2021

Algorithms in Business, Merchant-Consumer Interactions, & Regulation

Tabrez Y. Ebrahim

ALGORITHMS IN BUSINESS, MERCHANT-CONSUMER INTERACTIONS, & REGULATION

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Abstract

The shift towards the use of algorithms in business has transformed merchant–consumer interactions. Products and services are increasingly tailored for consumers through algorithms that collect and analyze vast amounts of data from interconnected devices, digital platforms, and social networks. While traditionally merchants and marketeers have utilized market segmentation, customer demographic profiles, and statistical approaches, the exponential increase in consumer data and computing power enables them to develop and implement algorithmic techniques that change consumer markets and society as a whole. Algorithms enable targeting of consumers more effectively, in real-time, and with high predictive accuracy in pricing and profiling strategies. In so doing, algorithms raise new theoretical considerations on information asymmetry and power imbalances in merchant–consumer interactions and multiply existing biases and discrimination or create new ones in society. Against this backdrop of the concentration of algorithmic decision-making in merchants, the traditional understanding of consumer protection is overdue for change, and normative debate about fairness, accountability, and transparency and interpretive considerations for non-discrimination is necessary. The theory that notice and choice in data protection laws and

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consumer protection laws are sufficient in an algorithmic era is inadequate, and countervailing consumer empowerment is necessary to balance the power between merchants and consumers. While legislative activity and regulation have conceivably increased consumer-empowerment, such measures may provide a limited or unclear response in the face of the transformative nature of algorithms. Instead, policy makers should consider responsible algorithmic code and other proposals as potentially effective responses in the analysis of socio-economic dimensions of algorithms in business.

I. INTRODUCTION

Algorithms continue to proliferate in society.[1] There is a growing awareness of potential complications of algorithms based on their ability to provide significant improvements in accuracy, consistency, speed, and capacity

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[1] *See generally* THE CAMBRIDGE HANDBOOK ON THE LAW OF ALGORITHMS (Woodrow Barfield ed., Cambridge Univ. Press 2020); WOODROW BARFIELD & UGO PAGALLO, RESEARCH HANDBOOK ON THE LAW OF ARTIFICIAL INTELLIGENCE (Edward Elgar 2018); THOMAS WISCHMEYER & TIMO RADEMACHER, REGULATING ARTIFICIAL INTELLIGENCE (Cambridge Univ. Press 2020); ALGORITHMS AND LAW (Martin Ebers & Susana Navas eds., Cambridge Univ. Press 2020).

above the human baseline.[2] While scholars and policymakers have devoted substantial attention to algorithms and their impact on civil rights,[3] criminal law,[4] cybersecurity,[5] discrimination,[6] due process,[7] medicine,[8] and privacy,[9] their impact on consumers has languished in the periphery. Recent developments at the Federal Trade Commission ("FTC") have revealed algorithmic decision-making in business is increasingly used in the modern economy.[10] The recognition of algorithmic decision-making among legislators in Europe with the enactment of the General Data Protection Regulation ("GDPR") suggests that the use of algorithms will become increasingly common in society and of concern to lawmakers and regulators.[11]

But beyond these legitimate concerns for society, algorithms present new considerations and unforeseen consequences for businesses and commercial exchanges. Businesses use algorithms primarily for predictive analytics and the optimization of business processes in new ways beyond our human capabilities

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2 Christopher S. Yoo & Alicia Lai, Regulation of Algorithmic Tools in the United States 21 Public Law and Legal Theory (J. of L. & Econ. Regul., Research Paper No. 21-04, 2020).

3 *See* Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CALIF. L. REV. 671, 677–712 (2016).

4 *See* Elizabeth E. Joh, *Feeding the Machine: Policing, Crime Data, & Algorithms*, 26 WM & MARY BILL RTS. J. 287 (2017).

5 *See* Tabrez Y. Ebrahim, *Artificial Intelligence in Cyber Peace*, *in* CYBER PEACE (Cambridge Univ. Press 2021).

6 *See* Anupam Chander, *The Racist Algorithm?*, 115 MICH. L. REV. 1023 (2017).

7 *See* AI NOW INST., *Litigating Algorithms Challenging Government Use of Algorithmic Decision Systems* (Sept. 2018), https://ainowinstitute.org/litigatingalgorithms.pdf; John Villasenor & Virginia Foggo, *Algorithms and Sentencing: What Does Due Process Require?*, BROOKINGS INST. (Mar. 21, 2019), https://www.brookings.edu/blog/techtank/2019/03/21/algorithms-and-sentencing-what-does-due-process-require/.

8 *See* W. Nicholson Price II, *Regulating Black-Box Medicine*, 116 MICH. L. REV. 421 (2017).

9 *See* Tim Simonite, *When It Comes to Gorillas, Google Photos Remains Blind*, WIRED (Jan. 11, 2018), https://www.wired.com/story/when-it-comes-to-gorillas-google-photos-remains-blind/.

10 FED. TRADE COMM'N, BIG DATA: A TOOL FOR INCLUSION OR EXCLUSION? 1 (Jan. 2016), https://www.ftc.gov/system/files/documents/reports/big-data-tool-inclusion-or-exclusion-understanding-issues/160106big-data-rpt.pdf (suggesting that while companies historically have collected and used customer information, the expanded use algorithms in online commerce and digital applications, such as by shopping, website usage, bills payments, social media, fitness trackers, and smart televisions, has greatly increased the amount of consumer data that is collected to analyze consumer choices, experiences, and individual characteristics).

11 Byrce Goodman & Seth Flaxman, *European Union Regulations on Algorithmic Decision-Making and a "Right To Explanation"*, (2016), https://arxiv.org/pdf/1606.08813.pdf; Guy Aridor, Yeon-Koo Che & Tobias Salz, *The Effect of Privacy Regulation on the Data Industry: Empirical Evidence from GDPR*, FED. TRADE COMM'N 1–4 (June 9, 2020), https://www.ftc.gov/system/files/documents/public_events/1548288/privacycon-2020-guy_aridor.pdf.

and, in so doing, are magnifying power relations between merchants and consumers.[12]

Scholars and commentators have debated power relations in the information age by arguing that power imbalances can be prevented via an information fiduciary—a particular type of merchant in the form of a digital platform that collects data about users through digital means in ways that may be shared with third parties or be used in ways that threaten the users' best interests.[13] The underluing principle in the information fiduciary literature is that digital platforms can and should do more, and similarly, I assess what is being done by algorithms where that duty may no longer work. My core premise is that that there is more that can and should be done to protect consumers in response to algorithms in the information age. In this Article, I critically analyze a concept that is different yet related to an information fiduciary in the following manner: (1) rather than an information fiduciary as a digital platform that has a responsibility with respect to utilizing data about users and potentially sharing

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[12] *See generally* John Danaher, Michael J. Hogan, Chris Noone, Rónán Kennedy et al., *Algorithmic Governance: Developing a Research Agenda Through the Power of Collective Intelligence*, BIG DATA & SOC'Y (2017), https://journals.sagepub.com/doi/full/10.1177/2053951717726554.

[13] *See generally* Jack M. Balkin, *Information Fiduciaries and the First Amendment*, 49 U.C. DAVIS L. REV. 1183, 1186 (2016) (introducing the concept of an information fiduciary as a category of people and businesses in the digital age to "argue that many online service providers and cloud companies who collect, analyze, use, sell, and distribute personal information should be seen as information fiduciaries towards their customers and end-users" and that "information fiduciaries have special duties to act in ways that do not harm the interests of the people whose information they collect, analyze, use, sell and distribute"); Lindsey Barrett, *Confiding in Con Men: U.S. Privacy Law, the GDPR, and Information Fiduciaries*, 42 SEATTLE U. L. REV. 1057, 1062, 1087–88, 1112–13 (2019) (applying fiduciary duties to data collectors in hopes of raising the bar of how digital companies are expected their users' information); Ariel Dobkin, *Information Fiduciaries in Practice: Data Privacy and User Expectations*, 33 BERKELEY TECH. L.J. 1, 3–5, 7 (2018) (analyzing situations where merchants took financial advantage of consumers' personal information given by consumers in a trust relationship to merchants, and arguing that merchants cross the line and "breach the fiduciary duty when they abuse users' trust by: (1) using their data to manipulate them; (2) using their data to discriminate against them; (3) sharing their data with third parties without consent; or (4) violating their own privacy policies"); Linda M. Khan & David E. Pozen, *A Skeptical View of Information Fiduciaries*, 133 HARV. L. REV. 497 (2019) (arguing that any business model that relies on behavioral advertising is antithetical with a requirement that the fiduciary place the client's interest above that of the fiduciary); Kenneth C. Laudon, *Markets and Privacy*, ICIS 1993 PROC. 65, 70–71 (1993) (coining the phrase "information fiduciary" by suggesting that "information fiduciaries would naturally arise [and] would accept deposits of information from depositors and seek to maximize the return on sales of that information in national markets or elsewhere in return for a fee, some percentage of the total returns"); Jack Balkin & Jonathan Zittrain, *A Grand Bargain To Make Tech Companies Trustworthy*, ATLANTIC (Oct. 3, 2016), https://www.theatlantic.com/technology/archive/2016/10/information-fiduciary/502346/ (introducing the concept of an information fiduciary, or a person or business that deals with information, and has "the duty to use personal data in ways that don't betray end users and harm them" as a way to protect individual privacy rights).

that data with third parties, by contrast, I focus on a merchant and its digital interaction with consumers through algorithms, and (2) similar to the notion of an information fiduciary' as a response to a data collector's ability to sway a user's (in particular a consumer's) actions for commercial gain (in particular for the benefit of a merchant), I analzye potential manipulation by algorithms. In so doing, I argue for legislation concerning algorithms and responsible algorithm development to protect consumers. As such, the lens I employ is the technological capability of algorithms in the relationship between merchants and consumers in the modern digital context and how the law should respond accordingly. The techniques embodied within algorithms present a capability and means to create and multiply power imbalances in the merchant–consumer interaction.

Scholars and policy analysts have voiced that algorithms, which are forms of artificial intelligence and machine learning, are pervading society in new ways with both beneficial and detrimental outcomes.[14] Noteworthy news headlines claim numerous concerns about algorithms in criminal sentencing,[15] dermatology,[16] and government decision-making.[17] Some of the similar challenges with algorithms from other disciplines are plaguing business. Specifically, in exploring business issues with algorithms, a massive problem in and of itself, relates to effects and interactions of merchants with consumers.

