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WHERE DO WE GO FROM HERE? TRANSFORMATION AND ACCELERATION OF LEGAL ANALYTICS IN PRACTICE

Patrick Flanagan and Michelle Hook Dewey

INTRODUCTION

The advantages of evidence-based decision-making in the practice and theory of law should be obvious: Don't make arguments to judges that seldom persuade; Jurisprudential analysis ought to align with sound social science; Attorneys should pitch legal work to clients that demonstrably need it. Despite the appearance of simplicity, there are practical and attitudinal barriers to finding and incorporating data into the practice of law.

This article evaluates the current technologies and systems used to publish and analyze legal information from a researcher's perspective. The authors also explore the technological, economic, political, and legal impediments that have prevented legal information systems from being able to keep pace with other industries and more open models. The authors detail tangible recommendations for necessary next steps toward making legal analytics more widely adopted by practitioners.

I. A Brief History of Data Analytics and Their Use in Law

A. Emergence of Data Analytics as a Discipline

Data analytics is an emerging field in the past few decades and, more recently, an emerging field in the legal sector.¹ This field has a variety of complex definitions and uses but has been described most

1. Daniel Martin Katz, *Quantitative Legal Prediction—or—How I Learned To Stop Worrying and Start Preparing for the Data-Driven Future of the Legal Services Industry*, 62 EMORY L.J. 909, 913 (2013) (providing an excellent summary of the origins of data-driven law). Ed Walters picks up where Katz left off by summarizing where the industry is now, and where it is headed, in the introduction to the new book, ED WALTERS, *DATA-DRIVEN LAW: DATA ANALYTICS AND THE NEW LEGAL SERVICES* 1–10 (2018).

simply by one vendor as the use of “high-level methods and tools to focus on projecting future trends, events, and behaviors.”² Though data analytics is seen as an emerging concept in many fields, including law, the application of data has been a reliable business tool for several decades. What has changed is that the tasks long associated with business process have become simpler, more accurate, and less expensive. This evolution has come with advances in access to technology, ability to store technology, and enhanced technology for the retrieval, manipulation, and presentation of data.

The historic uses of data in the form of manual collection can conceivably be traced back as far as early census approaches in Mesopotamia. Complex analysis of mathematical data is often noted to have emerged in earnest in the 1730s with Leonhard Euler’s publication on graph theory.³ In the middle of the twentieth century, however, the field of business analytics began to develop in earnest. The rise of early computation and storage tools encouraged automated processes and allowed for quicker application of data sets.⁴ This era, often referred to as Analytics 1.0, focused on smaller data sets, which tended to be highly structured and harvested from internal data sources tracking information such as a company’s internal operations and transactions. The focus of the work of Analytics 1.0 was on the collection and preparation of data, not analysis.⁵ Moreover, although there was growth and advancement during this era, the true application of predictive data algorithms was restricted mostly to academia due to the high cost associated with computing resources.⁶

2. *What Is Advanced Analytics?*, SISENSE, <https://www.sisense.com/glossary/advanced-analytics/> [<https://perma.cc/GNA5-BLRF>] (last visited Feb. 12, 2019). The term “analytics” also has a myriad of definitions; for a brief history and description of these definitions, see generally D.J. Power, C. Heavin, J. McDermott & M. Daly, *Defining Business Analytics: An Empirical Approach*, 1 J. BUS. ANALYTICS 40 (2018).

3. J.A. BONDY & U.S.R. MURTY, *GRAPH THEORY WITH APPLICATIONS* 51 (1976).

4. *The Evolution of Data Collection and Analytics*, VILLANOVA U., <https://taxandbusinessonline.villanova.edu/resources-business/article-business/the-evolution-of-data-collection-and-analytics.html> [<https://perma.cc/P39J-Q4AF>] (last visited Feb. 12, 2019).

5. *Id.*

6. *See generally* DAVID SALSBERG, *THE LADY TASTING TEA: HOW STATISTICS REVOLUTIONIZED SCIENCE IN THE TWENTIETH CENTURY* (2001).

As the twenty-first century began, the Internet presented opportunities to gather and analyze increasingly large data sets. Entities like Facebook and Google developed internal data at unprecedented rates.⁷ The rise of personal computing also meant greater access to, and reduced costs for, the tools needed to manage and examine data.⁸ These changes ushered in Analytics 2.0 and the beginnings of the era of “big data.”⁹ The term “big data” has a plethora of asserted origins and explanations, but the core definitions refer to the size, complexity, and technologies associated with a given data set.¹⁰

Analytics 2.0 largely relied on externally sourced data, such as Internet data, public data, and open-sourced data projects.¹¹ These big data sets meant a new need for more advanced frameworks and tools to manage, sort, and analyze data to find ways to improve business outputs and profitability.¹²

A new phase on data analytics has arguably already begun. Analytics 3.0 moves past using analytics to evaluate business operations and toward integration of analytics into the product itself.¹³ These integrations have given rise to the sub-disciplines of predictive and prescriptive analytics and the use of analytics to support on-the-spot decision-making.¹⁴ Thomas Davenport describes it as “the era of data-enriched offerings.”¹⁵

As most industries shift from 2.0 to 3.0, the market for data technologies grows each day. From the unique applications of analyzing health-care data transactions to consumer and financial

7. *The Evolution of Data Collection and Analytics*, *supra* note 4.

8. Harsha Rao & Deepali Jain, *The Evolution of Analytics*, OR/MS TODAY (Dec. 2013), <https://www.informs.org/ORMS-Today/Public-Articles/December-Volume-40-Number-6/The-evolution-of-analytics> [<https://perma.cc/A9X2-HZTJ>].

9. *The Evolution of Data Collection and Analytic*, *supra* note 4.

10. Jonathan Stuart Ward & Adam Barker, *Undefined by Data: A Survey of Big Data Definitions*, CORNELL U. (Sept. 20, 2013), <https://arxiv.org/abs/1309.5821> [<https://perma.cc/29VM-X28K>]. For a more complete picture of the various definitions, and the evolution of these definitions over time, see *id.*

11. *The Evolution of Data Collection and Analytics*, *supra* note 4.

12. *Id.*

13. Thomas H. Davenport, *Analytics 3.0*, HARV. BUS. REV., Dec. 2013, at 64, 65–66.

14. *The Evolution of Data Collection and Analytics*, *supra* note 4.

