27 i-100 index, 21 IBA, 351 **IBM** Corporation, 316 Identity and access management (IAM) platforms, 169 Identity authentication, 51-52 Immutable records, 252-253 Incident response (IR), 430 Incident response plans, 169 Income, 369 Independent robo-advisor companies, 49 Independent segments, allocating each borrower to, 146-147 Indexes collaboration index (CI), 25, 27 g-index, 21, 25, 27 h-index, 21–22, 25, 27 i-10 index, 21, 25, 27 i-100 index, 21 India Post Payments Bank, 51-52 Indiegogo, 245 Industrialization, 288-289 Information and communications technologies (ICTs), 286, 290, 292, 326-327 Information business, financial intermediation as, 95 Information supply chain, 293–299

big data architectures in, 296 intellectual property, 293 patents, 294-295 trade secrecy, 295 trademarks, 295-296 Information technology (IT), 123-124, 261, 431 Initial coin offerings (ICOs), 8, 177-178, 182, 184, 308-309, 390, 393 Initial public offerings (IPOs), 180, 309-310, 391 Innovations, 10 facilitator approach, 101–102 theory, 56 Input data, 153 Institute of Chartered Accountants in England and Wales (ICAEW), 258 Institutional solutions, 386-388 Insurance companies, 49 Insurance industry, 343-344, 350 disrupting, 12-13 Insurance sector, 100 Insurers, 49 InsurTech, 12–13, 49–50, 245, 343, 420, 425 ecosystem, 351-354 insurance industry transformation, 344-350 Insurtech 1.0, 355–357 Insurtech 2.0, 357-358 Insurtech 3.0, 358-359 waves in insurance industry's transformation, 354-359 Integrity, 127 Intel Corporation, 316 Intellectual property (IP), 290 Fintech architectures, 293 Intended audience, 5 Interest rate (IR), 141 Intermediation theory, 93 International Financial Reporting Standards (IFRS), 298-299 International financial system, 66

International Monetary Fund (IMF), 43 - 44International Standards Organization (ISO), 289 Internet, 210 Internet exceptionalism, 291 Internet of Things (IoT), 39, 53, 100, 306-307, 346 Investment Advisers Act (1940), 199 Investments, 182, 244 advisory, 193 alternative and big data as basis for investment decisions, 387-388 strategies, 192 Investors, 48, 364-365 marketplace lending platforms for borrowers and, 7-8 Job, 369 Jumpstart Our Business Startups Act (JOBS Act), 8, 182-183 Kakau, 351 Kaoshi, 426-427 Khan Academy, 243 Kickstarter, 245 Klarna, 426 Klynveld Peat Marwick Goerdeler (KPMG), 251–252 Know Your Customer (KYC), 44, 51–52, 78, 162–163, 257, 426 Knowledge, 299 foundation of Fintech research, 27 - 33knowledge-based systems, 317

Landscape, 159 Lapetus Solutions, 49–50 Large language models (LLMs), 228–229 Layering, 308 Lemonade, 245 Lending, 48 platforms, 14 LendingClub, 137, 236–237, 245, 382 LinkedIn, 305–306 Liquidity, 259–260 Litecoin, 271 Loan-to-value (LTV), 365 Location/active/environment data, 307 London Stock Exchange (LSE), 389 Long-term debt (LTD), 371 Loopnet.com, 375 Loss function, 319 Lotus, 426

M-Pesa, 47, 237 Machine learning (ML), 4, 12, 44, 71-72, 98, 136, 224, 227, 229, 237, 286, 303-304, 315-316, 368, 381, 400, 420, 423-424 evolution to, 317 harnessing data with, 11 latest ML advances, 317-318 paradigms, 318-321 Regtech, 326-327 risks and regulatory considerations, 327-334 Suptech, 327 techno-methodic specificities, 328-330 Macroeconomics, 54 Magnetic ink character recognition (MICR), 289 Majority attack (see 51% attack) Mana, 272 ManageMy, 351 Managing general agent (MGA), 354 Market structures ask price, 210 bid price, 210 central limit order book (CLOB), 210 exchange, 215–216 over-the-counter (OTC) market, 210Marketplace lending (MPL), 135–136 allocating each borrower to independent segments, 146-147

