West Science Information System and Technology
Vol. 2, No. 01, April 2024, pp. 39~48

Landscape Mapping: Investigating the Scope of Information Systems and Technology in Contemporary Organizations

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Article Info

Article history:

Received April, 2024
Revised April, 2024
Accepted April, 2024

Keywords:

Information Systems
Technology
Organizational Dynamics
IST Deployment
Bibliometric Analysis

ABSTRACT

In today's fast-paced business environment, the integration of Information Systems (IS) and technology is crucial for organizational success. This research aims to explore the landscape of Information Systems and Technology (IST) within contemporary organizations, investigating its multifaceted dimensions across diverse organizational contexts. Through a systematic examination, this study seeks to shed light on the intricate relationships between technology and organizational functionality, offering insights into IST deployment, utilization, and management strategies. By employing bibliometric analysis, thematic mapping, and author collaboration network analysis, this research provides a comprehensive understanding of IST research dynamics, trends, and future directions. The findings not only contribute to scholarly discourse but also offer practical implications for organizational stakeholders, policymakers, and technology practitioners.

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1. INTRODUCTION

In today's rapidly evolving business landscape, the integration of Information Systems (IS) and technology has become indispensable for organizational success [1]. The intricate interplay between technological advancements and organizational processes has propelled a paradigm shift, redefining the dynamics of contemporary businesses [2], [3]. Amidst this transformative milieu, understanding the landscape of Information Systems and Technology (IST) within organizations becomes paramount [4], [5]. This research endeavors to delve into the multifaceted dimensions of IST deployment, mapping its scope across diverse organizational contexts, thereby illuminating the intricate relationships between technology and organizational functionality.

Contemporary organizations operate within a complex ecosystem shaped by technological innovations, market dynamics, and evolving consumer demands [6], [7]. The proliferation of digital technologies, ranging from cloud computing to artificial intelligence, presents both opportunities and challenges for organizations seeking to harness the power of information systems [8]. Against this backdrop, elucidating the intricacies of IST adoption, utilization, and management emerges as a critical imperative [9]. By unraveling the contours of IST within organizations, this research aims to offer

insights into the nuanced strategies employed by businesses to leverage technology effectively in their operational frameworks [10].

At the heart of this exploration lies a compelling research problem: the need to comprehend the holistic landscape of IST in contemporary organizations amidst the dynamic interplay of technological advancements, organizational structures, and environmental factors [11]–[15]. Addressing this complex conundrum requires a comprehensive examination that goes beyond surface-level analyses. The research endeavors to delineate the intricate interrelationships between IST infrastructure, organizational culture, strategic objectives, and competitive positioning. By elucidating the underlying dynamics, this study seeks to shed light on the challenges and opportunities inherent in navigating the IS-technology terrain within organizations.

The primary objective of this research is to conduct a systematic investigation into the scope of Information Systems and Technology within contemporary organizations, with a focus on identifying key patterns, trends, and challenges. By employing a multi-dimensional analytical framework, the study aims to explore the diverse facets of IST deployment, utilization, and impact across different organizational domains. Through empirical inquiry and theoretical synthesis, the research endeavors to generate actionable insights that can inform strategic decision-making, organizational design, and technological investments.

The significance of this research extends beyond academic inquiry to practical implications for organizational stakeholders, policymakers, and technology practitioners alike. By elucidating the intricacies of IST within organizations, the study offers valuable insights into optimizing technological investments, enhancing operational efficiencies, and fostering innovation. Furthermore, the findings are poised to contribute to the development of theoretical frameworks, methodological approaches, and managerial practices pertinent to the dynamic intersection of technology and organizational dynamics. Ultimately, this research aspires to catalyze informed discourse and facilitate informed decision-making in the ever-evolving landscape of Information Systems and Technology within contemporary organizations.