15. Davenport, *supra* note 13, at 67.

applications,¹⁶ the law has only begun to engage with data analytics as a concept and a practical tool.¹⁷

B. *Historic Use and Applications of Data and Analytics in the Law*

The legal field has a long-standing reputation for being slow to change.¹⁸ The legal sector largely did not participate in Analytics 1.0, but qualitative and quantitative analytics have been present in legal

16. For example, health-industry users rely on geographic data to fill coverage and services gaps to develop better patient outcomes and better predictive modeling. Jennifer Bresnick, *Challenges of Applying Predictive Analytics to Population Health*, HEALTH IT ANALYTICS (Jan. 10, 2017), <https://healthitanalytics.com/news/challenges-of-applying-predictive-analytics-to-population-health> [<https://perma.cc/F44J-W2N4>] [hereinafter Bresnick, *Challenges Applying Analytics to Population Health*]. These users also rely on diagnostic tools and predictive analytics to reduce admissions. John Burkhardt, *Your Heart is Big Data*, U. WASH., TACOMA: NEWS & INFO. (Aug. 1, 2014), <https://www.tacoma.uw.edu/news/article/your-heart-big-data> [<https://perma.cc/7PEU-SLZX>]. This includes even U.S. web-based diagnostics for depression screening. Jennifer Bresnick, *Web-Based Health Risk Assessments Accurately Flag Depression*, HEALTH IT ANALYTICS (Apr. 4, 2017), <https://healthitanalytics.com/news/web-based-health-risk-assessments-accurately-flag-depression> [<https://perma.cc/5FXJ-VR9M>]. While consumer-based industries, ranging from traditional consumer products to financial services, hospitality, pharma, retail, e-commerce, telecom, and transportation use analytics to win out in the marketplace, in the financial sector these analytics aid in finding solutions for fraud detection, risk management, security, performance, and customer service. DATA EXPLORATION OPPORTUNITIES IN CORPORATE BANKING: KEY CONCEPTS AND APPLICATIONS, EURO BANKING ASS'N 28–29 (Sept. 2017).

17. A brief literature search across legal and nonlegal sources shows an emergence of articles discussing “data analytics” and “big data” in other areas as early as the mid to late 1990s. By 2011 to 2012, the use of data analytics in everything from sports to business was mainstream. Mark Brunelli, *Orlando Magic Scores Big with Advanced Analytics Software*, TECHTARGET: SEARCHBUSINESS ANALYTICS (Dec. 22, 2010), <https://searchbusinessanalytics.techtarget.com/news/2240026182/Orlando-Magic-scores-big-with-advanced-analytics-software> [<https://perma.cc/M4HV-F6W2>]; John Furrier, *Business Intelligence (BI) Trends Go Beyond Analytics*, FORBES (Aug. 5, 2012), <https://www.forbes.com/sites/siliconangle/2012/08/05/business-intelligence-bi-trends-go-beyond-analytics/#651e4af237f1> [<https://perma.cc/6U94-G6EP>]. And yet, in law, most empirical and scholarly articles first came to play in 2011 and 2012. See, e.g., Nolan M. Goldberg & Micah W. Miller, *The Practice of Law in the Age of ‘Big Data,’* NAT’L L.J. (Apr. 11, 2011).

18. It is not difficult to find a plethora of articles in the news framing law as slow to change and inert when it comes to innovation. For a few recent examples, see Leigh McMullan Abramson, *Why Are So Many Law Firms Trapped in 1995?*, ATLANTIC (Oct. 1, 2015), <https://www.theatlantic.com/business/archive/2015/10/why-are-so-many-law-firms-trapped-in-1995/408319/> [<https://perma.cc/XBY7-K52L>]; Simon Thompson, *Law Firms Slow to Embrace ‘New’ Technology Due to Lack of Desire and Motivation to Change*, LEXISNEXIS (Jan. 7, 2016), <https://www.lexisnexis-es.co.uk/blog/2016/01/07/law-firms-slow-to-embrace-new-technology/> [<https://perma.cc/T2EN-KYTV>]; Legal Sector “Too Slow to Adapt to Technology,” BUSINESSCLOUD, <https://www.businesscloud.co.uk/magazine/legal-sector-too-slow-to-adapt-to-technology> [<https://perma.cc/G73Z-N4K8>] (last visited Feb. 13, 2019).

work for some time. Like other disciplines, Analytics 1.0 was largely represented in the academic sphere of the law.¹⁹

In the 1960s and 1970s, the legal sector saw a growing number of law review articles that used survey data, court statistics, and other quantitative data to make legal arguments. One author noted,

As the number of numbers consulted has grown, the sophistication of the techniques used to analyze and interpret these numbers has also increased: instead of simple tabular presentations, courts and legislatures are apt to confront multiple regressions and the associated statistics—significance levels, correlation coefficients, and so forth. Thus, the language of factfinding together with the character of the disputes involved has thrust upon legal institutions a host of questions regarding the use of quantitative methods.²⁰

Both courts and scholars were beginning to warm to the notion that some elements of the law could be quantified and that those components could be used to bolster legal discourse, if not legal arguments in practice. There are ample historical references with respect to data use, with increasing frequency from the 1970s onward.²¹ Courts have long looked to legal and nonlegal statistics when fact finding.²² Statistical measures have been used when

19. SALSBURG, *supra* note 6. The same fundamental issues of data access, cost, and time that Salsburg identified apply to the legal sector as well. *Id.*

20. Lea Brilmayer & Lewis Kornhauser, *Review: Quantitative Methods & Legal Decisions*, 46 U. CHI. L. REV. 116, 117 (1978).

21. The most abundant use of statistics in the practice of law itself appeared in the 1970s with the rise of employment-based civil rights claims. *See* Richard M. Cohen, *On the Use of Statistics in Employment Cases*, 55 IND. L.J. 493, 493 (1979); *see, e.g.*, *Mass. Bd. of Retirement v. Murgia*, 427 U.S. 307, 311 (1976); *Bos. Chapter, NAACP v. Beecher*, 504 F.2d 1017, 1019 (1st Cir. 1974); *Ochoa v. Monsanto Co.*, 473 F.2d 318, 319 (5th Cir. 1973); *Parham v. Southwestern Bell Tel. Co.*, 433 F.2d 421, 424 (8th Cir. 1970). All of these cases used quantitative analysis to explore disparate impact and are the line of related cases on the matter. In the scholarly legal conversations trends, however, opportunities, and legal effects for a more general approach to the origins of data in legal decision-making. *See* Brilmayer & Kornhauser, *supra* note 20, at 116–17.

22. The earliest references to court statistics we found were from 1850. In the 1890s, Oliver Wendell Holmes himself noted, “For the rational study of the law the black-letter man [sic] may be the man of the present, but the man of the future is the man of statistics and the master of economics.” Oliver

legislatures make new laws²³ and when executive agencies make and promulgate rules.²⁴ Although access and time were practical barriers to the sophisticated use of statistics in daily practice, courts and practitioners often reference statistical data when published in scholarly works.²⁵

Alongside the growing integration of statistics in legal academics and practice, the legal sector has been slowly moving away from print and embracing more electronic sources for research. As early as the mid-1990s, scholars were remarking on this transition:

The dominant role played by the book in legal information is now ending. My contention is that its demise will not manifest itself in the form of a clean break with tradition. There will be at least a decade, perhaps a generation, involved in constructing the new information environment. Many lawyers, law professors[,] and judges remain creatures of the old information and will never change their views of how things ought to be. However, they are being superseded by newer researchers, who come to the profession as devotees of electronic information.²⁶

Wendell Holmes, *The Path of the Law*, 10 HARV. L. REV. 457, 469 (1897). By the 1950s, the role and appropriateness of statistics and data in the law was emerging as a scholarly discipline. WILLIAM SEAGLE, *LAW: THE SCIENCE OF INEFFICIENCY* 3 (1952); *see also* Brilmayer & Kornhauser, *supra* note 20, at 118 (the book this review covers is no longer in print, but Brilmayer & Kornhauser provide some insightful context into this period).

