What do Information Systems(IS) researchers write about?

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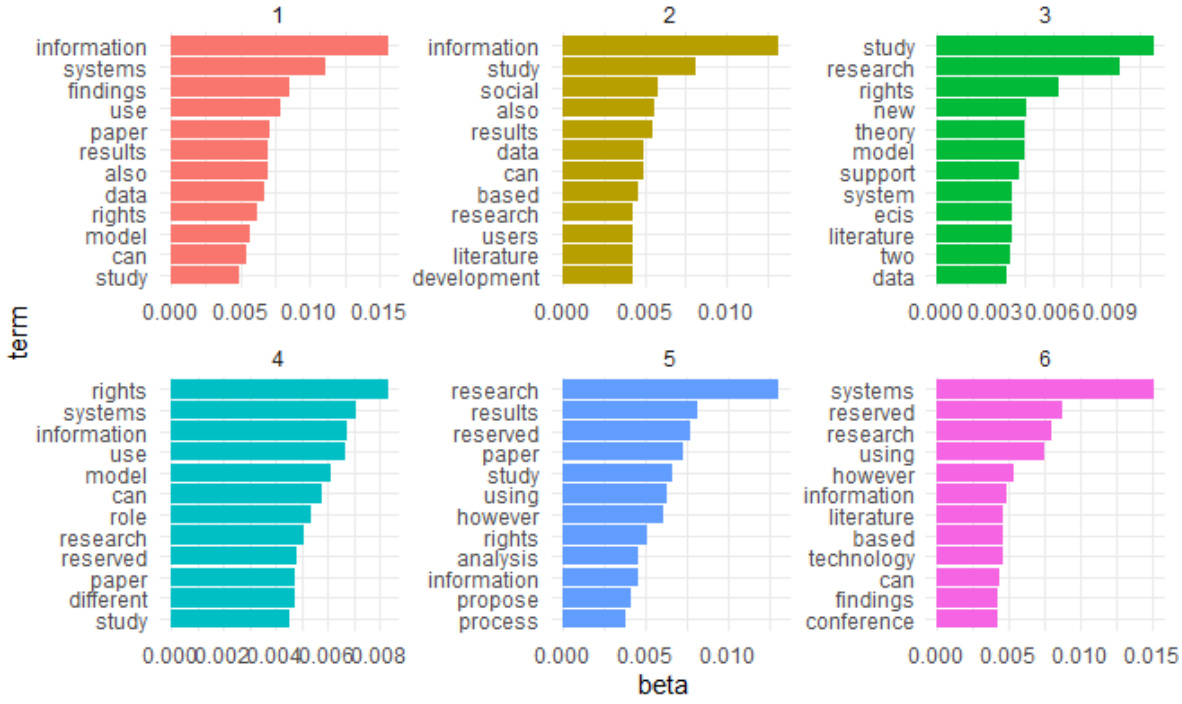
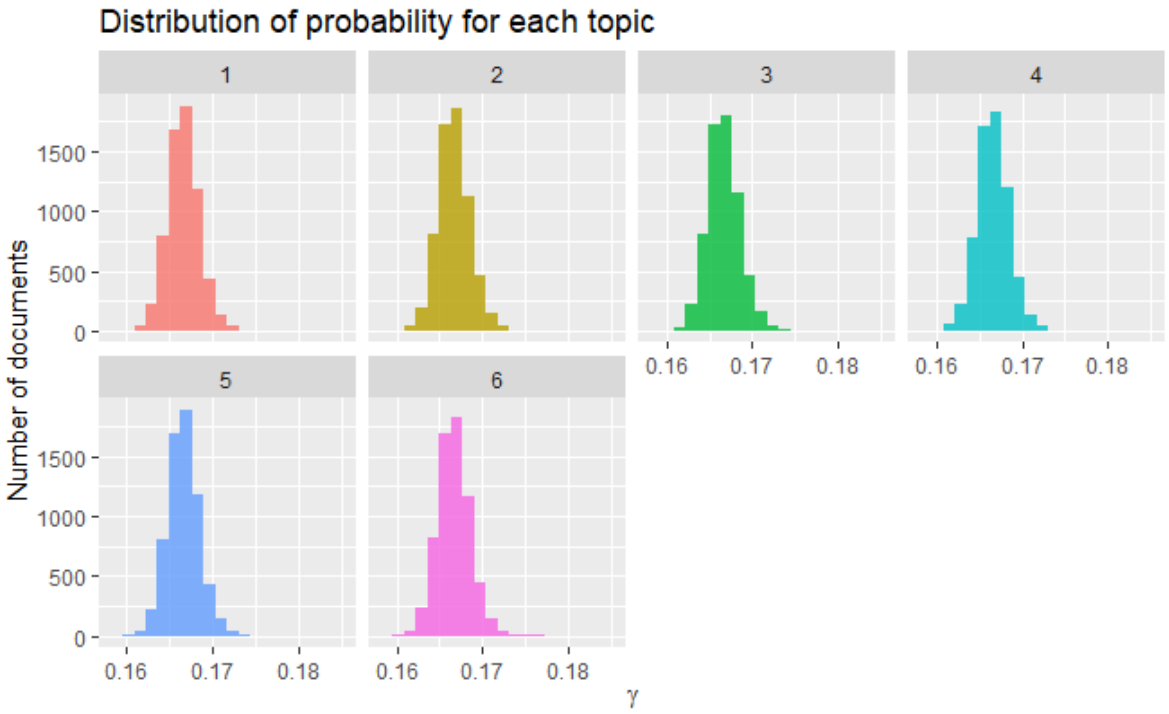
1 Introduction

