

*The Essential Competencies of Data Scientists: A Framework for Hiring and Training*

## LITERATURE REVIEW

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The article, *The Essential Competencies of Data Scientists: A Framework for Hiring and Training* by Motahareh Zarefard and Nicola Marsden, investigates the skills needed for data scientists in 2024 and ‘looking’ ahead into the future. As stated in the article, an increasing demand for data scientists and a reported difficulty in finding qualified professionals, the authors identify and categorize 130 distinct competencies across seven KSAEOs that are deemed to be essential for success within the role.

These include: 1) functional, 2) ethical, 3) cognitive, 4) awareness, 5) social, 6) organizational, and 7) behavioral skills. Functional includes technical skills like machine learning comprehension and programming. Ethical covers responsible data usage and compliance. Cognitive includes analytical thinking, problem-solving, and creativity. Awareness highlights organizational knowledge, social intelligence, and self-awareness. Social covers communication skills, teamwork, and leadership skills. Organizational relates to managerial and strategic proficiencies. Lastly, behavioral involves adaptableness, resilience, and even mentions the entrepreneurial spirit.

The study uses data analytics methods that combine literature review, statistical analysis, and text mining to classify and measure the defined skills. By combining information from job postings and from within industry, a model is created. The model provides a deeper insight into the competencies and can be used for optimized training and professional development (plus academic as well). Their conclusions ultimately demonstrate that those who are well-rounded [a balance of both technical and non-technical skills] are best positioned to succeed in data analytics roles.

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Source:

Zarefard, M., & Marsden, N. (2024). *The essential competencies of data scientists: A framework for hiring and training*. In H. Mori & Y. Asahi (Eds.), *HCI 2024, LNCS 14691* (pp. 397–418). Springer Nature Switzerland. [https://doi.org/10.1007/978-3-031-60125-5\\_27](https://doi.org/10.1007/978-3-031-60125-5_27)