23. NATHAN JAMES, CONG. RESEARCH SERV., RL34309, *HOW CRIME IN THE UNITED STATES IS MEASURED* 1 (2008). One example of this is the use of statistics in crime-control measures. The Congressional Research Service identified how Congress uses the Uniform Crime Reports (UCR), the National Incident-Based Reporting System (NIBRS), and the National Crime Victimization Survey (NCVS) to inform policy decisions regarding crime, including legislation, fund allocations, and program implementation. *Id.*

24. COMM. ON ETHICAL & SCIENTIFIC ISSUES IN STUDYING THE SAFETY OF APPROVED DRUGS, INST. OF MED., *ETHICAL AND SCIENTIFIC ISSUES IN STUDYING THE SAFETY OF APPROVED DRUGS* 121 (2012) (explaining that, though common in many regulatory sectors, the use of data in the health sciences regularly integrated into evidence-based decision-making process of the HHS).

25. *Mass. Bd. of Retirement*, 427 U.S. at 311; *Bos. Chapter, NAACP*, 504 F.2d at 1019; *Ochoa*, 473 F.2d at 319; *Parham*, 433 F.2d at 424.

26. Robert Berring, *Chaos, Cyberspace and Tradition: Legal Information Transmogrified*, 12 BERKELEY TECH. L.J. 189, 212 (1997).

Berring was right; it took almost a decade and a half more, at the end of the first decade of this century, for legal scholars to declare a legal “Information Revolution.”²⁷ These new changes in the mechanisms by which attorneys, legal researchers, and law scholars found and disseminated legal information also brought new ways to sort, tag, and *use* legal information. Analytics 2.0 was finding its first foray into the legal market through its own sets of Internet data, public data, and open-sourced data projects.²⁸

As law begins to embrace Davenport’s era of data-enriched offerings, the market for new tools and approaches increases rapidly. Although the first detailed discussions about using big data in law practice emerged less than a decade ago,²⁹ lawyers, judges, and information professionals are already deploying and shaping Analytics 3.0, as it still fulfills the promise of the previous phase. The legal industry will continue to develop because the legal workforce buys in to new tools and new workflows, threatening to catch up to its peers.

II. *Current Landscape of Analytics in the Legal Sector*

It has been three decades since Bob Berring predicted the demise of the book’s dominant role in legal information.³⁰ This move from a

27. Bruce H. Kobayashi & Larry E. Ribstein, *Law’s Information Revolution*, 53 ARIZ. L. REV. 1169, 1220 (2011).

28. Jonathan Germann, *Legal Analytics—Researcher Beware?*, AM. ASS’N L. LIBR.: COMPUTING SERVS. SPECIAL INT. SEC. (Sept. 20, 2017), <http://blog.cssis.org/2017/09/20/legal-analytics-researcher-beware/> [<https://perma.cc/FB3X-BHTB>] (one example is Legal Metrics, which Jonathan Germann notes might have been the first real legal analytic tool on the market).

29. Andrew McAfee & Erik Brynjolfsson, *Big Data: The Management Revolution*, HARV. BUS. REV., Oct. 2012, at 60, 62–63; Katz, *supra* note 1; Steve Lohr, *The Age of Big Data*, N.Y. TIMES (Feb. 11, 2012), https://www.nytimes.com/2012/02/12/sunday-review/big-datas-impact-in-the-world.html?pagewanted=all&_r=0 [<https://perma.cc/2WS5-HKWU>].

30. Berring, *supra* note 26, at 190.

The dominant role played by the book in legal information is now ending. My contention is that its demise will not manifest itself in the form of a clean break with tradition. There will be at least a decade, perhaps a generation, involved in constructing the new information environment. Many lawyers, law professors and judges remain creatures of the old information, and will never change their views of how things ought to be. However, they are being superseded by newer researchers, who come to the profession as devotees of electronic information.

Id.

print to an electronic information age has ramifications beyond the ease and access of legal research. Current visions of legal analytics are possible in part because we now have a useful backfile of electronic information. This new and evolving environment of electronic information carries over legacy publishing systems while simultaneously creating new tools and use cases.

Here we consider some important sources of legal information and how lawyers and law firms employ them. There are many metrics and types of information that lawyers can employ to evaluate their business, their clients, and justice writ large.³¹ Litigation analytics is important among them for good reasons: (1) they are emblematic of the profession; (2) common law principles means any given litigation may become precedential; (3) the data is relatively accessible; and (4) they can provide a high impact for individual parties and the broad market. The ability to gather, store, and sort vast amounts of litigation data—data on judges, courts, parties, outcomes, etc.—brought the rise of the first Analytics 2.0 tools to the legal marketplace.³² They are being employed currently in a variety of ways across the industry.³³

Business development is among one of the most prominent roles that analytics have played in legal services thus far.³⁴ When starting a

31. See generally KEVIN ASHLEY, *ARTIFICIAL INTELLIGENCE AND LEGAL ANALYTICS: NEW TOOLS FOR LAW PRACTICE IN THE DIGITAL AGE* (2017) (supplying a more full discussion of the marketplace of tools and concepts for a general topic of legal analytics and analytical legal tools encompassing a broad range).

32. Margo Schlanger & Denise Lieberman, *Using Court Records for Research, Teaching, and Policymaking: The Civil Rights Litigation Clearinghouse*, 75 UMKC L. REV. 153, 154 (2006) (discussing the importance of litigation documents and the development of the Civil Rights Litigation Clearinghouse); J. Jason Williams, Mark V. Campagna, & Olivia E. Marbutt, *Strategies for Combating Patent Trolls*, 17 J. INTELL. PROP. L. 367, 369 (2010) (citing Legal Metric summaries of data on patent case volume).

33. Jesse Bowman & Diana Koppang, *Legal Analytics: Beyond the Buzz*, CHI. ASS'N L. LIBR. (Dec. 14, 2018), [http://chicagolawlib.org/news-and-events/continuing-education-presentations/\[https://perma.cc/NFL4-QPER\]](http://chicagolawlib.org/news-and-events/continuing-education-presentations/[https://perma.cc/NFL4-QPER]) (in addition to their recorded presentation, the presenters provided a spreadsheet analyzing various tools on the market); Schlanger & Lieberman, *supra* note 32, at 155.

34. Jan Bisett & Margi Heinen, *Beyond Court Decisions—Dockets, Documents, and Analytics*, 46 COLO. LAW. 59, 59 (2017) (noting that among popular uses of new analytics tools, “the traditional uses of docket monitoring for business and client development, as well as case monitoring and tracking, still hold sway”); Oran F. Whiting, *In-House Counsel Perspective on Business Development*, AM. B. ASS'N: BUS. DEV. SEC. LITIG. BLOG (Oct. 16, 2016), <https://www.americanbar.org/groups/litigation/publications/litigation-news/business-development/in-house-counsel-perspective-on-business->

new engagement or pitching a potential client for a new engagement, the legal team needs to have a complete picture of the client's litigation landscape. Finding that information independently is important. Clients may have neither a complete and high-level picture of all their litigation nor the internal budget or man power to prepare it. They may have unconsidered biases about long-running and troublesome litigation, where an outside firm can more objectively assess their litigation landscape. Firms certainly have an incentive to match the range of a client's litigation with the range of the firm's service. For a potential engagement, a law firm may highlight a cohesive national or international litigation strategy. Pitching those broad ideas is hard because it is currently laborious and expensive to get a complete picture of a busy litigant.