Consumers are finding themselves in an unbalanced interaction with merchants in an algorithmic era. Algorithms have provided merchants a technological means with which to exploit the wealth of consumer data so as to

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[14] Rebecca Kelly Slaughter, *Algorithms and Economic Justice*, U.S. FED. TRADE COMM'N 2–10 (Jan. 24, 2020), https://www.ftc.gov/system/files/documents/public_statements/1564883/remarks_of_commissioner_rebecca_kelly_slaughter_on_algorithmic_and_economic_justice_01-24-2020.pdf (discussing the transformative power of algorithms and how best to use their power to promote justice and expand opportunity, while recognizing that algorithms have flaws and can create perils for society with civil, criminal, and economic justice).

[15] *See* Leah Wisser, *Pandora's Algorithmic Black Box: The Challenges of Using Algorithmic Risk Assessments in Sentencing*, 56 AM. CRIM. L. REV. 1811 (2019); Danielle Kehl, Priscilla Guo & Samuel Kessler, *Algorithms in the Criminal Justice System: Assessing the Use of Risk Assessments in Sentencing*, RESPONSIVE COMMUNITIES INITIATIVE BERKMAN KLEIN CTR. FOR INTERNET SOC'Y (2017), https://dash.harvard.edu/bitstream/handle/1/33746041/2017-07_responsivecommunities_2.pdf?; *AI and Human Rights: Criminal Justice System: The Tools*, ELECTRONIC PRIV. INFO. CTR., https://epic.org/ai/criminal-justice/ (last visited Feb. 2, 2021).

[16] *See* Michael Allen, *AI Dermatology Tool Needs More Diverse Skin Types in Its Training Datasets*, PHYSICS WORLD (Nov. 19, 2019), https://physicsworld.com/a/ai-dermatology-tool-needs-more-diverse-skin-types-in-its-training-datasets/.

[17] *See* Robert Brauneis & Ellen Goodman, *Algorithmic Transparency for the Smart City*, 20 YALE J.L. & TECH. 103, 107–08, 110, 132 (2018) (suggesting that a lack of transparency of government and cities use of algorithms denies public access, when referring to transparency as "the use of algorithms that are highly dynamic or that use modeling which makes them difficult to interpret even when records are revealed").

better target consumers.[18] In particular, algorithms enable merchants to decipher accurately, easily, quickly, and in real-time inferences between consumer data and possible responses for advertisements or offers for their products and services.[19] The plethora of consumer data, including their purchasing behaviors, social media usage, and websites visited, allows merchants to utilize algorithms to predictively trigger consumer reactions and drive purchasing decisions through personalized, tailored ads and to discriminate among consumers (whether intentionally or unintentionally).[20] This algorithmic ability has transformed the merchant–consumer relationship and could further morph into manipulation by merchants if left unaddressed by law and policy. While algorithms may provide merchants with mechanisms to advance existing and permissible ways to understand their customers and potential new consumers of their products and services, they may also enable exercise of excessive control, unexpected discrimination, and hidden intentional discrimination.

Algorithms provide a means to influence and modify consumer behaviors. Consumers have become empowered by the Internet to access a global marketplace and digital assistants that encompass algorithms.[21] The massive collection of consumer data and the emergence of algorithms as a new socio-technical capability by merchants has shifted the merchant–consumer interaction towards greater power with the merchant. As the Cambridge Analytica scandal exemplified, data collected about individuals, such as from social networks, can be utilized to understand people and consequently target them in ways meant to

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[18] I define "merchants" throughout this Article as entities to sell or offer to sell products and services to consumers. In this context, a "merchant" is a producer or retailer that sell goods or service through the Internet or digital app to a purchaser. While such "merchants" can be digital businesses or online platforms that collect data about their users (such as in the information fiduciary scholarship), they represent any digital business that sells to consumers; hence a merchant in the context of this Article is broader in scope than an information fiduciary. Furthermore, "merchant" is used to distinguish from other businesses that may be intermediaries or distributors but may also be businesses or companies that function as producers and retailers. Merchants refers to businesses that sell directly to a consumer, such as in a B2C (business-to-consumer) relationship.

[19] Jakob Schemmel, *Artificial Intelligence and the Financial Markets: Business as Usual?*, *in* REGULATING ARTIFICIAL INTELLIGENCE 256 (Cambridge Univ. Press 2020) (describing the proliferation of algorithmic tools in the business-customer relation).

[20] *Federal Trade Commission Announces Hearings on Competition and Consumer Protection in the 21st Century*,' FED. TRADE COMM'N, https://www.ftc.gov/system/files/attachments/hearings-competition-consumer-protection-21st-century/hearings-announcement_0_0.pdf (last visited Feb. 18, 2021).

[21] Michal S. Gal, *Algorithmic Challenges to Autonomous Choice*, 25 MICH. TECH. L. REV. 59, 60, 64 (2018); Michal S. Gal & Niva Elkin-Koren, *Algorithmic Consumers*, 30 HARV. J.L. & TECH. 309, 311 (2017); Michael Weber, Marek Kowalkiewicz, Jörg Weking, Markus Böhm et al., *When Algorithms Go Shopping: Analyzing Business Models for Highly Autonomous Consumer Buying Agents*, 15TH INT'L CONF. ON WIRTSCHAFTSINFORMATIK (2020), https://library.gito.de/open-access-pdf/J12_Weber-When_Algorithms_Go_Shopping-336_c.pdf.

change their behaviors.[22] Similarly algorithmic processing of consumer data for the purpose of tailored pricing and personalized profiling can draw inferences about consumers and adopt consequential actions, such as whether or not to send an ad or what type of pricing to offer to the consumer. While personalized pricing by itself is permissible by the law, algorithms present capabilities that should raise concerns for the potential for unfair or deceptive practices. The potential of algorithms to promote deceptive behaviors and related data privacy concerns present consumer protection issues, for which there should be response by law and policy.

Merchants' use of vast and increasing data sets, the rapid rise in computing power, and continually increasing interconnected devices may also enable categorization or grouping of certain classes of consumers in ways (whether inadvertent or intentional) that could be considered a violation of anti-discrimination laws. As the FTC has recognized, "the collection and use of personal data [via algorithms] raise consumer harm [if] a company collecting personal data that helps inform a personalized pricing algorithm violate[s] material promises related to the collection and use of those data[,] [and when it is] based on factors like race, religion, gender, or national origin, it could violate certain U.S. antidiscrimination laws."[23] While intentional discrimination may be rare and difficult to identify due to the discrete nature of algorithmic processing of data, algorithmic decision-making may present apparent disadvantages or inadvertent offerings to certain groups of consumers. Algorithms may systematically exclude certain categories of consumers based on assessments of consumer data, which may reflect existing structural and systemic biases in society.[24] Furthermore, the technological characteristics of algorithms may present unexpected discrimination or may multiply discrimination through the mathematics of training data and utilizing neural networks or deep learning techniques.[25]

An adequate legal and regulatory framework is necessary to direct algorithms to address imbalances in merchant–consumer interactions. These forms of legal protections are not concerned with the protection of data in and of

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22 Ido Kilovaty, *Data Breach Through Social Engineering*, HARV. L. REV. BLOG (Mar. 21, 2018), https://blog.harvardlawreview.org/data-breach-through-social-engineering/; Tami Kim & Gerry Yemen, *Facebook, Cambridge Analytica, and the (Uncertain) Future of Online Privacy*, DARDEN BUS. PUBL'G (Sept. 13, 2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3660467.

23 *Directorate for Financial and Enterprise Affairs Competition Committee, Personalised Pricing in the Digital Era—Note by the United States*, ORGANISATION FOR ECON. COOP. & DEV. (Nov. 21, 2018), https://one.oecd.org/document/DAF/COMP/WD(2018)140/en/pdf (quoting the Federal Trade Commission).

24 Pauline T. Kim & Erika Hanson, *People Analytics and the Regulation of Information Under the Fair Credit Reporting Act*, 61 ST. LOUIS U. L.J. 17, 19 (2016).

25 Igancio N. Cofone, *Algorithmic Discrimination Is an Information Problem*, 70 HASTINGS L.J. 1389, 1394–96 (2019).

itself, but with the protection of individuals through data and algorithms where data is applied and used for predictions.[26] Indeed, algorithms are already employed in business domains that are characterized by information asymmetry and power imbalances, as well as biases and discrimination. As merchants keep algorithms proprietary and in their control, the concentration of forecasting and predictive capabilities away from public authorities will enable an ability to influence and manipulate consumers, thereby increasing the power imbalance in the merchant–consumer interaction if left unaddressed. Effective countervailing powers need to be supported by legislation. Consumer protection and data protection laws are inadequate in an algorithmic era.[27] While the European Union's GDPR has provided some response in helping consumers attain greater fairness, accountability, and transparency of algorithms, U.S. legislation has been slow to respond to the algorithm-powered merchant. While consumer-empowering algorithmic tools, business ethics considerations, and self-regulation by merchants are positive first steps, greater legal and regulatory safeguards should also be taken into consideration. This Article's central insight is that greater discussion and policymaking are necessary for both the safeguards against the biases of the merchants who build and deploy algorithms and the regulation of algorithms. This combination will play a key role in ensuring that algorithms are being built in a way that promotes balanced merchant–consumer interactions. This Article concludes that responsible algorithm code development and policing through private panels of experts represents one option that would supplement or complement existing regulation and legislative activity concerning algorithms.

This Article proceeds in four parts. Following Part I's Introduction, Part II describes the phenomenon of algorithmic decision-making in business, provides representative applications and examples, explains the characteristics and function of algorithms, and discusses pricing and profiling with the use of algorithms. Part III explains the theoretical principles related to information asymmetry and biases and discrimination and builds on these principles to suggest the need for a regulatory response to algorithmic decision-making in the consumer–merchant context. Part IV explains the state of regulation and reform in the United States and Europe and closes with a proposal and future areas of exploration. Part V concludes by recommending responsible algorithm code development by a panel of experts one possible responsive measure.

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[26] Thomas Streinz, *The Evolution of European Data Law*, *in* THE EVOLUTION OF EU LAW 3 (Oxford University Press 3d ed.) (forthcoming 2021).

[27] *See* SOFTWARE & INFO. INDUS. ASS'NS, *Response to the Federal Trade Commission's Request for Comments on Questions in Connection with Its February 2019 Privacy Hearing* 3–4 (Dec. 21, 2018), https://www.ftc.gov/system/files/documents/public_comments/2018/12/ftc-2018-0098-d-0017-163225.pdf.

II. PROLIFERATION OF ALGORITHMS IN BUSINESS

The rise of algorithms in business will require merchants and their counsel to confront decades old processes and procedures and compare them to analytical techniques to ascertain potential concerns. As algorithms grow in popularity, policymakers need to develop policies and regulations that address weakened consumer protection as a result of algorithms in the merchant–consumer context.