allocating several borrowers to common single sector, 145 - 146allocation of borrowers and correlations, 144–148 apportioning borrowers across several risk factors, 144-145 apportioning borrowers across several sectors, 145 asset recovery in case of default, 153 - 154borrower correlation via sector correlation, 148 for borrowers and investors, 7-8 business model and risks, 136–137 credit portfolio analysis applicable to MPL, 141-154 and high inflation, 139 and high interest rates, 137-138 implementing future correlated rating states of borrowers, 142-144 input data and MM, 153 market conditions, 149 risks of bank credit portfolios, 140 simulation and analysis elements, 149-152 valuation and cash flows on defaulted and nondefaulted exposures, 153 valuing MPL credit portfolios, 140 - 141Markets, 217 conditions, 149 making, 225 pattern recognition, 386 Markets in Financial Instruments Directive (MiFID). 67 Markets in Financial Instruments Directive II (MiFID II), 71 Mastercard, 261 "Meme-stock" trading frenzies, 221-222, 224 Meta. 433 Metadata, 297–298 Metromile, 245

Metropolis software, 388 Micro-, small-, and medium-sized enterprises (MSMEs), 45 Microdata, 307 Microsoft. 316 Microsoft Azure, 226 Migration matrix (MM), 153 Mint, 236-237, 239, 243 Mobile banking apps, 237 Mobile devices, 191–192 Mobile digital payments, 110 Mobile footprints, 240 Mobile growth trends, 120–122 transaction value percent comparison mobile POS payments vs. digital payments by country, 121 Mobile pay, 110 Mobile payments, 7, 235 business use of digital payments, 123-124 competition, 127 country trends in, 117-120 digital and mobile payments in North America, 124 digital service providers in United States, 122–123 Fintech and market for payments, 124-126 individual and digital payment market, 126-127 integrity, 127 mobile growth trends, 120–122 in North America, 124 rise of smart payments, 110–112 Swish, 127 worldwide digital activity, 112-120 Mobile POS payments, 112, 115 Mobile wallets, 110 Mobile-based trading platforms, 221-222 Mobile-first brokerages, 230-231 Models model interpretability, 323 model optimization, 322 model testing, 322

model training, 322 Modern online trading platforms, 224 Modigliani-Miller theorem, 93 Monetary Authority of Singapore (MAS), 333 Money laundering, 126, 428-429 Monster, 305–306 Monte Carlo analysis, 140 Monte Carlo simulation, 7-8, 154 Monzo, 246 Moody's, 401 Moonshot Insurance, 352 Moral hazard problems, 49 **MOVE** Capital, 408 Moving average (MA), 213 Moving average convergence/ divergence (MACD), 213 Multi-factor authentication (MFA), 238 Multiple listing service (MLS), 368 N26, 246 NASDAQ market, 211 National Association of Realtors, 368 National Association of Securities Dealers, The (NASD), 222 National Association of Securities **Dealers** Association Automated Quotations (NASDAQ), 208, 222, 393 National Best Bid and Offer (NBBO), 216

- National Institute of Standards and Technology (NIST), 333
- Native digital securities (see Security tokens)

Natural Language Processing (NLP), 53–54, 71–72, 317–318,

358–359, 388

Near Field Communication (NFC), 110 Neobank (neo-bank), 400

challenges, 406 and sustainable characteristics, 405–406

```
NerdWallet, 243
```