2. LITERATURE REVIEW

Information Systems and Technology play a vital role in contemporary organizations, especially in the face of challenges like the COVID-19 pandemic [16]. These systems facilitate the flow of information, unifying IT, Information Systems Management, and Knowledge Management to create competitive advantages [17]. The reciprocal relationship between information systems and corporations is crucial for understanding the benefits of this partnership as technology advances [18]. Effective deployment and management of information systems are essential for enhancing organizational efficiency and productivity [19]. Organizations rely on a variety of information technologies, from communication infrastructures to software systems, to streamline operations and improve performance [20]. In today's rapidly evolving digital landscape, the strategic adoption and management of information systems are key to gaining competitive advantages and ensuring organizational success.

Information Systems (IS) and Technology in organizations are intriguing for researchers due to their significant impact on strategy, effectiveness, cultural features, and innovation within organizations. IS play a crucial role in enhancing information flow, improving organizational effectiveness, influencing cultural aspects, and driving innovation [21]–[24]. Researchers highlight the benefits organizations can achieve through effective IS implementation, such as competitive advantage, resilience, and success [25]. Additionally, the evolving nature of IT and its role in organizational innovation is a focal point for researchers, emphasizing

the need for a deeper understanding of how IT contributes to innovation. Moreover, IT is recognized as a vital enabler for developing capabilities essential for organizational success in today's fast-paced and uncertain environment.

3. METHODS

Bibliometric analysis serves as the methodological cornerstone for this research, offering a systematic and quantitative approach to explore the landscape of Information Systems and Technology (IST) within contemporary organizations. Drawing upon bibliometric techniques, this study analyzes a vast corpus of scholarly literature sourced from reputable academic databases and journals. The process entails collecting, organizing, and synthesizing a comprehensive dataset comprising relevant articles, conference papers, and research publications spanning the domain of IST and organizational studies. Employing bibliometric software tool such as VOSviewer, the analysis entails the examination of bibliographic data, citation networks, co-authorship patterns, and thematic trends, thereby uncovering key insights into the evolution, diffusion, and impact of IST within organizational contexts. By systematically mapping the scholarly landscape of IST, this method facilitates the identification of seminal works, emerging research trends, and interdisciplinary linkages, thereby providing a holistic understanding of the field's development and trajectory. Through rigorous bibliometric analysis, this research endeavors to distill actionable insights, inform theoretical frameworks, and guide future research agendas pertaining to the dynamic interplay between Information Systems, technology, and contemporary organizational dynamics.

Research Data Metrics

Table 1. Data Metrics of Literature

Publication years:	1971-2023
Citation years:	53 (1971-2023)
Papers:	980
Citations:	1551404
Cites/year:	29271.77
Cites/paper:	1583.07
Cites/author	845579.64
Papers/author	552.17
Authors/paper:	2.34
h-index:	540
g-index:	980
hI,norm:	409
hi,annual:	7.72
hA-index:	140
Papers with ACC >= 1,2,5,10,20:	
974,968,947,905,722	

Source: Output of Publish or Perish, 2024

This table provides a comprehensive overview of the bibliometric characteristics derived from the analysis of a corpus of 980 papers spanning the years 1971 to 2023 within the domain of Information Systems and Technology (IST). The dataset amassed an impressive total citation count of 1,551,404 citations over 53 years, yielding a remarkable average of 29,271.77 citations per year. On a per-paper basis, the average number of citations stands at 1,583.07, reflecting the substantial impact of the included publications within the academic

discourse. Notably, the analysis indicates an exceptionally high average number of citations per author, averaging at 845,579.64, underscoring the collaborative nature of scholarly endeavors in the field of IST. The dataset exhibits an average of 552.17 papers per author, with an average of 2.34 authors contributing to each paper. The h-index, a widely recognized metric of scholarly impact, attains a value of 540, indicative of the cumulative impact of the top 540 most highly cited papers. Additionally, the g-index, which accounts for the total number of citations and the distribution of citations among papers, stands at 980. Furthermore, the analysis reveals that 974 papers have been cited at least once, with decreasing counts for higher citation thresholds, reflecting the distribution of impact across the corpus. Overall, this table provides a quantitative snapshot of the scholarly productivity, impact, and collaboration within the realm of IST research, offering valuable insights into the dynamics of academic contributions and their reception within the academic community over the specified timeframe.