Marketplace tools can also help law firms monitoring the needs of current clients. It is possible currently to get notice of new litigation faster than service of process through several different docket-tracking platforms.³⁵ Some clients may even expect their outside counsel to discover and prepare for litigation before receiving official notice. Especially where lawyers specialize in niche issues for a client, monitoring and preparing quickly for new litigation can be a strong service differentiator. These same tools that alert lawyers about new litigation can tag and analyze the underlying data of the dockets, thus providing metrics about caseloads, case types, and case outcomes, among other case facets.³⁶

Predicting court behavior is arguably the fastest growing sector of the legal-analytic marketplace. Mark Osbeck observes that as an advisor, a lawyer is called upon to assist "his client in determining the course of future conduct and relationships," especially with

development/ [https://perma.cc/2VUY-3VE5].

35. Examples include established platforms such as Westlaw and Lexis, as well as specialized docket tools such as Courthouse News Service, CourtTrax, and Docket Alarm. DOCKET ALARM, www.docketalarm.com [https://perma.cc/4JR9-ZHL5] (last visited Feb. 20, 2019); LEXIS NEXIS, www.lexisnexis.com [https://perma.cc/3U4R-ALC3] (last visited Feb. 20, 2019); WESTLAW, www.westlaw.com [https://perma.cc/D8P9-3H4K] (last visited Feb. 20, 2019).

36. DOCKET ALARM, *supra* note 35; DOCKET NAVIGATOR, http://brochure.docketnavigator.com [https://perma.cc/KD43-YW83] (last visited Feb. 20, 2019); LEX MACHINA, https://lexmachina.com/ [https://perma.cc/224Q-2GLR] (last visited Feb. 20, 2019). Many tools, including Docket Alarm, Docket Navigator, and Lex Machina bundle their alerting and data mining features.

respect to litigation outcomes.³⁷ A lawyer’s analysis, experience, and evaluation informs a client’s aim to avoid costs and provide consistency. It is somewhat of a given to say that better litigation decisions can be made with greater information about judges, opposing counsel, causes of action, and procedural posture.³⁸ This information, and a variety of other data points, can now be gleaned from dockets algorithmically. Anecdotal and personal expectations are now quantifiable, even in jurisdictions where an attorney or firm may have never represented a client.

Osbeck provides a robust list and discussion of legal-analytics tools but notes that “predictive-analytics technology is not yet at a state where it can enable accurate outcome predictions [for all cases, but] the landscape is evolving quickly”³⁹ Since the very recent publication of his article, even more tools have been announced and developed.⁴⁰ West has repackaged and refocused its platform as “Westlaw Edge” and includes a module for exploring litigation analytics.⁴¹ Lexis has further developed its Lexis Analytics tools with insights from acquisitions of Ravel⁴² and Lex Machina⁴³ by rolling out trials to Lexis Context.⁴⁴ Furthermore, Fastcase acquired Docket Alarm to keep it among the providers with the most robust

37. Mark K. Osbeck, *Lawyer as Soothsayer: Exploring the Important Role of Outcome Prediction in the Practice of Law*, 123 PA. ST. L. REV. 41, 43 (2018).

38. *Id.* at 53. Lawyers have traditionally tried to get a sense of judges and anecdotally predictive assessments based on their or their firm’s prior interactions. *Id.* at 60. Clients will look to experience before a certain court or a certain judge as retainment criterion—and have increasingly sophisticated tools to evaluate that experience. *Id.*

39. Osbeck, *supra* note 37, at 96.

40. Bowman & Koppang, *supra* note 33 (the author’s comparison chart includes many tools that were not on the market at the time of Osbeck’s publication).

41. Jean O’Grady, *Major Thomson Reuters Launch: Westlaw Edge, West Search Plus, Analytics, Enhanced Citor and More*, DEWEY B STRATEGIC (July 12, 2018), <https://www.deweybstrategic.com/2018/07/6838.html> [<https://perma.cc/KNJ4-CY8P>].

42. Sara Randazzo, *LexisNexis Snaps up Legal Tech Startup Ravel Law*, WALL ST. J.: L. BLOG (June 8, 2017), <https://blogs.wsj.com/law/2017/06/08/lexisnexis-snaps-up-legal-tech-startup-ravel-law/> [<https://perma.cc/99BF-ARRG>].

43. Robert Ambrogi, *LexisNexis VP Steven Errick Discusses Lex Machina Acquisition*, LAWSITES (Nov. 23, 2015), <https://www.lawsitesblog.com/2015/11/lexisnexis-vp-steven-erick-discusses-lex-machina-acquisition.html> [<https://perma.cc/B5VR-2AXB>].

44. LEXISNEXIS, <https://www.lexisnexis.com/en-us/products/context-pretrial.page> [<https://perma.cc/SH4K-LS8T>] (last visited Feb. 13, 2019).

offerings.⁴⁵ Startups that leverage and summarize litigation information, like Gavelytics⁴⁶ and Judicata,⁴⁷ are among the currently active legal-technology boom.⁴⁸

These lists of tools and use cases are not exhaustive and certainly not static. They do, however, provide a glimpse into why legal analytics is a buzz topic and how law firms are leveraging them into creating sustainable processes that improve both the business and practice of law.

III. Barriers & Challenges

Industries often hit walls when implementing analytics,⁴⁹ and the legal sector is no different. Despite the hype and headline interest, widespread adoption of the use of analytics in the legal market has been stymied by two distinct types of barriers: functional barriers and practical barriers. Functional barriers arise from the limitations surrounding the serviceable use of current tools and the constraints that restrict the design and build of new tools. Practical barriers are those obstacles that prevent adoption and integration. Tools on the market are limited by the scope, structures, and idiosyncrasies of law. Simultaneously, there are people in the legal-services market who see the allure of connecting historically disparate systems or posing novel ways to present information but have trouble demonstrating value and gaining traction with the old methods.

45. Gabrielle Orum Hernández, *Fastcase Makes Analytics Play with Docket Alarm Acquisition*, LEGALTECH NEWS (Jan. 12, 2018), <https://www.law.com/legaltechnews/sites/legaltechnews/2018/01/12/fastcase-makes-analytics-play-with-docket-alarm-acquisition/> [https://perma.cc/7ZJD-WTNQ].

46. Robert Ambrogì, *With \$3.2M in Second-Round Funding, Gavelytics Plans to Expand Its Judicial Analytics*, LAWSITES (Mar. 13, 2018), <https://www.lawsitesblog.com/2018/03/3-2m-second-round-funding-gavelytics-plans-expand-judicial-analytics.html> [https://perma.cc/R8Y3-RWJA].

47. Robert Ambrogì, *After Five Years in Stealth Mode, Judicata Reveals Its Legal Research Service*, LAWSITES (May 3, 2017), <https://www.lawsitesblog.com/2017/05/five-years-stealth-mode-judicata-reveals-legal-research-service.html> [https://perma.cc/99AY-AEEY].

48. Raymond Blijd, *Legal Tech Funding Landscape*, LEGALCOMPLEX (Oct. 24, 2018), <https://www.legalcomplex.com/blog/2018/07/09/first-half-of-2018-legal-tech-raised-1-2-billion-in-cash/> [https://perma.cc/T4A3-YMYL].