A. Origins of Algorithms in Digital Commerce

Merchants have long utilized statistical methods to understand and market to consumers. In the beginning of the digital revolution, algorithms played an increasingly important role for merchants, but were based on limited sample data sets.[28] The exponential increase in computing power, interconnected devices, and platforms and social media usage have generated a concomitant growth in consumer data.[29] In response, merchants have developed and deployed algorithms to tailor consumer engagement and offerings.[30]

While consumers are also able to utilize algorithms in ways that ease their purchase process and use of a product or service, merchants are able to clandestinely use algorithms to gain from a vast amount of consumer data and transform the merchant–consumer interaction in profound ways. Consumers' use of algorithms may make identification and convenience of products easier, such as through digital assistants.[31] But a larger problem is that algorithms used by merchants allow for control and influence of consumers' purchase decisions and their use of products and services. Representative applications and examples and a technological understanding of algorithms help to demonstrate consumers may lack the necessary digital literacy in an algorithmic area, and merchants' use of algorithms may impede consumers from making informed decisions.

1. Applications & Examples

Merchants are increasingly utilizing algorithms to observe behaviors of consumers and to address certain groups of consumers over time to develop a

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28 Bernard Marr, *A Short History of Machine Learning—Every Manager Should Read*, FORBES (Feb. 19, 2016), https://www.forbes.com/sites/bernardmarr/2016/02/19/a-short-history-of-machine-learning-every-manager-should-read/?sh=3a6fbad815e7.

29 *See generally* Terrell McSweeny, *Consumer Protection in the Age of Connected Everything*, 62 N.Y.L. SCH. L. REV. 203 (2018).

30 *See generally* Zeshan Fayyaz, Mahsa Ebrahimian, Dina Nawara, Ahmed Ibrahim et al., *Recommendation Systems: Algorithms, Challenges, Metrics, and Business Opportunities*, 10 APPLIED SCI. 7748 (2020).

31 Benedict G. C. Dellaert, Suzanne B. Shu, Theo Arentze, Tom Baker et al., *Consumer Decisions with Artificially Intelligent Voice Assistants*, 31 MKTG. LETTERS 335, 339–42 (2020).

profile and to provide tailored solutions to those consumers. While there are limited examples of direct litigation concerning the use of algorithms in the merchant–consumer interaction, researchers and marketeers have designed and utilized algorithms in behavioral or intelligent content marketing in a variety of scenarios, which could expand and multiply with new use cases.

State of the art marketing techniques include the use of algorithms for personalized marketing strategies to give merchants a more informed view of consumer responses and to provide targeted responses and promotions.[32] The same algorithmic techniques are utilized in a variety of merchant–consumer interactions via digital assistants, online environments, and social media. Examples of the use of algorithms by merchants for advertising and marketing purposes that are prevalent in modern social media usage include (1) adaptive scenarios with digital content, where media (i.e. video, sound, and animation) or texts are utilized to receive feedback (i.e. like or dislike) from consumers to determine which scenario to be provided to the consumer; (2) optimization scenarios whereby a key value (i.e. total views of the scenario) and an additional variable (i.e. total number of target consumers) in combination are utilized to provide a scenario to a consumer; (3) intelligent evaluation of social media, whereby consumer interaction with a webpage or ads is continually fed back to the consumer; and (4) self-learning digital content that continually improves itself based on feedback from consumers to suggest what may be increasingly popular in a web environment.[33] Such algorithm powered approaches enable merchants to interact with customers by providing vital insights, making informed decisions, performing analytic calculations, and making automated recommendations and, in so doing, allow merchants to optimize when and how to respond to consumers.[34] Projections suggest that algorithm usage and new use cases in the merchant–consumer context will experience exponential growth and become a more significant issue in the regulatory context and in litigation.[35]

2. Understanding Algorithms

Consumer information is created and transmitted in digital data, which is processed by merchants through algorithms in ways that analyze and monetize

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[32] Dan Dumitriu & Mirona Ana-Maria Popescu, *Artificial Intelligence Solutions for Digital Marketing*, 46 PROCEDIA MFG. 630, 632 (2020).

[33] Utku Kose & Selcuk Sert, *Intelligent Content Marketing with Artificial Intelligence*, INT'L CONF. OF SCI. COOP. FOR FUTURE, Sept. 2016, at 837–41, https://www.researchgate.net/publication/308520444_Intelligent_Content_Marketing_with_Artificial_Intelligence.

[34] Emmanouli Perakakis, George Mastorakis & Ionnia Kopanakis, *Social Media Monitoring: An Innovative Intelligent Approach*, DESIGNS, May 20, 2019.

[35] Robin Nunn, *Discrimination in the Age of Algorithms*, *in* THE CAMBRIDGE HANDBOOK ON THE LAW OF ALGORITHMS 182, 185, 187 (Woodrow Barfield ed. 2021).

it to provide useful insights. Algorithms are the technological mechanisms that provide a nexus between data and consumers.[36] Algorithms can be understood via their technological characteristics and the lens of social power dynamics. The technological and social aspects of algorithms are intertwined, and their functionality can influence the deployment of power in social and economic relationships.

Algorithms are a set of instructions to solve a problem or complete a task. It can be a series of rules and formulas that are performed in a certain order in software code. Algorithms can range from simple instructions to perform repetitive tasks more efficiently than humans to more complex codes that analyze large data sets, solve complex problems, and make predictions. Different types of algorithms can be utilized by merchants in consumer outreach and interaction, with more advanced ones employing artificial neural networks and deep learning technologies.[37] Merchants benefit from algorithms that provide ways to search, aggregate, and cross reference large data sets to analyze different aspects of data, identify patterns in unobservable cases of interest, and make predictions.[38] Algorithms can sift and search through data, generalize from examples, or can be applied to problems with answers that require subjective interpretation or explanations.[39] Data analysis through algorithms can help to predict future behavior as if looking into a crystal ball.[40]

While algorithms refer to analytical methods and mathematical techniques, other commonly used terms are related to, but distinguished from, such techniques. "Big data" refers to the large quantities of data that are collected and shared through increasingly connected devices. Algorithms utilize big data and rely on artificial intelligence ("AI") and machine learning systems to extract value from them.[41] Artificial intelligence refers to a branch of computer science

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36 Björn Steinrötter, *The (Envisaged) Legal Framework for Commercialisation of Digital Data within the EU*, *in* ALGORITHMS AND LAW 269-70 (Martin Ebers & Susana Navas eds., 2020).

37 Joseph Lemley, Shabab Bazrafkan & Peter Corcoran, *Deep Learning for Consumer Devices and Services: Pushing the Limits for Machine Learning, Artificial Intelligence, and Computer Vision*, IEEE CONSUMER ELEC. MAG., Apr. 2017, at 48.

38 *See* Matt Taddy, *The Technological Elements of Artificial Intelligence*, *in* THE ECONOMICS OF ARTIFICIAL INTELLIGENCE 61 (Ajay Agrawal, Joshua Gans & Avi Goldfarb eds., 2019) (explaining that AI automates tasks previously done by humans and requires a massive amount of data and continued data generation to detect patterns and make predictions).

39 Gabriel Nicholas, *Explaining Algorithmic Decision*, 4 GEO. L. TECH. REV. 711, 714 (2010).

40 Mario Martini, *Regulating Algorithms: How To Demystify the Alchemy of Code?*, *in* ALGORITHMS AND LAW 100 (Martin Ebers & Susana Navas eds., 2020).

41 Clark D. Asay, *Artificial Stupidity*, 61 WM. & MARY L. REV. 1187, 1190 (2020) (defining AI as computing systems that perform tasks that normally would require human intelligence); Harry Surden, *Artificial Intelligence and Law: An Overview*, 35 GA. ST. U. L. REV. 1305, 1307 (2019) (describing AI as using technology to automate tasks that normally require human intelligence).

that involves the design of intelligent systems to perform complex tasks.[42] Machine learning is a subfield of AI that utilizes algorithms to learn iteratively from data, and deep learning is a subfield of machine learning that attempts to replicate activity of the human brain with artificial neural networks.[43] Algorithms in the machine learning context involve mathematical techniques that recognize patterns in large datasets and make predictions.[44] Such machine learning algorithms build a model from training data, which are effectively historical examples, to train the model to behave in a certain way.[45]

With advancements in computing power, increasingly connected devices, and a plethora of data via digital platforms and social media, algorithms are being introduced by merchants to assist in or take the responsibility of decisions affecting interactions with consumers.[46] The use of algorithms in business can have real life consequences for the merchant–consumer interaction based on the algorithm's technological characteristics. Algorithms may not be transparent as to their inner working and their use and may cause consumers to

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[42] John Frank Weaver, *Regulation of Artificial Intelligence in the United States*, *in* RESEARCH HANDBOOK ON THE LAW OF ARTIFICIAL INTELLIGENCE 155, 156–57 (Woodrow Barfield & Ugo Pagallo eds., 2018).

[43] *See* Joost N. Kok, Egbert J. W. Boers, Walter A. Kosters & Peter van der Putten, *Artificial Intelligence: Definitions, Trends, Techniques, and Cases*, *in* ARTIFICIAL INTELLIGENCE 1, 1–2 (2009). The following definition of AI is based on The New International Webster's Comprehensive Dictionary of the English Language, Encyclopedic Edition: "An area of study in the field of computer science. Artificial intelligence is concerned with the development of computers able to engage in human-like thought processes such as learning, reasoning, and self-correction." SMITH S. STEPHENSON, THE NEW INTERNATIONAL WEBSTER'S COMPREHENSIVE DICTIONARY OF THE ENGLISH LANGUAGE, ENCYCLOPEDIC EDITION (2004).

Artificial intelligence can also be defined as:

> The concept that machines can be improved to assume some capabilities normally thought to be like human intelligence such as learning, adapting, self-correction, etc. The extension of human intelligence through the use of computers, as in times past physical power was extended through the use of mechanical tools. In a restricted sense, the study of techniques to use computers more effectively by improved programming techniques.

Kok, *supra*, at 2.

[44] *See* Angela Daly, Thila Hagendorff, Li Hui, Monique Mann et al., *Artificial Intelligence Governance and Ethics: Global Perspectives* 5 (Univ. of Hong Kong Faculty of L. Research Paper No. 2019/033, June 28, 2019) (describing AI as detecting patterns in data and making predictions on the basis of such datasets, which requires identification of correlations within the datasets).

[45] *See* Cary Coglianese & David Lehr, *Transparency and Algorithmic Governance*, 71 ADMIN. L. REV. 1, 14–15 (2019).