4. RESULTS AND DISCUSSION

4.1 Thematical Network

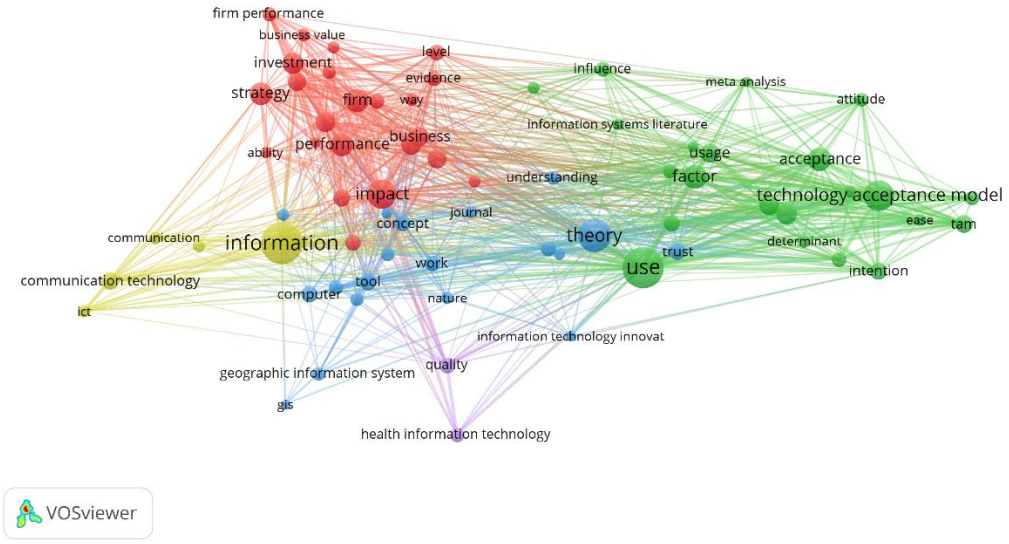

Figure 1. Network Visualization

Source: Data Analysis Result, 2024

In this network, nodes represent key terms or concepts, and the links indicate the strength of association or co-occurrence between these terms in a body of literature, such as academic articles or patents. From the color coding, we can discern different thematic clusters:

1. The red cluster seems to be centered around business performance and strategy. Key terms like "firm performance," "business value," "investment," "firm," "performance," and "strategy" suggest a focus on how information and communication technologies impact organizational effectiveness and business strategies.
2. The green cluster includes terms such as "technology acceptance model," "acceptance," "usage," "factor," "attitude," and "intention." This indicates a thematic focus on the acceptance and use of technology, likely discussing models and theories that explain how users come to accept and use technology, such as the well-known Technology Acceptance Model (TAM).

3. The blue cluster connects to the concept of "use" and includes "theory," "trust," and "information systems literature." It seems to revolve around the practical application of theories in the use of information systems, considering the trust aspect and how it's reflected in the literature.
4. The purple cluster focuses on "health information technology" and "geographic information system," which are specific applications of information technology in the healthcare and geographic data fields respectively. This suggests a discussion of the impact of information technology in specialized areas.
5. There are other minor clusters and individual nodes, but they seem to be less prominent or are bridging concepts between the major clusters.