Net operating income (NOI), 365 Netflix. 433 Network infrastructure operation, 351-352 Network promotion and contract management, 351-352 New York Stock Exchange (NYSE), 97, 208-209 NIST Cybersecurity Frameworks, 8, 166–167 Nodes, 270 Non-fungible tokens (NFTs), 71, 276 Nonbank financial institutions (NBFIs), 94 Nondefaulted exposures, valuation and cash flows on, 153 Nondisclosure/confidentiality agreements (NDAs), 295 Nondiscrimination, 331 North America, digital and mobile payments in, 124 Novidea, 351 Number of active years (NAY), 25 - 27NVIDIA, 316 Occupiers, 364–365 Office of the Comptroller of Currency (OCC), 269, 432 Olivia, 239 Omniscience, 351 Online brokers, 210, 214 order types with, 211–212 platforms, 9-10 Online payment processing, 426 Online trading, 9-10, 207-208, 221-222 account types, 213-214 advantages (benefits), 214-215 benefits, 223 Bollinger bands, 213 Candlestick chart, 213 cash account, 214 centralization vs. decentralization, 217 - 218charting tools, 212-213

development, 222-223 in different market structures, 209 - 210disadvantages (drawbacks), 214-215 drawbacks, 223-224 E*TRADE, 208-209 features, 210-211 Fibonacci retracement, 213 high-frequency trading, 215-216 history, 208-209 Iceberg, 212 limit, 212 limit on close, 212 margin account, 214 market, 211-212 market on close, 212 mobile-first brokerages, 230-231 moving average (MA), 213 moving average convergence/ divergence (MACD), 213 order types, 211-212 payment for order flow, 216-217 profit, 212 regulation, 216 regulation of financial markets, 216 request-for-market (RFM) protocol, 209 request-for-quote (RFQ) protocol, 209 Robinhood, 224-230 stop, 212 trading platforms, 207-208 trading protocols, 209 Opacity, 329-330 Open banking, 424–425 Open banking initiatives, 100 Open-source applications, 431 Open-Source INTelligence (OSINT), 68 OpenAI, 229 Opening banking, 424-425 Operational resilience in Fintech frontier, 169-170 business continuity measures,., 170 disaster recovery planning, 170

regular system updates, 170 reliable technology infrastructure, 170Operational risks events, 50 in Fintech, 161-162 Order-to-trade ratios, 309 Ordinary least squares (OLS), 227-228 Organization for Economic Cooperation and Development (OECD), 316 Over-the-counter (OTC), 208, 222, 383 market, 209, 211 Overconfidence bias, 198 Patents, 294-295 Paycheck Protection Program (PPP), 47 Payment for order flow (PFOF), 216-217 Payments, 99, 109-110 Fintech and market for, 124-126 industry, 6 processing, 246 technologies, 420 Payoneer, 424 PayPal, 122, 236-237, 291 Peer-to-peer (P2P) communication, 55-56 financing, 292 lenders, 135-136, 163 lending, 4, 33, 47, 91–92, 164, 184, 235, 244–245, 426–427 markets, 382 transactions, 253, 274 Pentation Analytics, 352–353 Per active year (PAY), 22 Permissioned access, 258-259 Person-to-person (P2P), 110 Personal banking (see also Digital banking) with fintech, 238 security in, 240-241 Personal capital, 243 Personal finance, 236 applications of Fintech, 10

brief history of fintech in, 236-237 budgets, 238-239 Fintech 50 companies and impact on, 243-246 transformation with Fintech, 9 Personal financial management (PFM), 425 Personalization, 425 Personally identifiable information (PII), 297 Phygital, 104-105 Physical real estate, 364–365 PitchBook sources, 305 Platform as a Service (PaaS), 291, 376 Platforms, 154 PocketGuard, 239 Point of sale (POS), 7, 110, 289 Policymakers, 173 Postdeployment monitoring, 323 Praedicat, 351 Preferencing, 208 PricewaterhouseCoopers (PwC), 251-252 Principal, interest, taxes, and insurance (PITI), 371 Principal and interest payment (PI payment), 371 Prior art, 294 Privacy, 258-259 Privacy-preserving technologies (PPTs), 68 Private data, 305 Private equity (PE), 177, 180 funds, 180 "Pro-innovation" approach, 333 Proactive management, risk assessment frameworks for, 165-166 Proactive vulnerability assessment, 169 Problem formulation, 321 Productivity per active year (PAY), 25, 27 Professional investors, 140, 154 Profit spread (PS), 141 Proof of stake (POS), 254-255, 390 Proof of transaction, 258 Proof of work (POW), 254, 390