49. Bresnick, *Challenges Applying Analytics to Population Health*, *supra* note 16.

A. *Functional Barriers*

A lack of technical expertise in the legal sector is a key functional barrier. Although there are skilled technologists working in the legal field, attracting technical talent—especially with respect to analytics and artificial intelligence—is expensive and in competition with other industries.⁵⁰ There is also often a cultural mismatch between legal industry employers and tech talent. The formal and hierarchical structure of law firms and professionally honed risk aversions⁵¹ are at odds with the anything-goes environments and free-thinking entrepreneurship hallmarks of technology development.⁵² Despite clients listing technology among their most needed competencies,⁵³ lawyers resist encroachment by professionals outside the legal industry,⁵⁴ and nonlawyer salaries in the legal industry haven't grown as fast as lawyers' salaries.⁵⁵ The legal-services industry will need to attract, value, and compensate a new batch of professionals with more data-science-oriented skill sets to fully engage in Analytics 3.0.

Functional barriers are also created due to data-source restrictions in law. Government works are not protected by copyright,⁵⁶ and court records are public,⁵⁷ but their volume and complexity encourage a

50. Cade Metz, *Tech Giants Are Paying Huge Salaries for Scarce A.I. Talent*, N.Y. TIMES (Oct. 22, 2017), <https://www.nytimes.com/2017/10/22/technology/artificial-intelligence-experts-salaries.html> [<https://perma.cc/8KSF-TKH5>].

51. Rebecca Lim, *Cultivating Innovation in a Risk-Adverse Industry*, THOMSON REUTERS: LEGAL INSIGHT (Apr. 28, 2017), <http://insight.thomsonreuters.com.au/posts/innovation-risk-averse-legal-industry> [<https://perma.cc/97MT-8NZC>]. These industry generalizations are well established, but Lim argues that it is not just the formal rigidity of a lawyer's work and training that embrace these cultural norms but also that "[a] static, largely homogeneous management hierarchy actively discourages creativity and the generation of fresh ideas from 'below.'" *Id.*

52. For a good overview of the tech-sector culture born in Silicon Valley and oft repeatedly elsewhere, see *California Dreaming*, ACCENTURE, <https://www.accenture.com/us-en/insight-outlook-california-dreaming-corporate-culture-silicon-valley> [<https://perma.cc/9CQT-PSRP>] (last visited Feb. 13, 2019).

53. Natalie Runyon, *Attracting & Retaining Legal Talent: Insights from LegalWeek 2018*, THOMSON REUTERS (Feb. 14, 2018), <http://www.legalexecutiveinstitute.com/attracting-retaining-legal-talent-legalweek-2018/> [<https://perma.cc/L8EU-5R7H>].

54. Mark A. Cohen, *Legal Innovation is the Rage, But There's Plenty of Resistance*, FORBES (Aug. 30, 2018), <https://www.forbes.com/sites/markcohen1/2018/08/30/legal-innovation-is-the-rage-but-theres-plenty-of-resistance/#247051b27cdd> [<https://perma.cc/T9DZ-BLSP>].

55. Milan Markovic, *Rise of the Robot Lawyers?*, ARIZ. L. REV. (forthcoming 2019).

56. 17 U.S.C. § 105 (2018). *But see* Robert M. Gellman, *Twin Evils: Government Copyright and Copyright-Like Controls over Government Information*, 45 SYRACUSE L. REV. 999, 999 (1994).

57. Stephen J. Schultze, *The Price of Ignorance: The Constitutional Cost of Fees for Access to*

market for tools that make them physically and intellectually accessible.⁵⁸ Information vendors have hashed out foundational details about the openness of court information and publication,⁵⁹ but no single research platform currently provides a complete picture of all litigation information due to a variety of factors related to cost, accessibility, and data structures.⁶⁰

Information may be limited by jurisdiction, by practice area, or by what metadata is available for analysis.⁶¹ Tools are understandably rolled out piecemeal, according to what data can be wrangled.⁶² For example, federal data, compiled and collected electronically since 1988 and compiled publicly via PACER since 2001,⁶³ is more readily available than state-court data.⁶⁴ The heart of the issue lies beyond just access and instead rests on how courts gather and disseminate their information and records. Despite PACER's vision to centralize federal court records, its implementation—to put it mildly—lacks

Electronic Public Court Records, 106 GEO. L.J. 1197, 1199 (2018). Federal court records through PACER are open to anyone but are far from free. *See id.*

58. Olufunmilayo B. Arewa, *Open Access in a Closed Universe: Lexis, Westlaw, Law Schools, and the Legal Information Market*, 10 LEWIS & CLARK L. REV. 797, 802 (2006). Although we no longer strictly need a “book” publisher to disseminate case law for physical access, adding headnotes, references, and editorial enhancements—usefully carried over from the print to the electronic—make the cost worthwhile. *Id.*

59. *West Publ'g Co. v. Mead Data Cent., Inc.*, 799 F.2d 1219, 1222 (8th Cir. 1986); Peter B. Maggs, *The Impact of the Internet on Legal Bibliography*, 46 AM. J. COMP. L. 665, 673 (1998).

60. Michael Kagan, Rebecca Gill, & Fatma Marouf, *Invisible Adjudication in the U.S. Court of Appeals*, 106 GEO. L.J. 683, 719–20 (2018). Consider also unpublished and non-precedent decisions where the courts limit access. *Id.* at 720.

61. Bowman & Koppang, *supra* note 333.

62. *Bloomberg Law to Offer Lawyer-Client Representation Analysis*, ARTIFICIAL L. (Oct. 24, 2018), <https://www.artificiallawyer.com/2018/10/24/bloomberg-law-to-offer-lawyer-client-representation-analysis/> [<https://perma.cc/VN2M-97QD>].

63. Bobbie Johnson, *Recap: Cracking Open US Courtrooms*, GUARDIAN (Nov. 11, 2009), <https://www.theguardian.com/technology/2009/nov/11/recap-us-courtrooms> [<https://perma.cc/VN2M-97QD>].

64. *Privacy/Public Access to Court Records*, NAT'L CTR. ST. CTS., <https://www.ncsc.org/topics/access-and-fairness/privacy-public-access-to-court-records/state-links> [<https://perma.cc/8QUL-G5PV>] (last visited Feb. 13, 2019). The National Center for State Courts keeps a list of each state's electronic-court-record accessibility. *Id.* Cost and availability vary widely, even within a single state. *Id.* For example, in Arkansas there is one tool for supreme and appellate court decisions, another tool that the state's circuit and district courts can choose to utilize, and one county that is utilizing its own system. *Id.* Access costs and use requirements vary among each of these platforms. *Id.* Moreover, some courts are not online altogether, as only eight of the fifteen district courts in Arkansas are on any electronic system. *Id.*

consistency.⁶⁵ For several states and local jurisdictions, the picture is even more disjointed. A leading software consultant, Capterra, lists fifty-eight entries in their online directory of court-management software.⁶⁶ Those off-the-shelf solutions don't include the custom enterprise approach that generalist software companies often encourage.⁶⁷ Despite some attempts to establish standards for court records and documents, no leading set of standards or systems has emerged.⁶⁸ Thus, even though a court may have a way to take a detailed analytical view of its own business, any wider view requires concatenating information from diverse systems. Discrete litigation certainly benefits from more informed tactical decisions by having, for example, greater insight into an individual judge's proclivities.⁶⁹ Broad strategic insights, however, must account for gaps in coverage or laboriously consult several sources due to the current actuality of market offerings and restrictions.