[46] Agnieszka Jablonowska, Maciej Kuziemski, Anna Maria Nowak, Hans-Wolfgang Micklitz et al., *Consumer Law and Artificial Intelligence Challenges to the EU Consumer Law and Policy Stemming from the Business' Use of Artificial Intelligence* 19 (Eur. Univ. Inst. L. Working Paper No. 2018/11, 2018).

become accustomed to less interaction with humans.[47] The lack of transparency as to whether an algorithm was applied and the lack of public scrutiny over their application gives rise to consumers being highly vulnerable to manipulation by merchants in specific purchase choices. The more dependent a consumer is on algorithms, the less informed the consumer will become in making choices related to products and services. As a result of these technological characteristics, consumers may lack the digital literacy to interact with algorithms and may be unable to make informed purchase decisions.[48]

One key aspect in understanding algorithms from the legal, normative, and policy perspective is that algorithms are representations of social processes and that the social world is imbedded in their substrates of code.[49] Algorithms embody value-laden judgments that represent perceptions, understandings, and reasoning and underlying assumptions beyond simply solving particular tasks.[50] Due to challenges with accessing how algorithms work and the lack of resources and expertise to adequately assess them, algorithms can create power imbalances.[51] Given that the code of algorithms is rarely available, and in cases where it is available, it is difficult to understand and scrutinize, algorithms can become indirect control mechanisms that compound power imbalances.[52] Algorithms impact human behaviors since their ability to provide automation and analytics can drive modifications to human behaviors, monopolies, and power implications in society.[53]

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47 *See* Valérie Beaudouin, Isabell Bloch, David Bouni, Stéphan Clémençon et al., Flexible and Context-Specific AI Explainability: A Multidisciplinary Approach 7–9, 12–13 (Mar. 13, 2020), https://arxiv.org/pdf/2003.07703.pdf '(suggesting that the functioning of an algorithm is not transparent, which in turns provides a lack of traceability, auditability, and accountability to the algorithmic system).

48 *See generally* Secretary-General of the Organization for Economic Co-operation and Development [OECD], *Toolkit for Protecting Digital Consumers, A Resource for G20 Policy Makers* (2018), http://www.oecd.org/digital/consumer/toolkit-for-protecting-digital-consumers.pdf.

49 David Beer, *The Social Power of Algorithms, Information, Communication, & Society*, 20 INFO. COMMC'N SOC'Y 1, 4 (2017) (suggesting that algorithms are modelled on versions of the social world and are reflective of underlying social processes).

50 Gregory Weheeler, *Machine Epistemology and Big Data*, *in* THE ROUTLEDGE COMPANION TO THE PHILOSOPHY OF SOCIAL SCIENCE (Lee McIntyre & Alex Rosenberg eds., 2016).

51 Alexandra Mateescu & Aiha Nguyen, *Algorithmic Management in the Workplace*, DATA & SOC'Y, Feb. 2019, at 1.

52 Tom Barratt, Alex Veen & Caleb Goods, *Algorithms Are Entrenching a Power Imbalance Between Employer and Employee*, SMARTCOMPANY (Aug. 26, 2020), https://www.smartcompany.com.au/technology/algorithms-power-imbalance-employer-employee/.

53 S.C. Olhede & P.J. Wolfe, *The Growing Ubiquity of Algorithms in Society: Implications, Impacts, and Innovations*, PHIL. TRANSACTIONS ROYAL SOC'Y, Aug. 6, 2018, at 8.

3. Response to Potential Critique

This proposal to address power imbalances in the merchant–consumer interaction created by the proliferation of algorithms must address some criticisms. The threat of losing innovative advertising capabilities may motivate merchants to respond to legislation and regulation of algorithmic decision-making with arguments supporting prioritization of commerce.

The most obvious objection is that algorithms do not transform the merchant–consumer interaction since they are an incremental technological improvement to existing capabilities. While it is certainly true that merchants have long observed the behaviors of consumers and responded to consumers' purchasing patterns to develop customized offerings, algorithms increase understanding of consumers at a signifciant scale and in an opaque manner. The argument that algorithms are an incremental innovation has been proposed since they do not allow yet for omniscience or general intelligence.[54] While such a critique is not without merit, it fails to consider that algorithmic decision-making may be best understood as presenting a new, powerful capability available to merchants that have greater resources than consumers. Society should consider the opaqueness of algorithms when assessing the modern merchant–consumer interaction.

Along these lines, merchants may object that they should have the right to analyze consumers as they choose. As a general matter, merchants should be allowed to segment their consumer base, draw inferences from historical data, and customize their offerings. But society should be more concerned when merchants become empowered to a degree where they can tailor offerings in real-time, have constantly evolving customer profiles in conjunction with updatable data sets that enable responsive actions, and manipulate consumers in interactive manners. It would be both impossible and undesirable for policy makers to anticipate all potential advancements in algorithms in the merchant–consumer context, but in many ways, the trade off between facilitating commerce and protecting consumers may be necessary for evaluation and response.

B. Algorithmic Interactions with Consumers

Algorithms present beneficial opportunities to merchants by providing inferences from data in digital interactions with consumers. Merchants benefit from being able to target consumers more effectively, in real-time, and with high

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[54] *See generally* Ragnar Fjelland, *Why General Artificial Intelligence Will Not Be Realized*, HUMANS. & SOC. SCIS. COMMC'N, June 17, 2020; David Miller, A Philosophical Critique of Artificial Intelligence (Spring 1990) (Honors College Capstone Experience/Thesis Project, Western Kentucky University) (on file with Western Kentucky University Honors College); Latanya Sweeney, That's AI?: A History and Critique of the Field (2003), https://dataprivacylab.org/projects/thatsai/paper.pdf.

predictive accuracy.[55] Conversly, consumers may lack digital literacy or be unable to make informed decisions when merchants utilize algorithms.[56]

First, in terms of targeting consumers, algorithms enable merchants to benefit from assessments of consumers; the more data that there is about the consumer, the better the merchant can draw inferences about consumer behaviors and preferences. Merchants can generate greater commercial profit and improve access to their services through algorithms that generate information and analysis of consumers' backgrounds and interests.[57] Algorithms are increasingly being used to analyze a wide range of data sources to assess consumers and their digital footprint to predict the actions a consumer may take with high accuracy.[58] While algorithms may enable consumer' access to merchants' services that may have previously been unavailable, they disproportionately enhance merchants' traditional means of assessing consumers. The unwanted behaviors relating to targeting of consumers that are promoted by algorithms occur when merchants collect personal consumer data that helps inform a personalized pricing algorithm that violates a material promise related to the collection and use of that data. [59]

Second, algorithms may present biases in their decision-making and may be discriminatory in drawing inferences about a consumer, including on issues of race, religion, gender, and national origin. Although algorithmic decision-making can seem rational, neutral, and unbiased, it can lead to unfair or illegal discrimination.[60] Algorithms have the potential to create inaccuracies and biases that could lead to detrimental effects for low-income and underserved popluations.[61] The unwanted behaviors relating to biases that are promoted by

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55 *See generally* Fayyaz et al., *supra* note 30, at 1.

56 Lee Rainie & Janna Anderson, *The Need Grows for Algorithmic Literacy, Transparency, and Oversight*, PEW RSCH. CTR. (Feb. 8, 2017) https://www.pewresearch.org/internet/2017/02/08/theme-7-the-need-grows-for-algorithmic-literacy-transparency-and-oversight/.

57 *See generally* Anindita A. Khade, *Performing Customer Behavior Analysis Using Big Data Analytics, International Conference on Communication, Computing, and Virtualization*, 79 PROCEDIA COMPUT. SCI. 986, 987 (2016).

58 *See generally* Abhijit Raorane & R.V. Kulkarni, Data Mining Techniques: A Source for Consumer Behavior Analysis '(2011), https://arxiv.org/ftp/arxiv/papers/1109/1109.1202.pdf.

59 *Directorate for Financial and Enterprise Affairs Competition Committee, Personalised Pricing in the Digital Era—Note by the United States*, *supra* note 23.

60 Federik J. Zuiderveen Borgesius, *Strengthening Legal Protection Against Discrimination by Algorithms and Artificial Intelligence*, 24 J. HUMAN RTS. 1573, 1573 (2020).

61 *See* FTC, BIG DATA: A TOOL FOR INCLUSION OR EXCLUSION? (2016), https://www.ftc.gov/system/files/documents/reports/big-data-tool-inclusion-or-exclusion-understanding-issues/160106big-data-rpt.pdf.

algorithms occur when presonalized pricing is based on factors that violate certain U.S. antidiscrimination laws. [62]

Problematic algorithmic outcomes stem from faulty inputs, faulty conclusions, failures with testing, and proxy discrimination.[63] Algorithmic discrimination may be embedded in or can be magnified by data processing, and would be prohibited by discrimination laws if such decisions were carried out by human processes alone.[64] Merchants can utilize algorithms to customize and tailor their products and services to consumers' preferences and, in so doing, present new concerns for transparency and accountability, privacy and security, and non-discrimination and data fairness for law and society.[65] The challenges arising from the treatment of algorithmic decision-making in business suggest that new normative considerations and regulatory frameworks are warranted.

This Section provides the key concepts in play for two major areas where consumers may encounter algorithmic decision-making by merchants—(1) pricing and (2) profiling. It describes how algorithmic decision-making raises implications in consumer protection law for consumers, innovators, legislators, merchants, policy makers, and regulators.

1. Pricing

Algorithms can process consumer data for personalized advertising via pricing decisions. Algorithmic pricing can take many forms and can give rise to

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[62] *Directorate for Financial and Enterprise Affairs Competition Committee, Personalised Pricing in the Digital Era—Note by the United States*, *supra* note 23.

[63] Remarks of Commissioner Rebecca Kelly Slaughter, *Algorithms and Economic Justice*, Federal Trade Commission (Jan. 24, 2020) at 3, 6, 8 (stating that faculty inputs refers to "garbage in, garbage out" or skewed data that reflects problematic human biases or a dataset that is not adequately representative; describing faculty conclusions as "data in, garbage out" or the use of data to generate conclusions that are inaccurate or misleading; suggesting that failure to test refers to algorithms being deployed without adequate testing that could uncover unanticipated outcomes before they harm people in the real world; describing proxy discrimination as "the predictive power of a facially neutral characteristic [that] is at least partially attributable to its correlation with a suspect classifier").

[64] Thomas B. Nachbar, *Algorithmic Fairness, Algorithmic Discrimination*, FLA. ST. L. REV. (forthcoming 2020); Nicholas Schmidt & Bryce Stephens, An Introduction to Artificial Intelligence and Solutions to the Problems of Algorithmic Discrimination (Nov. 8, 2019), arXiv.org https://arxiv.org/abs/1911.05755.

[65] *See generally* Bo Cowgill & Catherine Tucker, *Algorithmic Fairness and Economics* (Apr. 4, 2019) (Colum. Bus. Sch. Rsch. Paper), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3361280; Emre Kazim, Jeremy Barnett & Adriano Koshiyama, Automation and Fairness (Sept. 24, 2020) (manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3698404.

prices that vary automatically according to the cost of the product or service, to supply and demand, and to consumers' preferences.[66]

Merchants can utilize algorithms to infer information about the consumer and help decide whether or not to send the consumer a certain price in an ad or a certain promotion.[67] In some cases, merchants' involvement may be minimal, and algorithms may be self-executing once deployed, such that the consumer may be interacting with the algorithm.