Property value, 370-371 Prosper, 236-237, 245, 382 PSD2, 100 Public data, 304–305 Publication trends, 19-20, 40 Qapital, 239, 244 Qualifying ratios, 371–373 Quality firm management, 50 Quantum Computing, 80 Quick Response (QR) system, 126, 238 R3 Corda, 262–263 Radio frequency identification (RFID), 291 Real estate, 259, 363-364 future technology and limitations, 375-379 life cycle of commercial real estate process, 367 physical real estate, 364-365 practice of, 365-367 revolutionizing real estate industry with Fintech, 13 technology, processes, and tools, 367-375 Realtor. com, 368-369 Reddit, 230, 305–306, 382 Regulation, 5, 14, 101-102, 202, 431-432 algorithmic regulation, 73 changes, 4 compliance, 66 crowdfunding, 182 of financial markets, 216 in financial services, 66-67 humanitarian regulation, 80-81 pressure points and transitions, 66 Regulation National Market System (Reg NMS), 210, 216 Regulation T (Reg T), 214 Regulators, 54, 172, 428 Regulatory change management, 426 Regulatory data, 307-308 Regulatory environment, Fintech use cases support, 54-56

Regulatory framework of capital formation, 180-184 Regulatory intelligence, 77 Regulatory lag (RegLag), 288-291 Regulatory landscape, 39, 162-163 Regulatory monitoring, 67, 73 Regulatory sandboxes, 334 Regulatory technology (regtech), 6, 44, 54-55, 71-72, 102, 326-327, 420, 425-426 benefits and challenges, 73-76 debanking and other social and geopolitical drivers, 69-71 decentralized compliance, 79 detection of fraud, AML/CTF, and sanctions compliance, 79 digital and cryptographic assets, 78-79 digital technologies associated with, 72 ESG sustainability and humanitarian regulation, 80 - 81frontiers, 6 future, 77-81 generative AI, 78 global regtech industry, 71 literature insights, 71–73 new dimensions, 77-81 pressure points and transitions, 66-69 quantum computing, 80 use cases (applications), 76–77 Regulatory uncertainty, 162-163 Regulatory-mandated extensible business reporting language (xBRL), 298-299 Reinforcement learning (RL), 319 Reputation, 52 management, 52-53 Reputational risks in Fintech, 164-165 Request-for-market protocol (RFM protocol), 209 Request-for-quote protocol (RFQ protocol), 209

Research and development (R&D), 91-92 function, 91-92 investments, 293 Research gaps, 18, 40 Research questions (RQs), 18 Reserve Bank of India, The, 258 Residential appraiser, 370 Residential mortgage approval, 369-373 Residential multiple listing services, 368-369 Residential real estate, 364 Respondents, 123–124 Retail solutions, 384–385 Retail traders, 214-215 Revolut, 246 Rewards-based crowdfunding, 184 Ripple, 245 Risk assessment frameworks for proactive management, 165-166 and management, 50-51 Risk management, 94, 159, 325 building operational resilience in Fintech frontier, 169–170 choosing right framework, 167 comparative analysis of risk management frameworks in Fintech. 166-167 comparative analysis of risk profiles in Fintech sub-sectors, 165 compliance risks in Fintech, 162-163 embracing robust technology risk management for sustainable fintech success. 159-160 essential defense measures in Fintech, 168-169 financial inclusion through technology, 158-159 in Fintech, 8 Fintech companies, 172 holistic integration, 167-168 operational risks in Fintech, 161 - 162