Overcoming the challenges of language and context may be one of the most difficult barriers, the effects of which are reflected in previously stated challenges as well as independently. Law uses jargon like any other specialized field, but legal words and documents sometimes have an inflexible character.⁷⁰ Statutory definitions may call for using a word in a specific way that conflicts with another jurisdiction. Quirks of a local rule may not align

65. Peter W. Martin, *District Court Opinions That Remain Hidden Despite a Long-Standing Congressional Mandate of Transparency—the Result of Judicial Autonomy and Systemic Indifference*, 110 L. LIBR. J. 305, 330 (2018).

66. *Court Management Software*, CAPTERRA, <https://www.capterra.com/court-management-software/> [<https://perma.cc/YZ3X-LWGK>] (last visited Feb. 13, 2019).

67. *See, e.g., Courts Management Solution*, MICROSOFT, <https://www.microsoft.com/en-US/enterprise/government/courts-management> [<https://perma.cc/BV44-2D4V>] (last visited Feb. 13, 2019).

68. Michael Simon, Alvin F. Lindsay, Loly Sosa, & Paige Comparato, *Lola v. Skadden and the Automation of the Legal Profession*, 20 YALE J.L. & TECH. 234, 302 (2018) (discussing the lack of development from LegalXML and the Open Legal Standards Initiative).

69. *See generally* Owen Byrd, *Moneyball Analytics Now Online for Commercial Litigators*, 31 COM. L. WORLD 12 (2017).

70. *See* RICHARD C. WYDICK & AMY SLOAN, *PLAIN ENGLISH FOR LAWYERS* 3–4 (4th ed. 1998). There is both the historic use of “legalese” and archaic language in the law, as well as issues about what the law means in a given jurisdiction. *Id.* Even among legal experts, of course, the meaning of words can be contested. *See generally* ANTONIN SCALIA & BRYAN GARDNER, *READING LAW: THE INTERPRETATION OF LEGAL TEXTS* (2012).

precisely with another. Contracting parties will set out terms with specificity. Even if concepts are set out accurately and clearly in plain language,⁷¹ they carry an actionable importance unlike more casual prose. Software tools or analytics systems must adapt to that language. Any tool that seeks to summarize many must accommodate these distinctions. Using fluid and flexible language works well enough among colleagues, but computational systems don't have that luxury. These language differentiations also mean that tools that work well in a different market may struggle to adapt to legal-information needs.

In addition, when experts must communicate with laypeople about the law, it poses different and special barriers.⁷² More than just communicating about the law and its uniqueness and terms, there is likewise an issue with translating an understanding of the law's structure, the way lawyers think about it, and how the profession stores, accesses, and utilizes information.⁷³ Technology, too, has its own language—one that many in the legal-and-business sector do not speak.⁷⁴ This component of the language barrier is often reflected in the difficulty that legal professionals and technology vendors have communicating.⁷⁵ When tech expertise is brought to the table by nonlawyers and lawyers have to rely on outside partners for tech skills, the communication divide can be wide.

71. Joseph Kimble, *Answering the Critics of Plain Language*, 5 SCRIBES J. LEGAL WRITING 51, 53 (1994).

72. See generally Becky Sandifer, *Bridging the Gap: Rethinking Outreach for Greater Access to Justice*, 37 U. ARK. LITTLE ROCK L. REV. 721 (2015). The public experiences and understands the law differently than do experts. *Id.* They often do not even code issues as "legal." *Id.* When they do, they often understand the law to be something different than experts do. *Id.*; see also Arden Rowell, *Legal Rules, Beliefs, and Aspiration*, 51 ARIZ. ST. L.J. (forthcoming 2019).

73. See generally Robert Berring, *Legal Information and the Search for Cognitive Authority*, 88 CALIF. L. REV. 1673 (2000). A significant goal of law school is to train students to "think like a lawyer." *Id.* This training in part requires a deep understanding of the structure and use of legal information. *Id.* Even information professionals have struggled to tackle this concept in a transition from print to electronic interfaces. *Id.*

74. See generally VINAY TRIVEDI, *HOW TO SPEAK TECH: THE NON-TECHIE'S GUIDE TO TECHNOLOGY BASICS IN BUSINESS* (2013).

75. Anecdotally, we have experienced this on both sides with tech vendors. Projects can be extended or delayed because more time is required for tech specialists to translate their work and for the legal-sector partners to translate their needs and use cases. Even vendors that have been highly successful in other industries often struggle to reimagine their work into the environment of legal information.

B. Practical Barriers

Legal culture is a functional barrier when it comes to why the legal-services industry struggles to retain tech talent, but it is also a practical barrier when it comes to adoption. The foundational tenets of the law don't change often or quickly, and they probably shouldn't.⁷⁶ The legal laboratory is one of deliberation and advocacy—not of empirical experimentation and whole-cloth invention. Innovation hasn't happened in law in the same way or at the same pace as other fields.⁷⁷

The bulk of costs associated with legal research and legal analytics tools are acquisition costs.⁷⁸ The pricing varies, as well as other access-based costs (number of individuals, headcount requirements, etc.). However, most of these tools have a flat rate. Historically, for services and tools like legal research, lawyers have passed costs on to clients.⁷⁹ Thus, with this history, adopting tools and workflows is easiest when lawyers have a convenient and obvious way to pass costs through to a client. Tools with a flat, all-in expense require a

76. See generally Robert A. Hillman, *The New Conservatism in Contract Law and the Process of Legal Change*, 40 B.C. L. REV. 879 (1999).

77. See generally Erwin Chemerinsky, *Rethinking Legal Education*, 43 HARV. CIV. RTS.-CIV. LIBERTIES L. REV. 595 (2008) (discussing both the need for and lack of change in legal education); Joan C. Williams, Aaron Platt & Jessica Lee, *Disruptive Innovation: New Models of Legal Practice*, 67 HASTING L.J. 1 (2015) (providing an overview on the stagnant history of legal billing practices, as well as emerging new models). The pacing differential between innovation in law compared to other industries follows the general comparison provided in Part II of this paper discussing data analytics across sectors. See *supra* Section II. That example of data-use trends mirrors similar adoption and integration trends of other modes of technological innovation. For law, however, the lack of innovation goes beyond technology and into other educational and structural standards which have been stagnant for most of modern law practice.