In the pricing context, algorithms can provide predictive analytics on the likelihood of purchase decisions by consumers. Merchants may use algorithms for predictive analytics to assert the likelihood of future outcomes based on analysis of historical data.[68] Merchants can utilize algorithms to collect and analyze data on consumers, such as their purchase history, social media activity, locations visited, Internet browsing history, amount of time spent on a website, speed of movement of a mouse pointer on a website, and time spent hovering their mouse over different parts of a website. Algorithms are utilized by merchants to predict consumer behavior and preferences, to forecast demand and price changes, and to target consumers more effectively.[69] Such algorithms can be classified as personalized pricing algorithms, dynamic pricing algorithms, and ranking and recommendation algorithms; they share in common a prediction-driven mathematical means by which merchants respond to consumer characteristics.

Personalized pricing algorithms analyze consumer preferences to determine a price for a particular good or service that is tailored to a consumer. Merchants may consider that such algorithms efficiently determine pricing that matches what a consumer most values. Some have argued that personalized pricing by itself does not raise consumer protection issues, but instead is redistributive and increases both total and consumer welfare.[70] This perspective considers personalized pricing as a specie of permissible price discrimiation, for which the merchant prices consumers individually (i.e, different kind of prices

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66 Pierre Honoré & Guillaume Fabre, European Union—Algorithmic Pricing Under Article 101 TFEU, LEXOLOGY (Oct. 15, 2019), https://www.lexology.com/library/detail.aspx?g=6f23d01a-150d-400a-b594-6d5542054025.

67 *See generally When Algorithms Set Prices: Winners and Losers*, OXERA (June 19, 2017), https://www.oxera.com/insights/reports/when-algorithms-set-prices-winners-and-losers/.

68 *See generally How Machine Learning Is Reshaping Price Optimization*, TRYO LABS (Apr. 16, 2020), https://tryolabs.com/blog/price-optimization-machine-learning/.

69 Zach Y. Brown & Alexander MacKay, *Competition in Pricing Algorithms* (Harv. Bus. Sch., Working Paper No. 20-067, 2021).

70 *Directorate for Financial and Enterprise Affairs Competition Committee, Personalised Pricing in the Digital Era—Note by the United States*, *supra* note 23 (arguing that "personali[z]ed pricing may intensify competition by allowing firms to target prices to poach rivals' customers" and "[act in a] redistributive [manner by allowing] some consumers [to] benefit, because they have access to products at lower prices than they otherwise would; while some consumers may lose, because they could pay higher prices than they would if the firm were to charge a single price").

for the same kind of product with the same production costs), for as much as the consumer is willing to pay according to the information that the merchant has on each consumer. While some economists consider that such price discrimination allows merchants to extract more consumer surplus (i.e., the difference between how much each consumer is willing to pay and what one ends up paying) and increase overall social welfare (by serving more consumers than a similarly imperfect market without price discrimination), such views do not consider the status and impact to consumers in the marketplace.

The advent of algorithmic-driven decisions in merchant–consumer interactions has significantly reduced merchants' costs of collecting and analyzing information on each consumer. Moreover, consumers are dilvuging information explicitly and in ways that are implicit in their habits and behaviors. The problems with algorithmic-driven decisions in merchant–consumer interactions are with transparency and fairness. Foremost, it is reasonable for consumers to want greater transparency of merchants and to know whether and how merchants' algorithms utilze information about them. Additionally, merchants' use of algorithms may be unfair to consumers, who would want to have the ability to shop around and negotiate prices. The problems multiply when algorithms become too influential with suggesting the path for the consumer to take, providing the consumer with the illusion of choice, and promoting use scarcity.[71] The ability of algorithms used by merchants to change consumers' beliefs and behaviors in an exploitative manner should weaken the perspective that personalized pricing is an acceptable form of price discrimination that reflects the price that the market will bear.[72]

Consumers may consider such a practice as being unfair price discrimination when they lose their already limited market power. Algorithms that go too far undermine the status of consumers as participants in the market, and in so doing, strip consumers' ability to benefit from the market. Algorithms can exacerbate existing merchant–consumer information asymmetries[73] in a way that undermines the goals of markets in serving consumers. Merchants can undermine the ability of consumers to substantially benefit from their market participation through exploitative mechanisms. For example, a merchant may use an algorithm that would optimize pricing by determining the likelihood that a consumer would purchase a product based on a discount or a premium in an

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71 Daniel Faggella, *AI for Social Influence and Behavior Manipulation with Dr. Charles Isbell*, EMERJ (Feb. 9, 2019), https://emerj.com/ai-podcast-interviews/ai-social-influence-behavior-manipulation-dr-charles-isbell/.

72 Liesl Yearsly, *We Need To Talk About the Power of AI To Manipulate Humans*, MIT TECH. REV. (June 5, 2017), https://www.technologyreview.com/2017/06/05/105817/we-need-to-talk-about-the-power-of-ai-to-manipulate-humans/.

73 The concept of information asymmetry between merchants and consumers is discussed in more detail below. *See infra*, Section III.A.1.

discriminatory way.[74] Additionally, merchants can utilize algorithms on a widespread scale to show different customers a different number or results of prices in what may be deemed an unethical way. Some of these practices may be considered unfair price discrimination, which involves the sale of two or more similar goods at prices that are at different ratios to marginal cost and which necessitates considerations of different laws and regulations across various jurisdictions.[75]

Dynamic pricing algorithms could automatically adjust a merchant's pricing. Such dynamic price adjustments could occur in response to other competitor merchants' pricing or to changes in the marketplace. Dynamic pricing algorithms are utilized in conjunction with data scraping technology that searches, extracts, and compares prices across platforms.[76] In so doing, algorithms can quickly find a competitor merchant's prices using bots to extract pricing and product information and, then, instantly provide a price match to its target consumers.[77] One particular type of dynamic pricing algorithm is a unilateral pricing algorithm that automatically provides a lower price as a discount to a competitor's price or a higher price as a premium to a competitor's price.[78] Another particular type of dynamic pricing algorithm entails risk assessment features, wherein the algorithm analyzes a buyer's personal data and circumstances to assess the likelihood that an individual will act in a certain way based on its risk profile and preferences.[79] Merchants can use dynamic pricing algorithms to modulate their price offerings to consumers based on changes in the marketplace, an understanding of consumer risk preferences, and a desire to communicate a certain perception of their product or service to consumers. While such algorithms may make it easier for consumers to compare prices among

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74 Marshall Fisher, Santiago Gallino & Jun Li, *Competition-Based Dynamic Pricing in Online Retailing: A Methodology Validated with Field Experiments*, 64 MGMT. SCI. 2496, 2512 (2017).

75 George Stilger, *The Theory of Price* (4th ed., Plagrave Macmillan 1987); Lars A. Stole, *Price Discrimination and Competition*, *in* HANDBOOK OF INDUSTRIAL ORGANIZATION 2221 (Elsevier ed. 2007); Hal Varian, *Price Discrimination*, *in* HANDBOOK OF INDUSTRIAL ORGANIZATION 597 (Richard Schmalense & Robert D. Willig eds., 1989); Oren Bar-Gill, *Algorithmic Price Discrimination When Demand Is a Function of Both Preferences and (Mis)perceptions*, 86 U. Chi. L. Rev. 217 (2021).

76 Marian Zeis, Empirical Analysis of Dynamic Pricing on the "Amazon.de" Marketplace, (Mar. 2018) (Bachelor's Thesis, Berlin School of Economics and Law).

77 Le Chen, Alan Mislove & Christo Wilson, *An Empirical Analysis of Algorithmic Pricing on Amazon Marketplace*, *in* 25TH INTERNATIONAL CONFERENCE ON WORLD WIDE WEB 1339 (2016).

78 Sheng Li & Claire Chunying Xie, *Automated Pricing Algorithms and Collusion: A Brave New World or Old Wine in New Bottles?*, ANTITRUST SOURCE, Dec. 2018, at 3.

79 *Pricing Algorithms: Economic Working Paper on the Use of Algorithms To Facilitate Collusion and Personalised Pricing*, COMPETITION & MKTS. AUTH. (Oct. 8, 2018), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746353/Algorithms_econ_report.pdf.

merchants and reduce consumer search cost, such automatic price adjustments may present a form of price discrimination.

Ranking and recommendation algorithms can gauge a consumer's preference for a good or service and, in response, present a recommendation. Such ranking and recommendation algorithms are utilized by merchants in gathering information on purchasing patterns and customer reviews.[80] Merchants can also utilize algorithms to bolster reviews through paid reviews that make their products appear more appealing to consumers. Competitor merchants could implement algorithms to generate fake reviews to distort another merchant's product or service appeal to the same consumer base. One particular type of a ranking and recommendations algorithm is a matching algorithm, and it matches merchants and consumers based on a consumer's preference and criterion specified by the consumer.

In sum, algorithms present powerful new analytical capabilities in developing pricing, ranking, and recommendation responses. Many of these pricing-related capabilities escape legal detection due to the algorithms' opacity and merchants' subtle and effective ways to blur price discrimination and price optimization.[81]

2. Profiling

Algorithms can analyze consumer data to identify the links between individuals and construct profiles of groups of consumers. Profiling refers to the automated processing of personal data to evaluate, analyze, or predict a consumer's personal preferences or behaviors.[82] It allows merchants to group consumers together according to characteristics, such as age, gender, lifestyle choices, income, location, past purchases, and search terms. As a result, merchants can practice extensive targeted advertising to consumers.

Profiling is defined as the "systematic and purposeful recording and classification of data related to individuals" and "involves individualized targeting, real-time experimentation, and platformization."[83] Algorithmic methods enable profiling, which provides statistical inferences about consumers

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[80] *See* Amirreza Rohani & Mohsen Nazari, *Impact of Dynamic Pricing Strategies on Consumer Behavior*, 4 J. MGMT. RSCH. 143, 147 (2012).

[81] Sonia K. Katyal, *Private Accountability in an Age of AI*, *in* THE CAMBRIDGE HANDBOOK ON THE LAW OF ALGORITHMS 74 (Woodrow Barfield ed., 2020).

[82] Diana Sancho, *Chilling Automated Decision-Making Under Article 22 GDPR: Towards a More Substantial Regime for Solely Automated Decision-Making*, *in* ALGORITHMS AND LAW 138 (Martin Ebers & Susana Navas eds., 2020).