The field of Information Systems (IS) is a dynamic and diverse area of study, continually evolving as technology advances and our understanding of business processes deepens. In this assignment, we will delve into the myriad topics that IS researchers focus on.. we will be using R for analysis and data visualization, to look into a dataset spanning from 2011 to 2020. In our exploration, we will employ text analysis and Natural Language Processing (NLP) models such as Structural Topic Model (STM), Latent Dirichlet Allocation (LDA), and Correlated Topic Model (CTM). These sophisticated models will enable us to extract meaningful insights from our dataset, revealing patterns and trends in IS research over the past decade.The aim of this assignment is to offer a comprehensive understanding of this dynamic field.

2 Main themes in IS between 2015 and 2020, and how are they related

Utilizing the LDA topic modeling technique, we examined six topics to strike a balance between granularity and coherence, thereby simplifying the understanding of the main themes in the articles. This exploratory approach aims to provide a broad overview of the primary themes in Information Systems (IS) research without focusing excessively on specific subtopics. The term "results" is crucial, likely referring to the outcomes of the research papers. The significant weight of the term "research" suggests its pivotal role in IS. "Information" is another key term, underscoring its centrality in the field. "Model" is relevant, possibly alluding to system or data modeling. The term "systems" is also significant, encompassing not just technological artifacts but also intangible resources like knowledge. Lastly, the appearance of the term "study" emphasizes the academic aspect of the field.



