

Jurimetrics and the Brazilian Judicial System: A view through Institutionalism



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ABSTRACT

The text discusses the evolution of Institutionalism, highlighting its correlation with mathematical sciences and technology, such as jurimetry. It examines the trajectory of Institutionalism from the 19th century to current technological advances, highlighting its impact on public policy. It then explores the evolution of the Brazilian judicial

system, from colonial influence to contemporary challenges. It highlights the technological revolution in the judiciary, with an emphasis on jurimetry, big data and artificial intelligence. Jurimetry, the statistical treatment of legal issues, is analyzed in depth, highlighting its positive effects, such as improving decision-making, facilitating legal arguments and promoting judicial speed. It concludes by emphasizing the importance of jurimetrics in the quest for a more informed, efficient and socially equitable justice, while also highlighting associated ethical challenges.

Keywords: Institutionalism, Brazilian Judicial System, Jurimetry.

1 INTRODUCTION

Institutionalism is a school of thought in the social sciences that emphasizes the role of institutions in the organization and functioning of society. Since its origins in the late nineteenth century, institutionalism has undergone a remarkable evolution, driven in large part by the growing influence of the mathematical sciences and technology. In this text, we will explore the trajectory of Institutionalism over time and analyze how its correlation with the mathematical sciences and technology, notably jurimetrics, has contributed to the development of a deeper and more comprehensive understanding of social institutions.

2 INSTITUTIONALISM AND ITS CORRELATION WITH THE MATHEMATICAL SCIENCES AND TECHNOLOGY

Thinkers such as Thorstein Veblen (VEBLEN, 1899) and John R. Commons (1931) pioneered this approach, exploring how institutions, understood as formal and informal rules that govern human interaction, shape economic and social behavior.

In this early phase, Institutionalism was strongly rooted in a qualitative and descriptive approach. Institutional theories highlighted the importance of institutions, such as firms, unions, and governments, in shaping economic and social life, but did not employ significant quantitative or mathematical methods in their analyses.



The turn of the twentieth century witnessed the rapid advancement of the mathematical sciences, especially in economics. Economists such as Alfred Marshall and Leon Walras began to develop mathematical models to describe and explain complex economic phenomena. This mathematical approach, known as mathematical economics, has had a significant impact on the social sciences, including institutionalism.

One of the milestones of this revolution was game theory, developed by mathematicians such as John von Neumann and Oskar Morgenstern in the 1940s. Game theory provided a mathematical framework for analyzing strategic interactions and decision-making in institutional settings, making it a valuable tool for institutionalist scholars (Neumann & Morgenstern, 1944).

As the influence of the mathematical sciences grew, Institutionalism began to incorporate quantitative methods into its approach. Institutionalist economists, such as Douglass North (NORTH, 1990), who would later receive the Nobel Prize in Economics, applied mathematical models to analyze complex institutional issues such as the evolution of social norms, how institutions affect economic development, and how actors adapt their behaviors in response to institutional changes.

In addition, Institutionalism has also benefited from the advancement of statistical techniques and computing, allowing for the analysis of large data sets related to social institutions. These statistical analyses contributed to a more empirical understanding of institutional dynamics and their implications.

The advent of the digital age and information technology has brought a new dimension to the evolution of Institutionalism. The digitization of information and the ability to collect, store, and analyze large volumes of data have transformed the way institutions are studied.

Big data analytics and artificial intelligence (AI) have allowed institutionalist researchers to analyze complex patterns of institutional behavior on an unprecedented scale. AI is able to identify correlations and trends in institutional data that would be difficult or impossible to detect by traditional methods (LAZER et al., 2014).

In addition, technology has also expanded the possibilities of qualitative research, allowing for the collection and analysis of qualitative data on a global scale. Technology-based qualitative research is essential for understanding institutions in diverse cultural contexts.

The evolution of Institutionalism and its correlation with the mathematical sciences and technology have had a significant impact on the development of public policy and decision-making in various areas, including economics, politics, law, and public management.

The ability to model and analyze institutions through mathematical and technological methods allows for a more accurate approach in policymaking. Governments and organizations can use these models to predict the impact of different institutional policies and choose the most effective approaches to achieve their goals (MAYER-SCHÖNBERGER & CUKIER, 2013).