[83] Moritz Büchi, Edward Fosch Villaronga, Christoph Lutz, Aurelia Tamò-Larrieux et. al, Chilling Effects of Profiling Activities: Mapping the Issues 3 (2019) (manuscript), https://ssrn.com/abstract=3379275.

when specific personal characteristics are difficult to get or observe.[84] Profiling refers to algorithmic techniques that automatically process data related to consumers, develop inferences about the consumer's characteristics and preferences, and develop predictions for the purpose of constructing profiles for future decision-making.[85] The analytical and predictive capabilities of algorithms in making inferences that distinguish among consumers is at a greater scale and with faster speed than prior methods employed by marketeers.

Merchants and marketers have utilized segmentation techniques to identify and characterize groups of consumer needs or preferences. The challenge with algorithms in business is for merchants to personalize without contravening the law on profiling.[86] Market segmentation, customer demographic profiles, and statistical approaches are common exercises employed by merchants and marketeers, who aim to analyze and predict behaviors of consumers.[87] Profiling practices enable merchants to develop loyalty programs, customer relationship management tools, and personalized advertising programs.

But when profiling is utilized by merchants for far-reaching monitoring, social sorting, and unfair effects, they can raise legal and ethical issues. When consumers, based on the profiles, get assigned to market segments such that the resulting treatment is different for a particular consumer relative to others or when there are exclusionary actions based on certain characteristics, then such profiling is problematic from a discriminatory standpoint. Discrimination occurs when the data input on the consumer is not relevant enough to reach a correct conclusion.[88] In such cases, the algorithms embody society's biases; designers of algorithms are not demographically diverse, the data inputs do not reflect diversity, and algorithms mirror a narrow and privileged vision of society.[89]

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84 Betsy Anne Williams, Catherine F. Brooks & Yotam Shmargad, *How Algorithms Discriminate Based on Data They Lack: Challenges, Solutions, and Policy Implications*, J. INFO. & TECH. 78, 80 (2018).

85 Büchi et al., *supra* note 83, at 2, 5.

86 Büchi et al., *supra* note 83, at 2, 5.

vacy Law?, JDSUPRA (May 8, 2020), https://www.jdsupra.com/legalnews/personalising-marketing-and-services-16479/.

87 ARTHUR MEIDAN, CUSTOMER BEHAVIOR AND MARKET SEGMENTATION, MARKETING FINANCIAL SERVICES 23–49 (1996).

88 Peter Seele, Claus Dierksmeier, Reto Hofstetter & Mario D. Schultz, *Mapping the Ethicality of Algorithmic Pricing: A Review of Dynamic and Personalized Pricing*, J. BUS. ETHICS (2019); Anja Lambrecht & Catherine Tucker, Algorithmic Bias?: A Study of Data-Based Discrimination in the Serving of Ads in Social Media (Sept. 12, 2016), https://www.ftc.gov/system/files/documents/public_events/966823/lambrechttucker_algorithmicbias_final.pdf.

89 Ari Ezra Waldman, *Algorithmic Legitimacy*, *in* THE CAMBRIDGE HANDBOOK ON THE LAW OF ALGORITHMS 107, 114–15 (Woodrow Barfield ed., 2020).

Discrimination is encountered when algorithms apply profiling methods that categorize consumers in a way that treats certain groups (such as those based on race, religion, gender, and national origin) differently or denies access of products and services to certain groups. For example, if some consumers receive certain prices or special offers due to their association or inclusion in a certain group while other consumers are not provided such a benefit, this could be discrimination. Additionally, for instance, if algorithms categorize some consumers as wealthy to receive certain medical or cosmetic products while excluding others that may be considered higher risk due to their gender or race, that would be considered discrimination. In sum, it could be difficult to determine whether consumers have been discriminated against, difficult to tell whether there was intentional or inadvertent discrimination by merchants, difficult to identify discrimination in data and output of data, and difficult to define what constitutes discrimination in the algorithmic context between merchants and consumers. The consequences are severe when such algorithmic decisions deprive a consumer of the same benefit provided to other consumers.

III. THEORETICAL PRINCIPLES

Algorithms are proliferating in the merchant–consumer interaction and are shaping business and society. As merchant's' use of algorithms increasingly monitors and controls consumer behaviors, algorithms have far-reaching significance for output, outcome, and impact on the merchant–consumer interaction. The increasing significance of algorithms in business makes theoretical inquiries necessary to inform policy debate and potential regulatory responses. Measures of regulation of algorithms in business should be tailored to achieve socially desirable goals and avoid undesired effects based on theoretical considerations raised by algorithms' technological characteristics.

A. Theoretical Principles

Under conditions of growing use cases of algorithms in business, more and more consumers are engaging with algorithms in interactions with merchants. The changing distribution of algorithms usage between merchants and consumers poses a threat to consumer rights, effective consumer choice, and fair business practices. As merchants begin to use algorithms at a greater pace, far outstripping consumers' awareness or understanding of them, the exercise of consumer choice is weakened. Algorithm development and proliferation by merchants challenges the dominant approach of consumer sovereignty, or satisfying consumers without coercion, deception, or other influences from merchants.[90] The theoretical rationale for consumer protection in an algorithmic

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[90] Neil W. Averitt & Robert H. Lande, *Consumer Sovereignty: A Unified Theory of Antitrust and Consumer Protection Law*, 65 ANTITRUST L.J. 713, 715–17 (1997).

era is that consumers become an even weaker party as merchants increasingly begin to exploit significant information disparities.[91] On the basis of these considerations, (1) information asymmetry and power imbalances and (2) biases and discrimination result through algorithm usage by merchants and necessitate regulatory responses.

1. Information Asymmetry & Power Imbalances

One major theoretical consideration for effective consumer sovereignty is the imbalance caused by algorithms in the bargain between merchants and consumers. The private and negotiated bargain between merchants and consumers becomes one-sided when merchants have greater knowledge and understanding through data utilized in algorithms. Thus consumers face higher transaction costs in order to garner the equivalent level of comprehension about the bargain as the merchant regarding the offered product or service. In the absence of the intervention of laws and regulations, algorithms create a perceived asymmetry between merchants and consumers, such that there are severe differences in bargaining power resulting in consumer' fairness and efficiency concerns.[92] Consumers lack comprehension of the algorithms' capacities, and merchants collect much more information than the consumer can know or reasonably oversee, and as result, consumers become vulnerable to merchants' use of algorithms.[93]

Consumers would face significant efforts and transaction costs in order to achieve the capability level of merchants that utilize algorithms. In order for consumers to understand the purpose for which merchants' algorithms would collect, utilize, and analyze data about themselves, algorithms would need to be fair, accountable, and transparent to consumers.[94] At a minimum, consumers would need clear explanations and a description of the consequences merchants' algorithmic-driven decisions have on them. While notice and choice about algorithmic uses of consumer data gives consumers some choice, that may not be enough. Even if a consumer is notified about the use of an algorithm by a merchant that offers a product or service, the consumer's choice alone could still be amidst algorithms that are not considered fair, accountable, or transparent.

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91 Giesela Ruhl, *Consumer Protection in Choice of Law,* 44 CORNELL INT'L L.J. 569, 571–72 (2011).

92 *See generally* Danaher et al., *supra* note 12, at 2 (suggesting that algorithms "nudge, bias, guide, provoke, control, manipulate and constrain human behavior" and, in so doing, would treat consumers in an unfair manner and raise inaccuracies in predictions).

93 *See generally* Peter J. van der Waerdt, *Information Asymmetries: Recognizing the Limits of the GDPR on the Data-Driven Market*, 2020 COMPUT. L. & SEC. REV. 38 (2020).

94 Robyn Caplan, Joan Donovan, Lauren Hanson & Jeanna Matthews, *Algorithmic Accountability: A Primer*, DATA & SOC'Y, Apr. 18, 2018, at 4; Bruno Lepri, Nuria Oliver, Emmanuel F Latouze, Alex Paul Pentland et al., *Fair, Transparent, and Accountable Algorithmic Decision-Making Processes*, 31 PHIL. & TECH. 611, 611–27 (2018).

Merchants face inherent difficulty in explaining algorithms and their operation to consumers, and expecting consumers to bear the burden accentuates the problem. As a result of the information asymmetry between merchants and consumers due to algorithms, there is a need for regulatory intervention to regulate information as a means to offset the information imbalance between the parties.[95]

2. Biases & Discrimination

Another major theoretical consideration for effective consumer sovereignty is the potential for algorithms to discriminate while analyzing, drawing correlations, and making predictions based on billions of data points. Algorithmic discrimination could arise through a number of mechanisms in theory. Such forms of discrimination through the use of algorithms exist in both commercial and non-commercial contexts, but there are also consumer-specific forms of algorithmic discrimination as well. In theory, discrimination by algorithms in any context could arise based on technological characteristics of the algorithms, such as training on input data based on historical examples, feature selection, insufficient or distorted training data, randomness in the data, or hidden black-box techniques.[96] In addition, algorithmic discrimination in the merchant–consumer context could arise based on intentional reasons or unintentional business or economic reasons that impact certain groups.

In addition to consumers' concerns with information asymmetry and power balances caused by merchants' use of algorithms, consumers should be concerned about intentional discrimination and about inferences drawn from algorithms' processing of their data. Merchants can draw such inferences about consumers and, in so doing, can predict future behavior of consumers by analyzing how individuals viewed and evaluated their purchases.[97] Inferences include that of gender, race, and sexual orientation or, in general, categorization for the purpose of distinguishing groups of consumers. Problems with such inferences for consumers include inaccuracies and difficulties in their verification. Even more problematic are when such inferences introduce biases or cause merchants to discriminate in new and unique ways that are specific to algorithms.

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95 Ruhl, *supra* note 91, at 578–79.

96 Carlos Zednik, *Solving the Black Box Problem: A Normative Framework for Explainable Artificial Intelligence* (2019), https://arxiv.org/pdf/1903.04361.pdf.

97 *See* Monique Mann & Tobia Matzner, *Challenging Algorithmic Profiling: The Limits of Data Protection and Anti-Discrimination in Responding to Emergent Discrimination*, BIG DATA & SOC'Y, July–Dec. 2019, at 1; *see generally* Frank R. Kardes, Steven S. Posavac & Maria L. Cronley, *Consumer Inference: A Review of Processes, Bases, and Judgment Context*, 14 J. CONSUMER PSYCH. 230, 230–56 (2004).