policymakers, 173 practical recommendations for enhanced technology risk management in fintech, 171 - 173process, 166 regulators, 172 reputational risks in Fintech, 164 - 165risk assessment frameworks for proactive management, 165-166 strategic risks in Fintech, 163-164 for sustainable fintech success, embracing robust technology, 159-160 technology risks in Fintech, 160-161 Risk profiling, 192 of robo-advisors, 199 Risks, 136-137 Robinhood, 9-10, 221-224, 230-231, 242, 244 alternative data, 226-227 cryptocurrency and automated market makers, 229-230 high-frequency trading, 225 machine learning and artificial intelligence, 227-229 trading APIs, 225-226 trading app. 382 Robo-advice, 384-385 Robo-advisors, 48, 192, 325, 385 AI in robo-advisory, 200 assets under management (AUM), 195 automated robo-advisory, 197 behavioral biases, 197-199 benefits and limitations, 192-193 demystifying, 9 disrupting human advisors, 196-200 ESG investing, 201 evolution of robo-advisory, 193-194 future. 200-201 human financial advisor, 199-200 past, 193–195

performance, 194-195 present, 195-200 risk profiling, 199 robo-advice cost-efficient, 196-197 status quo, 195-196 Robo-advisory companies betterment, 193-194 Charles Schwab, 194 Edelman financial engines, 196 personal capital, 198 Quirion, 193-194 Scalable, 193–194 Vanguard, 194 Wealthfront, 194 Rocketmortgage.com, 369 Rubix, 259 Samsung Pay, 238 Sanctions compliance, detection of, 79 Saving, 244 SBA, 185 Schwab, 9–10 Scopus database, 5–6 Search costs, 218 Sector, 142 correlation, 148 Securities Act of, The (1933), 181 Securities and Exchange Act (1934), 181 Securities Regulations in Fintech Era, 181–182, 184 Securities trading, 384–388 institutional solutions, 386-388 retail solutions, 384-385 Security, 56 in personal banking, 240-241 tokens, 11, 268, 273 trading industry, 222 Self, 240 Self-regulatory organizations (SROs), 290 Sensitive financial data, 52–53 Sensitivity analysis, 153 Service provisioning, 351–352 Signature Bank, 278

Silicon Valley Bank (SVB), 140, 278-279 Silvergate Bank, 278 Simulation, 149-152 Slice Labs, 352 Small-and medium-sized enterprises (SMEs), 47, 136, 307 Smart contracts, 237, 241, 255-256, 268-270, 290 Smart devices, 129 Smart payments rise of, 110-112 systems, 111 Smart sampling approximation techniques, 154 SO-SURE, 351 Socially responsible investment (SRI), 201 Software as a Service (SaaS), 290, 375-376 Software bugs, 161 Special purpose vehicle (SPV), 259 Spoofing, 214 Spread, 141 Square, 122-123, 236-237, 246 Square Cash, 238 StabilityAI, 229 Stablecoins, 11, 268, 274–275 Standard financial data, 304-305 private data, 305 public data, 304-305 Star Citizen, 185 Starling Bank, 246 Stash, 244 State Bank of India, 258 Status Quo, 195-196 Status/passive/equipment data, 306-307 SteelEye's inaugural Fine Tracker, 67 Stock Market Crash of 1929, 288-289 Stockholm Stock Exchange, 127 Strategic risks in Fintech, 163–164 Stripe, 246, 426 "Super-platform" approach, 99

Supervised learning (SL), 318 Supervisory technology (Suptech), 327 Supply chain, 260 Sureify, 352 Sustainability sustainable banking, 405-406 sustainable finance, 402-403 sustainable investing, 192-193 Sustainable banking, 405-406 neo-banks and sustainable characteristics, 405-406 Sustainable fintech success, embracing robust technology risk management for, 159-160 Sustainable investment tools. 401-402 Swish, 127 System failures, 161 Tailoring, 168 risk assessment frameworks, 167-168 "Tailormade" approach, 167-168 Tandem, 100-101 Task Force on Climate-related Financial Disclosures (TCFD), 401 Tax management, 426 Taxes and insurance payment (TI payment), 371 Tech in Fin and legacy hurdle, 96-97 Techno-methodic specificities of ML systems, 328-330 autonomy, 329 complexity, 328-329 correlation focus, 328 data dependency and bias, 328 opacity, 329-330 vulnerability, 330 Technology, 3, 8, 96-97, 105 adoption, 10 breakdowns, 161 financial inclusion through, 158-159 innovation, 43-44 stack, 432

