# New Language Processing, Predictive Analytics, and Knowledge Management:
## Implications for Academic Advising in American Higher Education

**Valerie A. Storey**
http://orcid.org/0000-0001-8868-0802
*Franklin University, USA*

## ABSTRACT

*The traditional interface in American higher education between the student and advisor is personal. But now, Artificial Intelligence (AI)-generated tools such as Natural Language Processing (NLP) (chatbots), Predictive Analytics(PA), and Knowledge Management (KM) have evolved to become technology-based alternatives to human advisors. Advisor acceptance of AI-generated tools is limited despite the numerous organizational benefits. One approach that may address academic advisors' concerns is Explainable AI (XAI), which is AI programmed to describe its purpose, rationale, and decision-making process understandably and transparently. This article consists of four sections. Section 1 examines human and artificial intelligence. Section 2 reviews new GenAI technologies relevant to academic advising. Section 3 considers the historical context for technology integration (or rejection). Section 4 discusses Explainable AI (XAI), Responsible AI (RAI), and how advising and advisors might respond in the face of these new technologies.*

## INTRODUCTION

In 1972, the Carnegie Commission on Higher Education observed that the fourth revolution in higher education, the technological revolution, had arrived and would be the most decisive development in higher education in five decades (Carnegie Commission). Fast forward five decades and Artificial Intelligence (AI) generated tools such as Natural Language Processing (NLP) (chatbots), Predictive Analytics(PA), and Knowledge Management (KM) have evolved to become technology-based alternatives to a human

DOI: 10.4018/407554

advisor (Akiba & Fraboni, 2023; Bilquise et al., 2022a; Bilquise et al., 2022b; Meotti & Magliozzi, 2023; Rawatlal & Dhunpath, 2023).

How students obtain information, solve problems, and interact with others—humans or machines—has quickly evolved, requiring academic advisors to evaluate current advising processes and systems (Akiba & Fraboni, 2023; Meotti & Magliozzi, 2023). ChatGPT, a public-facing chatbot, can now give prospective students free academic and career advice (Rawatlal & Dhunpath, 2023). Prompting Akiba and Fraboni (2023) to ask ChatGPT whether it would replace person-to-person academic advising, the response was "No." Nevertheless, advisors are concerned as to the role of GenAI in higher education advising, whether it will continue to support or indeed replace human advisors (Anft, 2023; Bilquise & Shalaan, 2022a; Bilquise & Shalaan, 2022b; Da Laet, 2023; Iatrellis et al., 2017; Rawatlal & Dhunpath, 2023; Thottoli et al., 2024).

While GenAI tools can now provide academic and career advice, there is a lack of comprehensive research on how these tools will integrate with or potentially replace traditional person-to-person advising (Rawatlal & Dhunpath, 2023). This chapter contributes to a theoretical understanding of how AI-driven advising systems impact higher education, expanding upon the "fourth revolution" foreseen by the Carnegie Commission. It also advances scientific comprehension and conceptual frameworks of AI-enhanced academic advising by exploring emerging models incorporating these new technologies. This addresses the need for research and reflection mentioned by Anft (2023) and Zawacki-Richter et al. (2019). Additionally, it offers insights into effectively integrating GenAI tools into the student experience, tackling concerns and questions raised by advisors and researchers such as Akiba and Fraboni (2023).

## FOCUS OF THE CHAPTER

This chapter explores the complex world of GenAI tools, their potential roles in enhancing student advising in higher education in the United States, and their acceptance (or rejection) by academic advisors. The subsequent sections of this chapter are organized into four distinct parts. Section one examines the similarities and differences between human and artificial intelligence. Section two reviews new Generative Artificial Intelligence (GenAI) technologies relevant to academic advising. Section three considers the historical context for technology integration (or rejection). Finally, section four discusses Explainable AI (XAI), Responsible AI (RAI), and how advising and advisors might respond in the face of these new technologies.

## BACKGROUND

Decision-making in all organizations is a complex process, but in higher education, leaders face decision-making challenges that are not frequently faced in other organizational types (Harris et al., 2019). American colleges and universities operate within a shared governance model through which members make collective constitutional decisions. Cohen et al. (1972) characterized American academic organizations as resembling a garbage can as decisions are made in an ambiguous but dynamic environment.

In higher education, decisions can be categorized as programmed or nonprogrammed depending on whether the required decisions are for a routine or nonroutine problem (Chitpin & Evers, 2015). Programmed decisions (routine decisions) can be addressed through standard operating procedures. In contrast, nonpro-