Merchants may draw inferences using algorithms in ways there were not fathomable by anti-discrimination laws. In so doing, algorithms can discriminate in ways that society may consider intentional if shown to be purposeful by the merchant or unintentional if enabled by the algorithm in unexpected yet apparent ways. Thus, a merchant with a malicious intention may purposefully create a discriminatory outcome by knowingly starting with a biased dataset, or a merchant may infer attributes that separate a particular segment from the general population and amplify that bias.[98] In either scenario, existing social and political biases may get systemized in the algorithms through technological considerations with input data, training data, and programming of data.[99] Algorithms may also suggest some variables that are generally relevant for analysis and decisions to serve as proxies for class membership in ways that can create discriminatory impacts against vulnerable classes or develop associations between one characteristic and a specific class of people.[100] For example, Internet search engines and online paid advertising utilize algorithms that reinforce discrimination in society.[101] As another example, algorithms can profile segments of the population in a way that punishes the poor and working class and serves higher paying consumer segments.[102] In particular, algorithms have been considered to amplify racial hierarchies and to tailor to consumers by race.[103]

Consumers lack practical means of reinforcing laws that prohibit discrimination in an era of algorithms. In an era of algorithms, however, even when merchants do not intentionally discriminate, there may be discrimination through the nature of attribution of inferences. For example, names of consumers may result in inferences on purchase history from which merchants can make marketing, pricing, and promotion decisions of goods and services. Algorithms may draw upon demographic and statistical data that relates to a wider group of consumers to draw upon attributes of specific individuals, such as those of a certain gender, race, or sexual orientation.[104] As a result of expansive use of algorithms, the distinction between data that may be sensitive to discrimination and non-sensitive data is becoming blurred since more and more proliferating algorithms are being used for whatever data is encountered in business. In effect, merchants' use of algorithms could conceal discrimination in business and

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98 Robin Nunn, *Discrimination in the Age of Algorithms*, *in* THE CAMBRIDGE HANDBOOK ON THE LAW OF ALGORITHMS 182, 193–94 (Woodrow Barfield ed., 2020).

99 Nizan Geslevich Packin & Yafit Lev-Aretz, *Learning Algorithms and Discrimination*, *in* RESEARCH HANDBOOK ON THE LAW OF ARTIFICIAL INTELLIGENCE 96 (Woodrow Barfield & Ugo Pagallo eds., 2018).

100 Nunn, *supra* note 98, at 195; Packin & Lev-Aretz, *supra* note 99, at 96.

101 *See generally* SAFIYA UMOJA NOBLE, ALGORITHMS OF OPPRESSION (N.Y. Univ. Press 2018).

102 *See generally* VIRGINIA EUBANKS, AUTOMATING INEQUALITY (Macmillan Publishing 2019).

103 RUHA BENJAMIN, RACE AFTER TECHNOLOGY 17–18 (Polity Press 2019).

104 Williams et al., *supra* note 84.

potentially could systematize discrimination if there is not a response by law and regulation.

B. Regulation Considerations

The more economic and social power that algorithms are given or have for merchants to utilize, the more it will become common for consumers to experience unequal treatment and unfair treatment in the merchant–consumer relationship. In an algorithmic-driven commercial world, the algorithms and the data used with them can be used for multiple purposes that are far beyond the obvious uses of simply offering products to consumers.[105] Algorithms can exploit vulnerabilities of consumers and deliberately manipulate messages and offerings to consumers.[106] Consumers lack the understanding or the means to appreciate the complexities of algorithms, which may not be designed with the values of the legal system.[107] The result is that algorithms can have undesired effects from an ethical, social, or economic perspective on the merchant–consumer interaction, which in turn impacts the relevant norms. Consequently, law may need to be tailored to address this particular interaction through a mode of governance to avoid undesired effects.[108]

Algorithms are a type of transformative digital technology that requires a new legal and regulatory framework since they may distort the purpose of the intended merchant–consumer interaction in society. As a transformative technology, algorithms have the essential qualities that drive legal and policy conversations that attend them since they change the intended interaction and undermine balance.[109] Up until now, algorithms have been developed and utilized in the merchant–consumer context with relatively little oversight, and consumer protection law has been developed without considering them. Thus, a major consideration is whether and how to regulate the emergence of algorithms in the merchant–consumer interaction. Regulatory choices in general could include self-structuring and self-regulation, self-imposed rules, public authority regulation, and ethical standards.[110] In particular, time-based regulatory considerations of algorithms include preventive regulatory instruments, public authorities' action that serves as a parallel to the use of software applications, *ex*

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105 Mario Martini, *Regulating Algorithms: How To Demystify the Alchemy of Code?*, *in* ALGORITHMS AND LAW 101, 103 (Martin Ebers & Susana Navas eds., 2020).

106 *See* Martin Ebers, *Regulating AI and Robotics*, *in* ALGORITHMS AND LAW 7–73 (Martin Ebers & Susana Navas eds., 2020).

107 Martini, *supra* note 40, at 108.

108 Wolfgang Hoffman-Riem, *Artificial Intelligence as a Challenge for Law and Regulation*, *in* REGULATING ARTIFICIAL INTELLIGENCE 5–6 (Thomas Wischmeyer & Timo Rademacher eds., 2020).

109 Weaver, *supra* note 42, at 158.

110 Riem, *supra* note 108, at 18–24.

post protections that shape damages, and self-regulation with an algorithmic responsibility code.[111] This Article argues in part for an algorithmic responsibility code that brings together a private panel of experts in business and, in so doing, infuses a modern business perspective into the merchant–consumer interaction and effectively lets the market decide governance of algorithms in merchant–consumer interactions.

IV. STATE OF LEGISLATION & REGULATION AND A PROPOSAL WITH FUTURE DIRECTIONS

The treatment of data that is available on consumers, and in particular the process of profiling them and drawing inferences about them, is central to the merchant–consumer interaction. Consequently, achieving fairness, accountability, and transparency in the merchant–consumer interaction must take into account how algorithms utilize consumer data that is being collected, used, and shared with others.

Legal regimes are unprepared to address algorithmic decisions.[112] As a result, various legislative proposals in different nations and among U.S. states have arisen with provisions to protect consumers from adverse effects of algorithmic decision-making. Differences in jurisdictions' approaches include protecting consumers against information asymmetry, power imbalances, and discrimination and striving to achieve transparency and accountability, privacy, and non-discrimination. The consideration of these principles aims to reduce algorithmic unfairness and to achieve data fairness.[113] A balance must be struck for reform that addresses tradeoffs between consumer protection and encouraging innovation in business activity. Algorithms themselves do not know when they have crossed the line into unfair treatment or discrimination of consumers. Legislation and regulation provide a means to balance the merchant–consumer relationship and the risks that come from algorithm-driven business.

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111 Martini, *supra* note 40, at 111–32.

112 Asress Adimi Gikay, *The American Way—Until Machine Learning Algorithm Beats the Law? Algorithmic Consumer Credit Scoring in the EU and US*, CASE W. RSRV. J.L., TECH., & INTERNET (forthcoming 2020) (manuscript at 53), https://ssrn.com/abstract=3671488.

113 *See generally* Cowgill & Tucker, *supra* note 65; Emre Kazim, Jeremy Barnett & Adriano Koshiyama, *Automation and Fairness* (Dep't of Computer Sci., Univ. College London, Working Paper, 2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3698404; Mark MacCarthy, *Fairness in Algorithmic Decision-Making*, BROOKINGS (Dec. 6, 2019), https://www.brookings.edu/research/fairness-in-algorithmic-decision-making/; *NSF and Amazon Collaborate To Advance Fairness in AI*, NAT'L SCI. FOUND. (Feb. 10, 2021), https://www.nsf.gov/news/special_reports/announcements/021021.jsp.

A. State of Legislation & Regulation

Consumers in both the United States and the European Union are in a similarly vulnerable position since they are not equipped to tackle decisions made by algorithms.[114] There are numerous uses of algorithms by merchants that present potential implications for consumers, and the United States and the European Union have different approaches and a different protections for consumers. The reason for the differences in the United States and European Union enforcement actions stems from the vastly different ideologies behind American and European data protection laws. [115]

The United States has no fully federal law similar to that of the European Union that protects consumers from organizations that target or collect data related to people.[116] In sum, the United States and European Union's approaches to algorithms in the merchant–consumer context differ in stage of development and in cultural and historical backgrounds. Algorithmic decision-making poses challenges to the notice and choice aspects of data protection law and regulation, which differ between the United States and European Union.[117] This Section compares the statutes of the United States and the European Union in the context of algorithms, data, and consumer protection.

1. United States Legislation

The FTC is a federal agency with law enforcement authority that protects consumers against unfairness and deception in commercial practices.[118] While the FTC is charged with protecting consumers from digital exploitation in the commercial context, its ability to police and prevent abusive practices is limited by its narrow statutory authority, minimal available resources, and lack of rulemaking authority.[119] The FTC's limited power to enforce data privacy policies stems from the lack of omnibus privacy and data security legislation in

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[114] Gikay, *supra* note 112, at 1.

[115] Kimberly A. Houser & W. Gregory Voss, *GDPR: The End of Google and Facebook or a New Paradigm in Data Privacy?*, 25 RICH. J.L. & TECH. 1, 9 (2018).

[116] Megan Marie Miller, *Data as the New Oil: A Slippery Slope of Trade Secret Implications Greased by the California Consumer Privacy Act*, 12 CYBARIS, 1, 6 (2021).

[117] FINANCIAL INCLUSION GLOBAL INITIATIVE, BIG DATA, MACHINE LEARNING, CONSUMER PROTECTION AND PRIVACY 21–22 (2020), https://www.itu.int/en/ITU-T/extcoop/figisymposium/Documents/FIGI_SIT_Techinical%20report_Big%20data%2C%20Machine%20learning%2C%20Consumer%20protection%20and%20Privacy_f.pdf.

[118] *About the FTC*, FED. TRADE COMM'N, https://www.ftc.gov/about-ftc (last visited Apr. 24, 2021) (stating that the mission of the FTC is "[p]rotecting consumers and competition by preventing anticompetitive, deceptive, and unfair business practices through law enforcement, advocacy, and education without unduly burdening legitimate business activity").

[119] Barrett, *supra* note 13, at 1074.

the United States; as a result, the FTC is limited in' being able to take action against merchants that engage in unfair and deceptive trade practices.[120] The limits of the FTC's ability to protect consumers from exploitation necessitates new legislation to prevent abuses, manipulation against consumers, and expand the scope of its enforcement against informational harms.

Comprehensive legislation in response to algorithmic decision-making by merchants has been challenging to forge in the United States.[121] Algorithms and data collection by private entities are governed by a patchwork of state and federal law.[122] The U.S. federal government has only recently begun to consider legislation concerning algorithms, and states have hardly considered issues pertaining to algorithms in their statutes and regulations.[123] There have been several bills and legislative attempts to provide greater accountability with algorithmic decision-making and sharing of consumers' private information, but such efforts have not yielded regulatory solutions.

The Setting an American Framework to Ensure Data Access, Transparency, and Accountability ("SAFE DATA") Act sought to provide American consumers with more control of their data and directs merchants to be more transparent and accountable with the use and processing of consumers' data.[124] The SAFE DATA Act includes the Filter Bubble Transparency Act, which aimed to make it easier for consumers to understand potential manipulation from algorithms,[125] and the Deceptive Experiences To Online User Reduction ("DETOUR") Act, which was seeking to protect consumers against deceptive practices under digital interfaces that trick consumers into giving up their personal data (known as dark patterns).[126] In relation to algorithms, the

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120 Houser & Voss, *supra* note 115, at 6, 18.