The evolution of Institutionalism over time, driven by the incorporation of mathematical sciences and technology, demonstrates how this approach continues to be relevant and dynamic in the analysis of social institutions. The ability to combine institutional theories with advanced quantitative methods and data analysis technologies has allowed for a deeper and more complete understanding of institutions and their role in society.

3 BRAZILIAN JUDICIAL SYSTEM AND NEW TECHNOLOGIES

The evolution of the Brazilian judicial system over the years is a reflection of the social, political, and technological transformation that the country has experienced (BARROSO, 2019). From the colonial period to the present day, the justice system has undergone several significant changes, culminating in the adoption of new technologies to improve its efficiency and accessibility. In this text, we will explore this historical evolution, highlighting relevant authors and references along the way.

The history of the Brazilian judicial system dates back to the colonial period, when Brazil was a colony of Portugal. At that time, the legal system was strongly influenced by the Lusitanian legal system, which was based on the Philippine Ordinances (CARVALHO, 2002). This system was characterized by its complexity and formalism, with lengthy and bureaucratic judicial procedures.

Brazil's independence in 1822 brought significant changes to the judicial system. The country's first Constitution, promulgated in 1824, laid the groundwork for the organization of the Brazilian Judiciary. However, it still retained many of the features of the colonial system. (BONAVIDES, 2020).

With the Proclamation of the Republic in 1889, Brazil underwent a series of political and institutional reforms. These changes also affected the judiciary, with the promulgation of a new constitution in 1891, which established an independent judiciary and the separation of powers. (BONAVIDES, 2020).

The 1988 Constitution, often referred to as the Citizen Constitution, represented a milestone in the history of the Brazilian judicial system. It established fundamental principles, such as the guarantee of individual rights, the independence of the judiciary, and access to justice.

In recent years, the Brazilian judicial system has undergone a technological revolution. The computerization of courts, the creation of electronic process systems, and the digitization of documents have all been efforts to make the system more efficient and accessible.

The evolution of the Brazilian judicial system is not limited to computerization. Artificial intelligence (AI) and jurimetrics have played an increasing role in case analysis and judicial decision-making. Authors such as Nunes (2016) in *Jurimetrics: How Statistics Can Reinvent Law* explore how jurimetrics, the application of quantitative methods to law, is contributing to more informed and effective decision-making.



Despite technological advancements, the Brazilian justice system still faces significant challenges, such as lengthy proceedings and lack of access to justice for many citizens. The search for solutions to these challenges remains an important goal for the legal community and society as a whole. Authors such as Luís Roberto Barroso in *The Brazilian Constitution of 1988 and Overcoming the Political Crisis* discuss the challenges and perspectives for the Brazilian judicial system (BARROSO, 2019).

4 EFFECTS OF JURIMETRICS ON THE JUDICIARY

Jurimetrics is the statistical treatment applied to legal issues. In this sense, it is possible to perceive the influence of the advancement of technology in the decision-making of all law institutes.

The advancement of data processing, with Big Data, Artificial Intelligence and the so-called machine learning has brought an advance in all sectors of society, notably for those who need to make decisions in past data and in the prediction of future data (or in the study of future behaviors).

Thus, the application of new technologies has also been adopted in Legal Systems all over the planet. The term "jurimetrics" is a neologism created by the American lawyer Lee Loevinger, used for the first time with the publication of the article *Jurimetrics: the next step forward* (LOEVINGER, 1971), in a context in which the application of analytical methods can bring progress and legal certainty. In the United States, there are several law schools and associations that have research centers in jurimetrics, with references to the *Society for Empirical Legal Studies and the Journal of Empirical Legal Studies* (MAIA; BEZERRA, 2021).

In Brazil, the legal study based primarily on data was applied by the National Council of Justice (CNJ), through the Justice in Numbers program, where data were collected in different fields of action of Justice in order to improve it. The Brazilian Association of Jurimetrics was set up in 2009 and is currently recognized as an internationally qualified entity. Its main objectives are threefold: to gather and encourage researchers to describe decision-making processes in which individual and concrete norms are created; to discipline jurimetrics, determining its foundations, relations and concepts; and collaboration with public and private entities to improve judicial delivery mechanisms through the drafting of laws and the administration of courts. (ABJ, 2022).

Among the effects of the application of jurimetrics to the judicial system, the following can be mentioned (ABJ, 2022):

- Increase the ability to know the elements of a judicial process;
- Facilitate the arguments of the procedure;
- Indicate the means by which the case can be resolved;
- Facilitate the basis of a judicial decision and the impact of these decisions on society;
- Speeding up the judiciary.



