Proceedings of the Informing Science + Information Technology Education Conference

An Official Publication of the Informing Science Institute
InformingScience.org

InformingScience.org/Publications

Online July 5 – 6, 2023

THE ACADEMIC DISCIPLINE OF INFORMATION TECHNOLOGY: A SYSTEMATIC LITERATURE REVIEW

Roshanak Basty*	University of Cincinnati, Cincinnati, OH, United States	bastyrk@mail.uc.edu
Asuman Celik	University of Cincinnati, Cincinnati, OH, United States	celikra@mail.uc.edu
Hazem Said	University of Cincinnati, Cincinnati, OH, United States	saidhm@ucmail.uc.edu

* Corresponding author

ABSTRACT

Aim/Purpose	This paper aims to answer the research question, "What are the development phases of the academic discipline of information technology in the United States?" This is important to understand the reason for the growing talent gap in the information technology (IT) industry by reviewing the evolution of information technology across time, how the discipline was formed, evolved, and gained independence from other information and computing disciplines.
Background	The COVID-19 pandemic has increased the shortage of IT professionals in the workplace. The root reason for this talent shortage requires understanding from both industry and academic perspectives in order to implement effective initiatives to prepare, recruit, and retain diverse IT professionals at an early stage.
Methodology	This paper used a systematic literature review methodology and retrieved 143 primary studies from the ACM and IEEE Xplore digital libraries to review the development phases of the IT discipline as a contributing factor in understanding why, when, and how the population of professionals in IT and other relevant computing disciplines has changed and continues to fluctuate. Thematic analysis was applied to the abstracts of the primary studies, which spanned the period of 1982 to 2021.

The full paper has been published as the following and is being presented at this conference:

Basty, R., Celik, A., & Said, H. (2023). The academic discipline of information technology: A systematic literature review. *Issues in Informing Science and Information Technology, 20,* 1-23. https://doi.org/10.28945/5130

Abstract published in *Proceedings of InSITE 2023: Informing Science and Information Technology Education Conference*, July 5-6 [online], Article 17. Informing Science Institute. https://doi.org/10.28945/5101

Contribution	This paper contributes to the understanding of the discipline of IT in the US and contributes foundations to researchers and educators who are working on strategies to fill the talent gap.
Findings	Based on the thematic analysis in this paper, the academic discipline of IT has evolved over four phases across a timeline from 1982 to 2021. These phases were: Phase 1 (1982-1991) – Advent of Information Technology; Phase 2 (1992-2001) – Industry IT & DevOps; Phase 3 (2002-2011) – Information Technology and Management in Evolving Industry, Academia, and Research Areas; and Phase 4 (2011-2021) – Information Technology Research & Education.
Recommendations for Practitioners	IT occupies an independent disciplinary space from computer science, computer engineering, and information systems. The paper suggests that practitioners seeking to fill the talent gap in IT invest in enabling its academic programs.
Recommendations for Researchers	The depth of the IT disciplinary space and its continued evolution over time is ready for exploration. Continued research in this area may yield a better understanding of its role in society, the skills needed to succeed, and how to build programs to empower students with these skills.
Impact on Society	Examining the discipline of IT and understanding its independence and interrelated connection with other computing disciplines will help address the shortfalls in academia across the nation by identifying the distinction between each discipline and creating comprehensive programs, degrees, and curricula suitable for various students and professionals across all educational levels.
Future Research	Future research will integrate papers' introductions and conclusions in addition to abstracts, increase the number of databases and reviewers, as well as incorporate papers that focus on other information and computing disciplines such as computer science and information systems to explore the possibility that IT as a discipline was initially practiced in an existing information or computing discipline before it gained independence.
Keywords	information technology, discipline of information technology, systematic literature review

AUTHORS

Roshanak Basty is a Graduate Teaching Assistant at the University of Cincinnati (UC) and is currently studying as a full-time doctoral student in UC's Ph.D. in Information Technology program. She has a master's degree in health informatics and is also an ICAgile Certified Professional (ICP), equipped with knowledge and experience in information technology, data and business intelligent analysis, health informatics, project management, and more. Her dissertation area focuses on the ethical implications of AI art and AI art generators. Other research interests include ethical concerns and best practices around generative AI in education and healthcare, AI-human entanglement, and mental health.

Asuman Celik is an Adjunct Instructor and a Graduate Teaching Assistant at the University of Cincinnati studying as a full-time doctoral student. She earned her bachelor's degree in software engineering at North American University and specialized in bioinformatics. She worked as a Graduate Research Assistant and a bioinformatician at Cincinnati Children's Hospital as well as Cleveland Clinic. She has expertise in statistical analysis, machine learning, and programming languages such as Python and R. She is also working as a volunteer Teaching Assistant at Respect Graduate School. She is studying AI applications in cancer research for her dissertation.

Dr. Hazem Said is a Professor of Information Technology and the director of the School of Information Technology (SoIT) at the University of Cincinnati (UC). He is a certified Project Management Professional (PMP). Dr. Said founded the UC Information Technology Solutions Center (ITSC) in 2012, where he consults with government, public and private organizations, and leads teams of professionals, as well as graduate, undergraduate, and high school students, to investigate, develop, and support a variety of information technology solutions. In addition, Dr. Said is a co-founder and co-director of the Ohio Cyber Range Institute and the Justice, Law, and Information Technology Institute. Dr. Said is the recipient of over 200 grants and contracts totaling over $30 million and has authored over 27 articles on topics related to information technology education.