78. See JOHN AZZOLINI, *LAW FIRM LIBRARIANSHIP: ISSUES, PRACTICE AND DIRECTIONS* 177 (2013). It's hard to substantiate this observation rigorously because public pricing information is largely unavailable. *Id.* (“There is an overall lack of transparency for law librarians who seek an understanding of customary licensing terms in their field. Most firms are required to agree to non-disclosure clauses as part of their deals.”). See also Jacob Sayward, *CRIV/Lexis May 2016 Call*, CRIV BLOG (June 6, 2016), <https://crivblog.com/2016/06/06/crivlexis-may-2016-call/> [<https://perma.cc/SF4H-SBWF>]. When the AALL Committee on Relations with Information Vendors raised concerns with them, “LexisNexis responded that its non-disclosure language was unlikely to change.” *Id.*

79. Rachel M. Zahorsky, *Firms Wave Goodbye to Billing for Research Costs*, ABA J. (Nov. 14, 2012), http://www.abajournal.com/lawscribbler/article/firms_wave_goodbye_to_billing_for_research_costs [<https://perma.cc/5VDG-EBNX>]. Westlaw and Lexis, the two main legal-research platforms, still provide breakdowns for research tasks that allow for ethical client-based billing. *Id.* The trend, however, is moving toward law firms absorbing research cost into overhead, and savvy clients know these types of charges can be negotiated. *Id.*

shift of the cost conversation from one between lawyers and clients about expenses to one between lawyers and vendors about overhead. If clients will not absorb the cost or if the vendors' pricing model does not easily permit pass-through billing, then cost becomes a more considerable barrier of adoption.

On a more micro-level, the pace and pressure of client-driven demands also impacts adoption. Legal analytics often includes an invitation to explore broad views without a targeted objective. Searching through litigation data may, for example, uncover unexpected trends.⁸⁰ Yet, a lawyer hews to his client's immediate interest, deadlines, and expected outcomes, often leaving little time for such serendipity. Similarly, a court dispenses justice for the case at hand. Aspirational standards certainly inspire lawyers to have "special responsibility for the quality of justice,"⁸¹ but the details of living up to that responsibility are largely ensconced in individual dealings.

Law firms silo their information in ways that stymie adopting analytics tools. Litigation analytics in and of themselves are useful both for a litigant and society more broadly. Deeper insights are more likely to come with further integration with other kinds of information. Law-firm information, however, is difficult to casually mash up.⁸² Sensitivity to information-governance issues, client confidences, and competitive concerns understandably add friction to efforts to centralize internal law-firm information and incorporate it with external information.⁸³ Internal systems have been built and designed to address discrete business needs: document-management systems wrangle files and manage ethical screens; docketing tools manage deadlines; time, billing, and accounting software manages financial activity. In addition to the logistical hurdles of pulling it

80. See, e.g., Bert I. Huang & Tejas N. Narechania, *Judicial Priorities*, 163 U. PA. L. REV. 1719, 1770 (2015).

81. MODEL RULES OF PROF'L CONDUCT PREAMBLE & SCOPE (AM. BAR ASS'N 1983).

82. James A. Sherer & Ed Walters, *Practical Magic: Law's Hands-on AI Revolution Transitioning from Consumer Tech to Legal Intelligence Engineering*, L. PRAC. MAG., Jan./Feb. 2018, at 32, 38.

83. Annie Simkus, *Preventing Data Breaches at Law Firms: Adapting Proactive, Management-Based Regulation to Law-Firm Technology*, 59 ARIZ. L. REV. 1111, 1126 (2017).

together, the information culture of a law firm may frustrate sharing across teams.⁸⁴

Among the greatest adoption struggles is the attitudinal approach of individual lawyers. Lawyers are slow to individually adopt technology at the same rate as the industry. At least in a recent context, it seems unlikely this is due to lack of exposure or the intellectual capacity to learn and implement technology. Some evidence suggests that lawyers may have a fundamental lack of faith in new tools.⁸⁵ Despite a lawyerly, analytical approach to assessing informational tools, emotion plays a role.⁸⁶ Technological promises of greater efficiency, better informed decisions, and quantified predictions hit around the edges of the central pride that drives successful professional services. In that light, the time, effort, and expense involved in adopting new technology can seem like a distraction to the central mission of service to a client or the administration of individual justice.

Lay experiences with data analytics and successful isolated legal-analytics experiences create heightened expectations of analytic tools. Impactful visualizations in the popular press that summarize financial information, for example, are successful because they distill complex ideas and data sets.⁸⁷ Increased exposure in everyday information consumption creates an expectation that ideas and data can be similarly summarized. This may be heightened by the fact that statistical information in the law has been available in some form for generations,⁸⁸ and analytical tools have made incredible strides. But when a lawyer who has had a great result from one project then hears

84. Chun Wei Choo et al., *Working with Information: Information Management and Culture in a Professional Services Organization*, 32 J. INFO. SCI. 491, 491 (2006), <https://doi.org/10.1177/0165551506068159> [<https://perma.cc/A829-MN9E>].

85. Katherine M. Lowry, Elaine Kamp, Corey K. Fallon & Riley McGhee, *Investigating Attorney Trust in Machine-enabled Legal Research: A Mixed Methods Approach*, 62 PROC. HUM. FACTORS & ERGONOMICS SOC'Y ANN. MEETING 1997 (2018), <https://doi.org/10.1177/1541931218621452> [<https://perma.cc/9MGB-R2X3>].

86. *Id.* at 2000.

87. *See generally* EDWARD R. TUFTE, *THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION* (2001).

88. *See supra* Section II.

that another is not possible, the lawyer may question adoption more broadly.⁸⁹

IV. Solutions and Recommendations for Integration

The legal-services market is behind the times. Attorneys fear adoption of new technology and an innovation of services. Legal analytic tools do not meet the needs of modern practice demands. These statements may well be true, but the landscape is not all doom and gloom. In fact, there are plenty of reasons to believe that the legal market is making up for its slow start and that the industry is on the precipice of real change.⁹⁰ Legal startups have introduced competition in the legal marketplace and created a healthy environment for innovation.⁹¹ Capital investment in legal technology continues to grow⁹² and set funding total records.⁹³ Pushing for further integration and attorney adoption will continue to usher in changes that address these functional and practical barriers.

A key aspect to addressing both types of barriers lies with education. Broadly, the legal-services market must do better to prepare lawyers to both meet the technological needs of their clients and harness technology to meet their clients' legal needs.⁹⁴ The good

89. Anecdotal experiences of the authors, along with feedback among their peers, relay that the lack of repeatability of services due to nuanced changes such as jurisdiction, area of law, etc. have sometimes created a dismissive response from attorneys about the accuracy or usability of analytics altogether.

90. Mark A. Cohen, 'Legal Innovation' Is Not an Oxymoron—It's Farther Along than You Think, *FORBES* (Mar. 14, 2017, 8:59 AM), <https://www.forbes.com/sites/markcohen1/2017/03/14/legal-innovation-is-not-an-oxymoron-its-farther-along-than-you-think/#2dc71b1b2786> [<https://perma.cc/RN32-FYGT>].

91. Daniel W. Linna Jr., *What We Know and Need to Know About Legal Startups*, 67 *S.C. L. REV.* 389, 413 (2016).

92. Blijd, *supra* note 48.

93. See, e.g., Rhys Dipshan, *DISCO Raises \$83 Million in Bid to Expand Beyond E-Discovery*, *US, LEGALTECH NEWS* (Jan. 24, 2019, 11:26 AM), <https://www.law.com/legaltechnews/2019/01/24/disco-raises-83-million-in-bid-to-expand-beyond-e-discovery-us/> [<https://perma.cc/C7DZ-GYQE>].