Technology risks, 158 in Fintech, 160-161 management, 159-160, 171 practical recommendations for enhanced, 171-173 Temporal evolution of Fintech themes and future research directions, 39 10-K statements and corporate filings, 409 Terrorist financing, 126 Test-and-learn approach, 101 Text mining, 303–304 Textual data, 305-306 Themes. 39 Thomson Reuters sources, 305 Token, 259 Tokenization, 259-260, 273-274 Tokenized assets, 268, 273-274 and securities, 11 Top talent, 432-433 Total citations (TC), 19-21, 25, 27, 34, 38 Total co-citations (TC), 27-33 Total expense ratio (TER), 196 Total link strength (TLS), 27-33 Total publications (TP), 19-21, 27, 34, 38 Trade algorithms, 386–387 Trade secrecy, 295 Trademarks, 295-296 Trading, 244 platforms, 209 protocols, 207–209 Trading Application programming interfaces (Trading APIs), 225-226 Traditional FIs, 99-100 response of traditional FIs in changing ecosystem, 102 - 103Traditional ML models, 319-321 Traditional payment mechanisms, 46-47, 51

Traditional wealth management approaches, 49 Training and optimization, 322 Transformation, 93 Transmission control protocol/Internet protocol (TCP/IP), 261 Transparency, 56, 253, 331, 425 Triple-entry accounting, 258–259 Trustless environment, 270 Twitter/X, 305–306 UBS, 401 Ultra-low latency systems, 386 Unauthorized access, 160 Unicorn, 424

Uniform Domain-Name Dispute **Resolution Procedure** (UDRP), 295-296 Uniform Standards of Professional **Appraisal Practice** (USPAP), 370 Unique Identification Authority of India, 51-52 Uniswap (DeFi platform), 99-100 Unit economics, 424 United Kingdom (UK), 100, 333 United Nations Office on Drugs and Crime, 68 United States (US), 178, 333 digital service providers in, 122 - 123Unsupervised learning (UL), 318 US Patent and Trademark Office (PTO), 296 US regulatory perspective, 199 US Securities and Exchange Commission (SEC), 55, 181–182, 184, 199, 222, 225, 277, 288–289, 307, 333, 382, 410-411, 422

US Small Business Administration (SBA), 47, 178 Usage-based insurance models, 100

Use case data, 368–369, 373 Utility tokens, 11, 268, 271, 273 Valuation on defaulted and nondefaulted exposures, 153 Value configurations, 351–352 Value Line, 290 Vanguard Personal Advisor, 197 Venmo, 122, 238 Venture capital (VC), 177, 180, 421 funds, 180 reliance on venture capital funding, 427-428 Violations data, 409 Visa. 261 Volatility, uncertainty, complexity, and ambiguity (VUCA), 423 Volume, velocity, and variety/ variability (three Vs), 388 Vulnerability, 330 assessments, 169 Wait-and-See approach, 101 Walker & Dunlop (W&D), 370-371 Wash trading, 308 Waves in insurance industry's transformation, 354-359 Wealthfront, 236-237, 244 Wealthtech, 420 Web 3.0, 78–79, 252, 382 Web scraping IoT, 306-307 methodology, 388 for sensory data, 306-307 for textual data, 305-306 WeChat, 99 White-label platform, 354 World Bank, 421 World Economic Forum (WEF), 252-253 Worldwide digital activity, 112-120 country trends in digital payments, 115-117

country trends in mobile payments, 117–120 mobile POS payments worldwide, 118 percent transaction value change by segment, 114 worldwide digital and mobile POS payments, 119 worldwide transaction value by segment in Trillion USD, 113 Yelp, 305–306 You Need a Budget (YNAB), 239, 243–244

Zara, 426 Zelle, 123, 238 Zelros, 352 Zestimate, 370–371 Zeta, 244 Zillow.com, 368–369