121 Müge Fazlioglu, *Consolidating US Privacy Legislation: The SAFE DATA Act*, INT'L ASS'N OF PRIVACY PROS. (Sept. 21, 2020), https://iapp.org/news/a/consolidating-u-s-privacy-legislation-the-safe-data-act/.

122 Barrett, *supra* note 13, at 1059.

123 Weaver, *supra* note 42, at 156 (suggesting that only algorithms related to autonomous vehicles have been implemented in state regulation as of 2018, the book's publication date).

124 Press Release, U.S. Senate Comm. on Com., Sci., & Transp., Wicker, Thune, Fischer, Blackburn Introduce Consumer Data Privacy Legislation (Sept. 17, 2020), https://www.commerce.senate.gov/2020/9/wicker-thune-fischer-blackburn-introduce-consumer-data-privacy-legislation.

125 Filter Bubble Transparency Act, S.2763, 116th Cong. (2019).

126 Deceptive Experiences to Online Users Reduction Act (DETOUR) Act, S.1084, 116th Cong. (2019); Press Release, Debra S. Fischer, Sen., U.S. Senate, Senators Introduce Bipartisan Legislation To Ban Manipulative 'Dark Patterns' (Apr. 9, 2019), https://www.fischer.senate.gov/public/index.cfm/2019/4/senators-introduce-bipartisan-legislation-to-ban-manipulative-dark-patterns (describing dark patterns as "exploiting the power of defaults to push users into agreeing to terms stacked in favor of the service provider" and providing examples such as "a sudden interruption during the middle of a task repeating until the user agrees to consent; a deliberate obscuring of alternative choices or settings through design or

Filter Bubble Transparency Act had generated differing perspectives on the impact of algorithms on consumers. One perspective proposed that the Filter Bubble Transparency Act could empower consumers with the option to view a platform's opaque algorithm-generated content and make algorithms more visible.[127] Another perspective, considering the use of algorithms as a blanket term since all digital search and recommendation systems employ such algorithms, argued that disclosing some aspects of algorithms would not reveal micro-targeting or data mining.[128] Additionally, the Data Care Act aimed to protect consumers' personal information that is collected by websites and apps by requiring an explicit duty to use consumers' data in a responsible way.[129]

United States legislation has been unsucessful with enacting regluations that seek to minimize algorithmic extremism in business and protect against taking advantage of consumers. The U.S. approach seems to consider strong consumer protection as a barrier to innovation, has been reflected in a narrow interpretaton of digital harm, and has constrained the authority of the FTC. [130] By contrast, the European approach to algorithmic decision-making is prioritization of expections of control of an individual's information and in effect protection of the rights of consumers.

2. European Regulation

The normative commitment of European regulation is to meaningful rights of consumers and meaningful check on merchants. Scholars consider the European Union's approach to regulation of algorithms superior to that of the United States's because of its detailed provisions on transparency of automated decision-making.[131] The European approach stems from a 1995 directive that set out general rules to transfer into national law each European country's interpretation and that resulted in the 2016 passage of the GDPR.[132]

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other means; or the use of privacy settings that push users to 'agree' as the default option, while users looking for more privacy-friendly options often must click through a much longer process, detouring through multiple screens").

127 Chris Mills Rodrigo, *Senate Bill Takes Aim at "Secret" Online Algorithms*, HILL (Oct. 31, 2019), https://thehill.com/policy/technology/468385-bipartisan-senators-release-online-platform-algorithm-transparency-bill (suggesting that the Filter Bubble Transparency Act would help consumers understand how algorithms work and give consumers the choice to see the world in a less filtered way).

128 Adi Robertson, *The Senate's Secret Algorithms Bill Doesn't Actually Fight Secret Algorithms*, VERGE (Nov. 5, 2019), https://www.theverge.com/2019/11/5/20943634/senate-filter-bubble-transparency-act-algorithm-personalization-targeting-bill.

129 Data Care Act of 2018, S. 3744, 115th Congress (2018); Data Care Act of 2019, S. 2961 116th Congress (2019).

130 Barrett, *supra* note 13, at 1081.

131 Gikay, *supra* note 112, at 66.

132 Goodman & Flaxman, *supra* note 11, at 51–52.

The GDPR, which is considered a regulatory move in favor of greater protection for individuals, requires merchants to reveal an algorithm's purpose and the data that is used to make an algorithmic decision.[133] It seeks to regulate profiling and discrimination from algorithmic decisions. The GDPR targets the use of algorithmic decision-making by having humans review certain algorithmic decisions, and in so doing, it creates an obligation for merchants to provide either detailed explanations of algorithmic decisions or general information on how algorithms make decisions.[134]

One main goals of the GDPR is to balance the interests of consumers and their rights against the demands of merchants. The GDPR protects consumers against automated decision-making and profiling—terms that it defines. Article 4 defines profiling as

> any form of automated processing of personal data consisting of the use of personal data to evaluate certain personal aspects relating to a natural person, in particular to analyse or predict certain aspects concerning that natural person's performance at work, economic situation, health, personal preferences, interests, reliability, behaviour, location or movements.[135]

Additionally, automated decisions under Article 22 of the GDPR are meant to have "legal effects" on or "similarly significantly affect[]" the recipient.[136]

While the GDPR provides some safeguards to consumers, a number of the GDPR's key provisions are ambiguous and undefined and, therefore, present opportunities to provide guidance to policymakers to offer stronger protection for consumers. For example, targeted advertising (such as with website banners automatically adjusting content based on a user's browsing preferences, personalized recommendations, and updates on available products) is not ordinarily considered to produce decisions that could "similarly and significantly" affect consumers, but interpretative guidance suggests that there are certain circumstances that may increase the likelihood of certain targeted advertising fitting within Article 22.[137] There is some debate over what is required to be demonstrated, and there is appreciable risk that merchants will explain their algorithms in unclear ways without a clear definition in the interpretative guidance.[138]

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133 Katyal, *supra* note 81, at 82.

134 Nick Wallace & Daniel Castro, *Protection Regulation on AI*, CTR. FOR DATA INNOVATION 1–2 (2018), https://www2.datainnovation.org/2018-impact-gdpr-ai.pdf.

135 General Data Protection Regulation, 2016 O.J. (L.119) 33 (May 4, 2016), Art. 4(4).

136 *Id.* at 46, Art. 22(1).

137 Sancho, *supra* note 82, at 145–46.

138 Katyal, *supra* note 81, at 82.

Regardless of how such circumstances may be interpreted in a particular dispute under the GDPR, there are more substantive rights for consumers under it with respect to results from opaque algorithmic decision-making than in the United States. The GDPR can serve as a model for the use of algorithms in the merchant–consumer interaction in general and could help to raise the awareness of consumers and of particularly vulnerable individuals in the United States.

B. A Proposal With Future Exploration

Algorithms are changing the dynamics of the merchant–consumer relationship. While the United States has lagged behind the European Union in legislative measures and regulatory steps, neither has a well-defined protection of consumers. Achieving the societal goal of finding and implementing a regulatory approach to maintain consumer sovereignty in an algorithmic era is a rich line of future exploration and scholarly discourse. There could be a diverse arsenal of conceivable regulatory measures, which could be applied at various points in time in the merchant–consumer interaction.

Legislators should not attempt to regulate algorithms in the merchant–consumer context with one regulatory solution. Instead, regulatory efforts should start by determining the proper scope of protection and appropriate legal obligations. This may entail sector-specific classifications, certain types of applicable algorithms, or greater clarity on the necessary legal effect of algorithmic decision-making utilized by merchants. The breadth of prescription and the normative implications of these interpretations are expansive, and for these reasons, a proposal that follows the basic idea of letting the market decide, but with a unique angle, presents a more suitable legal and policy response.

A self-regulation proposal in the form of a responsibility algorithm code could serve as a possible new paradigm for a regulatory model. This proposal would bring together a panel of experts in business to develop a responsible algorithm code with a set of minimum industry standards or industry guidelines that would include and balance the opinions from various commercial sectors, merchants, and consumer associations. There would be a requirement for compliance with the determined rules of conduct of responsible algorithm code, or else a required explanation for not following such a code of conduct. The effects of self-binding and truth claiming would force merchants to make declarations, or else face market pressures. This proposal would infuse a modern business perspective into the merchant–consumer interaction and effectively let the market decide governance of algorithms in merchant–consumer interactions.

This proposal provides one possible responsive measure, but there are various areas of further exploration and other potential regulatory routes. Another proposal could consider state specific or local government measures, which could specify certain types of algorithms, data, and information governed by federal law. Other proposals could identify the specifics of opt-out provisions. Moreover, proposals could include provisions concerning obligations to post

notice about algorithm decision-making, obligations to limit data collection, and obligations to obtain affirmative consent from consumers.

This Article provides motivation concerning the need for solutions to protecting consumer data in the context of algorithmic decision-making in business. Along these lines, this Article's theoretical contributions define a framework for algorithmic interactions between merchants and consumers via profiling and pricing. It provides background for policymakers, regulators, legal scholars, attorneys, merchants, consumers, and consumer associations that are encountering consumer data and associated laws and regulations. In so doing, it broadens the perspective of contemporary merchant–consumer interactions and observes that greater attention should be given to protect consumers from a power disparity that is aggrandized from the pre-digital world. The Article's goal was to identify the issues, describe the phenomena, and explain the principles and factors in legislative measures and regulation to provide stakeholders oversight of algorithms in business. These issues are still emerging as algorithmic technologies advance and as use cases and adoption increase in the merchant–consumer interaction. Policy approaches and potential solutions will depend on weighing tradeoffs among policy objectives, such as regulation, business innovation, consumer protection, and economic productivity.

V. CONCLUSION

The use of algorithms to make predictions, recommendations, and decisions has tremendous benefits to merchants. Algorithms present new theoretical challenges and regulatory considerations in the merchant–consumer interaction, such as the potential for unfair pricing and discriminatory profiling actions. Longstanding laws and principles that protected consumers are facing challenges in terms of algorithmic methodologies utilized by merchants. As merchants utilize algorithms to strengthen economic and social power over consumers, new theoretically-driven concerns about information asymmetry and bias and discrimination have arisen. The core tenets of consumer protection law are under tension when the algorithms are utilized to exploit or deliberately manipulate consumers. Algorithms have undesired ethical, social, and economic effects for the merchant–consumer interaction if left unaddressed by regulation. The United States and European Union have taken some steps to provide a response through legislative activity and initial regulation. Responsible algorithm code development by a panel of experts provides one possible responsive measure.