4.2 Citations Analysis

Table 2. Top Cited Documents

Citation	Authors	Title
86496	[26]	Perceived usefulness, perceived ease of use, and user acceptance of information technology
51392	[27]	User acceptance of information technology: Toward a unified view
22741	[28]	The NIST definition of cloud computing
19921	[29]	Design science in information systems research
18026	[30]	Information systems success: The quest for the dependent variable
17914	[31]	The DeLone and McLean model of information systems success: a ten-year update
17461	[32]	Knowledge management and knowledge management systems: Conceptual foundations and research issues
16010	[33]	Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology
14038	[34]	Development of an instrument to measure the perceptions of adopting an information technology innovation
13569	[35]	Understanding information technology usage: A test of competing models

Source: Publish or Perish Output, 2024

This table presents a selection of highly cited papers within the domain of Information Systems and Technology (IST), along with their respective citation counts, authors, and titles. Topping the list is "Perceived usefulness, perceived ease of use, and user acceptance of information technology" by FD Davis, with an impressive citation count of 86,496, followed closely by "User acceptance of information technology: Toward a unified view" authored by V Venkatesh, MG Morris, GB Davis, and FD Davis, with 51,392 citations. These papers explore crucial aspects of user acceptance and perceptions toward information technology, highlighting their significance in shaping the adoption and utilization of technological innovations. Additionally, seminal works such as "The NIST definition of cloud computing" by P Mell and T Grance and "Design science in information systems research" by AR Hevner et al. contribute foundational insights into cloud computing and design science methodologies, respectively. Further, "Information systems success: The quest for the dependent variable" and "The DeLone and McLean model of information systems success: a ten-year update" by WH DeLone and ER McLean examine the dimensions of information systems success, while "Knowledge management and knowledge management systems: Conceptual foundations and research issues" by M Alavi and DE Leidner delves into the conceptual underpinnings of knowledge management. Rounding off the selection are studies such as "Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology" by V

Venkatesh et al. and "Understanding information technology usage: A test of competing models" by S Taylor and PA Todd, which contribute to a comprehensive understanding of consumer behavior and technology adoption. Together, these highly cited papers represent seminal contributions that have significantly influenced research and practice in the field of IST, shaping scholarly discourse and informing organizational strategies and technological innovations.

4.3 Research Trends

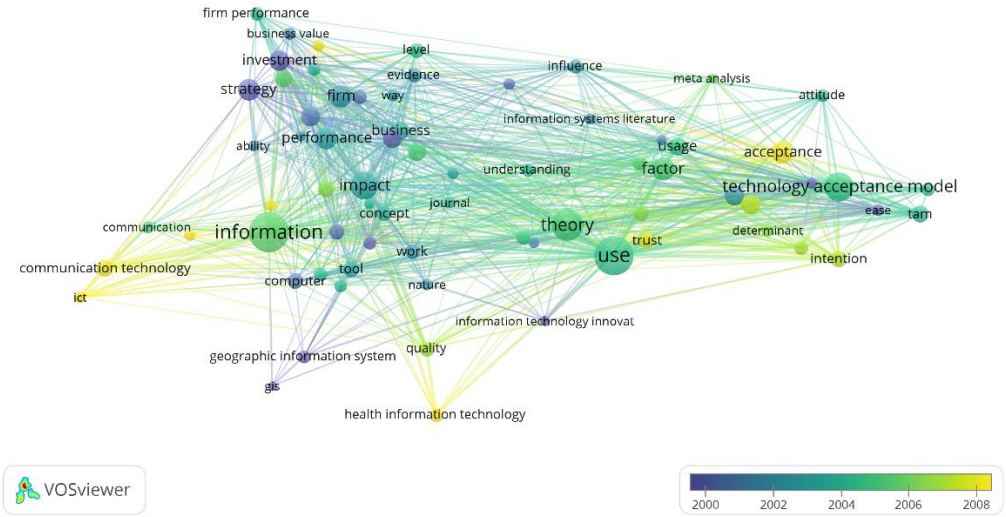

Figure 2. Overlay Visualization
Source: Data Analysis Result, 2024

The second image appears to add a temporal layer to the bibliometric network analysis, which could suggest the evolution of research trends over time, likely indicated by the color gradient at the bottom of the visualization. The gradient seems to range from blue (around 2000) to yellow (around 2008), suggesting the relative prominence of certain topics in different years. In this analysis, the color of each term node might indicate the period when that term was most prominent in the literature. The blue nodes, linked with the earlier years (around 2000), include terms like "information," "communication technology," "computer," and "ict" (information and communications technology). This suggests that early in the timeframe, research was focused on the fundamentals of information and communication technology.