94. See generally Aaron Crews, *The Big Move Toward Big Data in Employment*, in *DATA-DRIVEN LAW* (Ed Walters ed., 2019) (explaining that attorneys must be prepared to think about how technology will change the legal needs of clients). Attorneys also need to prepare for an increasing ethical requirement to utilize and be aware of technology that can affect case outcomes. See, e.g., *RULES REGULATING THE FLA. BAR 6-10.3(b)* (FLA. BAR) ("Five of the 33 credit hours must be in approved legal ethics, . . . and 3 of the 33 credit hours must be in approved technology programs, which are included in, not in addition to, the regular 33 credit hour requirement."). See Ivy Grey, *Exploring the Ethical Duty of Technology Competence, Part I*, *L. TECH. TODAY* (Mar. 8, 2017),

news is that legal education has begun to take up this cause, and there is a notable increase in technology-oriented and innovation programs and studies.⁹⁵ Through education, a new era of attorneys will enter the market with a broader skill set and deeper understanding of the use of tools, such as analytics, that can enhance practice via technology.⁹⁶ Continued movement in formal legal education and CLE requirements that embrace and integrate technological competencies are key to long-term adoption and integration.

More narrowly, there also must be an increase in user education for new tools and discrete strategies. This training needs to include more than advertising what the products and processes can do and include insight into what they cannot accomplish as well. Users must understand the limitations as well as the advantages of the tools they are using. Users must understand that legal data analytics do not necessarily replace, but rather complement, established methods in the arsenal of practice. Moreover, just as legal research may require an attorney to engage in more than one research platform to layer information, legal-analytics users must understand how to do the same with the data tools available.

In addition to transparency with respect to the tools, the industry must advocate for greater transparency with respect to data. To fill the attorney-trust gap,⁹⁷ there needs to be a better understanding about the underlying data that tools are harnessing. For attorneys to trust output, there must be a greater understanding of and access to data input. For information professionals, this has been noted to mean that as they:

become regular users and gatekeepers of analytics tools,

<https://www.lawtechnologytoday.org/2017/03/technology-competence-part-i/> [https://perma.cc/F9XQ-CTVQ], for a more general look at the ethics of technical knowledge in the law.

95. Randy J. Diamond, Darin Fox, Kenneth J. Hirsh, Heidi Frostestad Kuehl, & Michael Robak, *Let's Teach Our Students Legal Technology: But What Should We Include?*, 23 AALL SPECTRUM 23, 24 (2018); Simon et al., *supra* note 68, at 299.

96. Diamond et al., *supra* note 95, at 28. It is important to note that this does not mean all future lawyers need to be dually trained technologists; rather, next-generation attorneys should have a fundamental understanding about the role of technology in practice. *Id.* at 25.

97. Lowry et al., *supra* note 85, at 2000.

what information transparency is necessary for reliance?

. . . .

Information professionals must be acutely aware of how analytics are created and the actual value they add. Researcher/lawyer/librarian beware. Don't base a decision on bad or irrelevant information.⁹⁸

This is equally true for all legal-service professionals who are using and relying on these same tools and their underlying information.

The more attorneys and other users of legal analytics understand about the data, the processes, and the limitations of the marketplace offerings, the more integration and adoption will occur. If attorneys can approach these tools with greater knowledge, they can not only temper expectations but become a greater asset to future development. Innovation is a never-ending loop, and the more that tools are used, the more readily users can envision new use cases, which in turn means greater demand for the tools to meet those needs.

Not every lawyer will be a technology expert, but for firms to fully embrace data analytics and its emerging technology siblings, new industry roles are required. For each firm, there will need to be a determination as to what can be accomplished internally and what can be outsourced, but engagement is necessary. In the words of Jonathan Furlong, "Whether all these lawyers will do these things inside law firms, or on some superior platform, is an open question. But the more law firms resist change, the more these roles will leave firms and go to alternative platforms or go directly to the client."⁹⁹ This means law firms, like most other successful initiatives, will need to be multidimensional. Traditional entities, which consist of lawyers supported by staff, will fail to meet market demands. Attorney presence will need to be accompanied by professionals and

98. Germann, *supra* note 28.

99. Jordan Furlong, *Tomorrow's Law Firm, Today*, L. TWENTYONE (Oct. 4, 2017), <https://www.law21.ca/2017/10/tomorrows-law-firm-today/> [<https://perma.cc/6R49-H7WS>].

technicians from a broad range of industries and backgrounds. This means attorneys who can navigate the language barrier between tech and the law. It also means embracing roles that have traditionally not had a place in law firms, such as data scientists and data stewards.

Law firms will need to manage, store, and interact with both internal and external data. They will need individuals skilled to handle those tasks, and they need to be willing to value and compensate those roles in a manner consistent with peer industries. Law firms will need to provide more than attorney services; they will need to create products built through a combination of attorney skill and technical know-how.¹⁰⁰ Clients will request and require new products and services, and firms will need to have the skills required to meet those demands.

This includes recognizing a need for more robust collaboration between clients and outside counsel. The use of litigation analytics helps discover and map litigation needs. Firms that have or develop litigation analytical tools have an advantage in a market where corporate counsel disburse their litigation widely across multiple firms. Armed with these tools, those firms are well positioned to comprehensively manage the entirety of a client's portfolio despite the complexities of the technologies, data, and cultural issues.

Lastly, the legal-services sector must explore and support renewed standards that get data in shape for sharing. This may come in the form of advocacy through groups such as the American Bar Association, the Association for Legal Technologists, the Standards Advancement for the Legal Industry, or some other vested group. Alternatively, the solution may be found through the development of

100. As the definition of "legal tech" grows beyond integrated research platforms and firm websites, clients want even greater technical sophistication from their law firms. GEORGETOWN LAW CTR. ON ETHICS & THE LEGAL PROFESSION & THOMSON REUTERS LEGAL EXEC. INST., 2019 REPORT ON THE STATE OF THE LEGAL MARKET 13 (2019). Investment in technology and technology talent were significant differentiators between firms that were expanding in the current market and firms that were flat or shrinking *Id.* at 11; see Michael J. DiCorpo, *Technology—What Clients Demand*, 68 CLEV. B.J. 8, 8–9 (1996) (as an example that client-based interest in law-firm tech goes back to the 1990s). See generally RICHARD SUSSKIND, *THE FUTURE OF LAW* (1996); see also RICHARD SUSSKIND, *THE END OF LAWYERS?* (2009) (generally advocating the "new" role of law-firm jobs and law-firm outputs in some mode for over twenty years and earnestly for the last decade saying what may be new is that the clients and the market are now demanding it).

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resources or competencies that allows the various court data structures to convert information into standardized formats. Most likely, it will be a combination of factors that will help create shareable data sources, but individual user advocacy will be one of the greatest tools in the toolbox.

CONCLUSION

The legal-services industry is making headway in the analytics market, with new services and tools being released and expanded at a considerable pace. The barriers that remain are both functional and practical but are largely driven by a need for skill and monetary investment in technology by law firms. Law firms must make the strategic decisions required by new market realities, and the challenge is not in understanding the problem; rather, the challenge is the idea that change is required as a solution to new market realities. Addressing these attitudinal barriers through greater education and transparency will bring about the adoption necessary for success. In turn, greater adoption and integration of analytics by legal practitioners will drive the demand for improved products and processes.