In general, the treatment of quantitative elements to legal issues allows for more concrete analyses and helps to establish standards that, in turn, facilitate the decision-making of jurists, standardization of processes and procedures, efficiency in the solution of demands, contributing to greater social justice.

Jurimetrics is an interdisciplinary discipline that combines data analysis and statistics with the field of law. Its use has expanded considerably in recent decades due to the advancement of information technologies, especially Big Data, Artificial Intelligence (AI), and machine learning. These technologies have had a profound impact on many sectors of society, including the justice system. In this text, we will explore the effects of Jurimetrics on the justice system, highlighting how it has contributed to more informed, efficient, and fair decision-making.

One of the main contributions of Jurimetrics to the judicial system is the increase in knowledge about the elements of a judicial process. Traditionally, jurists based their decisions on legal precedents and subjective interpretations of the law. However, with data analysis, it is possible to identify trends and patterns in previous cases. For example, Jurimetrics can help determine how likely a particular argument is to succeed in a court of law based on historical data. This allows lawyers and judges to have a more solid understanding of the context in which they are making decisions. (NUNES, 2016).

Jurimetrics also facilitates the construction of arguments during the legal procedure. Lawyers can use statistical analysis to support their claims by presenting hard data to support their cases. Not only does this strengthen the arguments, but it also makes the process more transparent and evidence-based. Additionally, the ability to present quantitative data clearly can make arguments more persuasive to judges. (NUNES, 2016).

Another positive effect of Jurimetrics is the ability to indicate means for the resolution of cases. By analyzing historical data from similar cases, Jurimetrics can suggest alternative solutions or agreements that are more likely to be accepted by the parties involved. This can lead to a reduction in protracted litigation and a faster and more effective resolution of legal disputes. (COUTO, 2016).

Jurimetrics also plays a crucial role in facilitating the basis of judicial decisions. Judges can use statistical analysis to inform their decisions, demonstrating that their choices are based on objective and unbiased data. This increases the transparency and consistency of court decisions, reducing the risk of arbitrary decisions.

Court decisions have a significant impact on society, shaping legal norms and influencing people's lives. Jurimetrics can help assess the impact of court decisions on society by analyzing the results of previous cases. This allows legislators and the courts themselves to adjust their policies and practices to better meet the needs of society. (COUTO, 2016).

Jurimetrics also contributes to speed up the judicial system. Data analytics can identify bottlenecks and inefficiencies in court processes, allowing courts to implement measures to speed up



the processing of cases. This is especially important in a context where many court systems face an excessive caseload. (COUTO, 2016).

In addition to these direct effects, Jurimetrics also plays a key role in promoting social justice. By analyzing demographics and other factors, it is possible to identify disparities in the justice system and take steps to address these inequalities. For example, Jurimetrics can reveal disparities in the treatment of different ethnic or economic groups and provide insights into how these disparities can be corrected.

However, it is important to note that the application of Jurimetrics in the justice system also raises challenges and ethical issues. Protecting data privacy, ensuring that statistical analyses are unbiased, and understanding the limitations of statistical models are all issues that need to be addressed carefully.

5 CONCLUSION

As technology continues to advance, it is likely that Institutionalism will continue to evolve, incorporating new techniques and analytical tools to address increasingly complex issues related to social institutions. This continuous evolution is fundamental for the adaptation of public policies and institutional practices to the constantly evolving changes in modern society. Therefore, the correlation between Institutionalism, mathematical sciences, and technology play a crucial role in understanding and enhancing the institutions that shape our world.

The evolution of the Brazilian judicial system over the years reflects the country's political, social, and technological transformations. The adoption of new technologies, such as artificial intelligence and jurimetrics, has the potential to make the system more efficient and fair. However, challenges remain, and the path to improving access to justice and the effectiveness of the justice system is an ongoing journey that involves multidisciplinary efforts and the collaboration of legal scholars, researchers, and policymakers.

Jurimetrics has had a significant impact on the justice system, providing a solid foundation for more informed, efficient, and fair decision-making. As information technologies continue to advance, it is likely that Jurimetrics will play an even more important role in the evolution of the justice system and the quest for more accessible and equitable justice. However, it is critical that this application is accompanied by careful ethical and legal scrutiny to ensure that benefits are maximized and risks minimized.



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