As the colors transition to greens and yellows, indicating the middle to later years (towards 2008), we see a shift towards the application of these technologies, with terms like "health information technology," "geographic information system," "use," and "technology acceptance model." This might reflect a growing interest in the specific uses of information technology in healthcare and geographic data analysis, as well as a focus on understanding how individuals adopt new technologies (as represented by the "technology acceptance model").

The cluster with the most yellow, thus associated with the latest period in the data set (around 2008), contains terms like "health information technology," which suggests that by 2008, there was a significant research focus on the use of IT in the health sector. This could be due to advancements in technology making it more relevant for health applications or an increased focus on healthcare efficiency and data management.

4.4 Future Study Direction

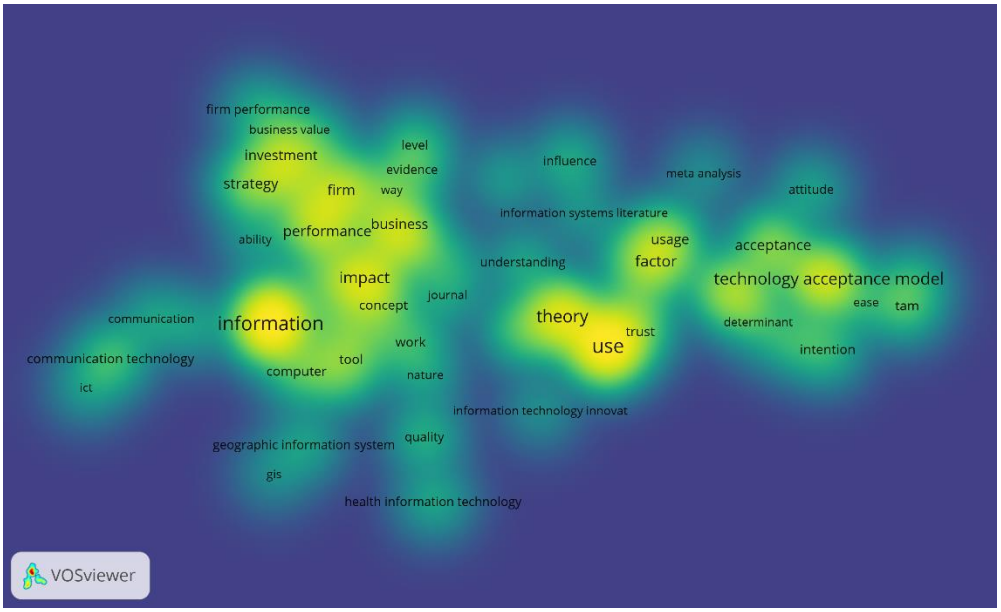

Figure 3. Density Visualization
Source: Data Analysis Result, 2024

From the image, it seems that the darker areas contain terms such as "geographic information system," "quality," "health information technology," and "information technology innovation." These less bright areas might indicate that while there is an established body of research on the broader topics of information and technology use, there are subfields within these areas that are relatively underexplored or emerging as new fronts for investigation.

Given its position in a darker area, GIS may be an area where more research could be conducted, possibly exploring new applications, integration with other technologies, or advancements in data analysis and visualization. The term "quality" in the context of information systems or technology could suggest a potential for research into quality assurance, quality control, and quality improvement within the IT sector, or in the deployment of IT systems in various domains. While there is a significant amount of research on health information technology, its positioning in a less bright area could imply that there are aspects of it—such as interoperability, patient data privacy, or the application of AI in health IT—that are ripe for further exploration. Lastly, "information technology innovat" (likely truncated from innovation) being in a darker area might point to a need for more research on the process of innovation in IT, the impact of emerging technologies, and the management of innovation within organizations.

4.5 Author Collaboration Pattern

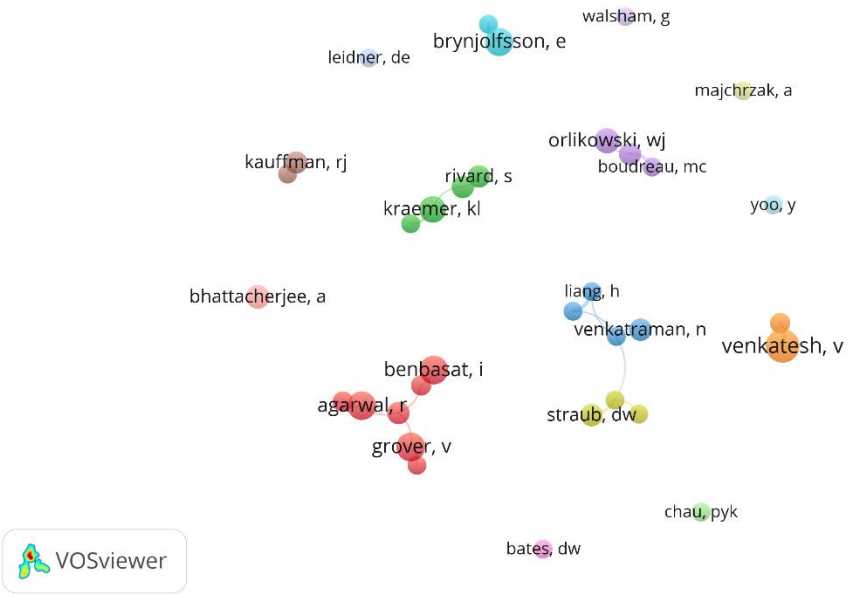

Figure 4. Author Collaboration Network
Source: Data Analysis Result, 2024

The image displays an author collaboration network, which maps the connections between various researchers based on co-authorships of scholarly publications. Each node represents an author, with the size of the node often indicative of the number of publications or collaborations the author has to their credit. The lines between nodes represent co-authorship links, with the thickness of the lines potentially representing the number of papers co-authored. The composition of each cluster can be identified by the grouping of authors who are more closely connected with each other, as indicated by the color-coding.

The red cluster includes authors such as Agarwal, R., Grover, V., and Benbasat, I. This cluster might represent a group of researchers who have worked together extensively, possibly sharing a common research interest or belonging to the same research institution. The green cluster has Rivard, S., Kraemer, K.L., and Bhattacherjee, A. as part of its composition. The close proximity of these nodes could signify a collaboration network focused on a particular aspect of the field they study, which could be different from the focus of the red cluster. Featuring Liang, H., Venkatraman, N., and Straub, D.W., the blue cluster again suggests a separate sub-community within the research field. Their collaboration may center on another unique theme or methodology within their discipline. The sole node of Venkatesh, V. in yellow might indicate an author who has significant individual influence or who bridges different research areas, possibly due to cross-disciplinary work or a strong record of varied collaborations.

5. CONCLUSION

In conclusion, the comprehensive analysis of literature, thematic networks, citations, research trends, future study directions, and author collaboration patterns provides valuable insights into the dynamics of Information Systems and Technology (IST) research. The bibliometric characteristics underscore the significant impact of scholarly contributions within the domain, highlighting both the prolific collaboration among authors and the substantial influence of seminal works on user acceptance, information system success, and knowledge management. Thematic clusters reveal evolving research interests, from foundational ICT concepts to specialized applications like health information technology and geographic information systems. The overlay visualization illustrates temporal shifts in

research focus, while density visualization suggests emerging areas for investigation, including GIS applications, quality assurance in IT, and innovation management. Author collaboration networks unveil distinct research communities, each with its own focal areas and collaborative dynamics. Collectively, these analyses offer a rich understanding of IST research landscape, guiding future directions and fostering interdisciplinary collaboration to address emerging challenges and opportunities in the field.

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