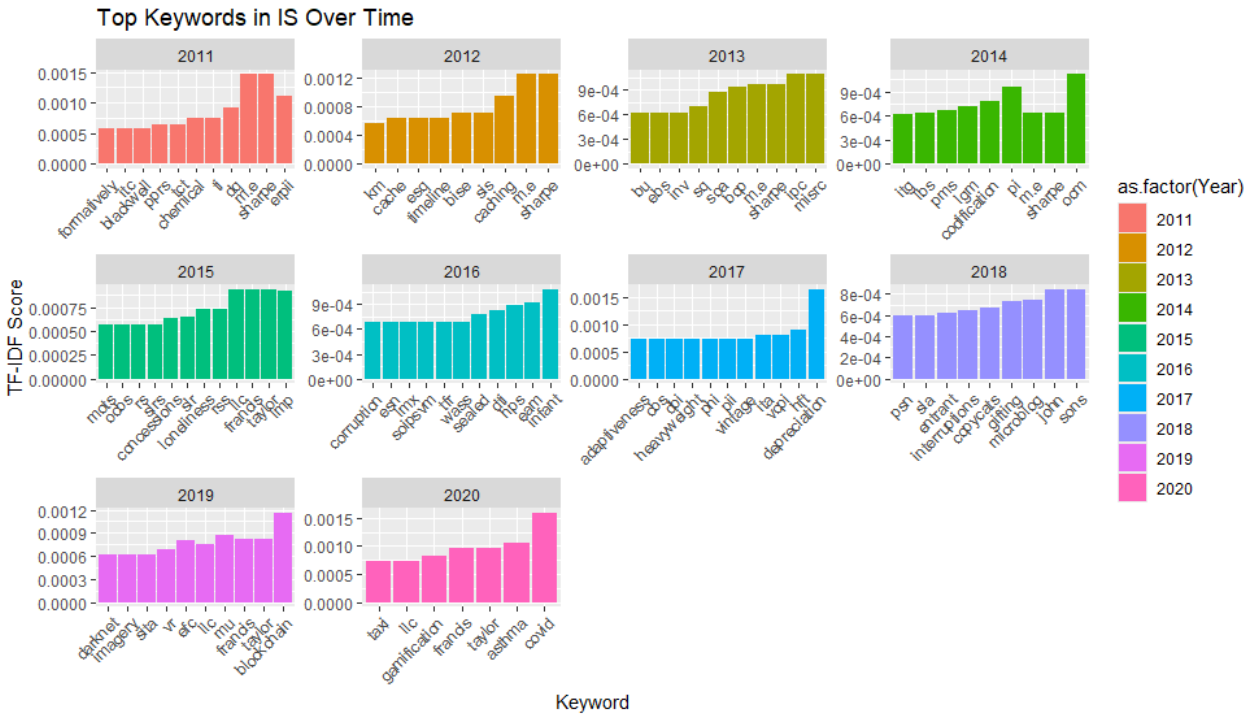


The word cloud visually represents the words from the abstract. In varying sizes; the size of

each word indicates its frequency or importance within the text. Larger and bolder words are used more frequently or are deemed more significant, making it easy to identify key themes or topics at a glance.

3 Annual Trends and Shifts in Key Topics within Information Systems Research

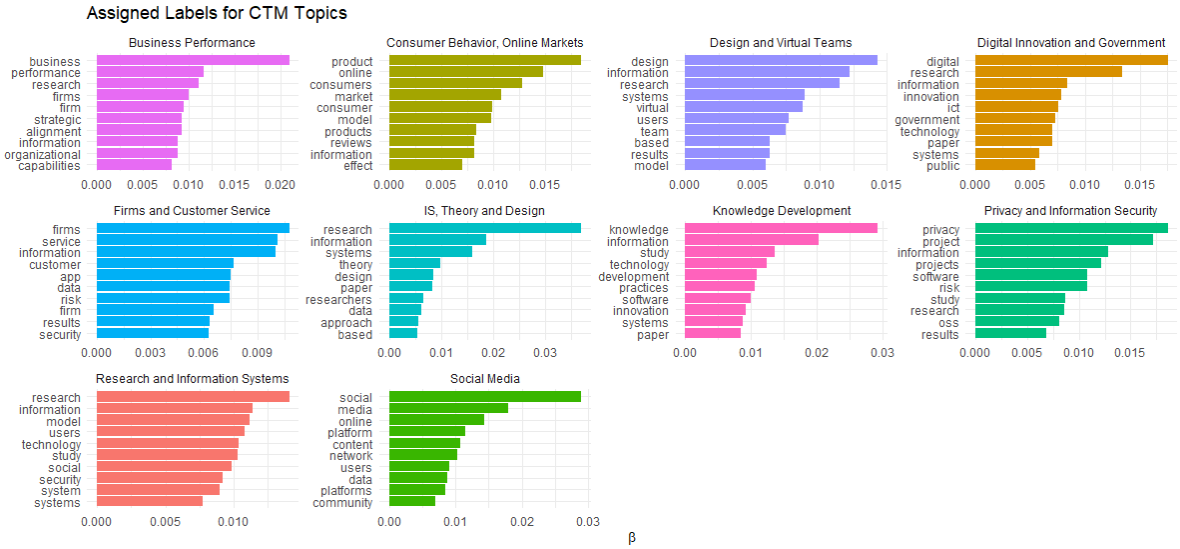
This analysis aims to identify and understand the evolution of important keywords in Information Systems (IS) research articles from 2011 to 2020. By analyzing the TF-IDF scores of keywords, we aim to uncover trends and patterns in the topics and themes that have been prominent in IS research over the past decade. TF-IDF is a numerical statistic that reflects how important a word is to a document in a collection or corpus.



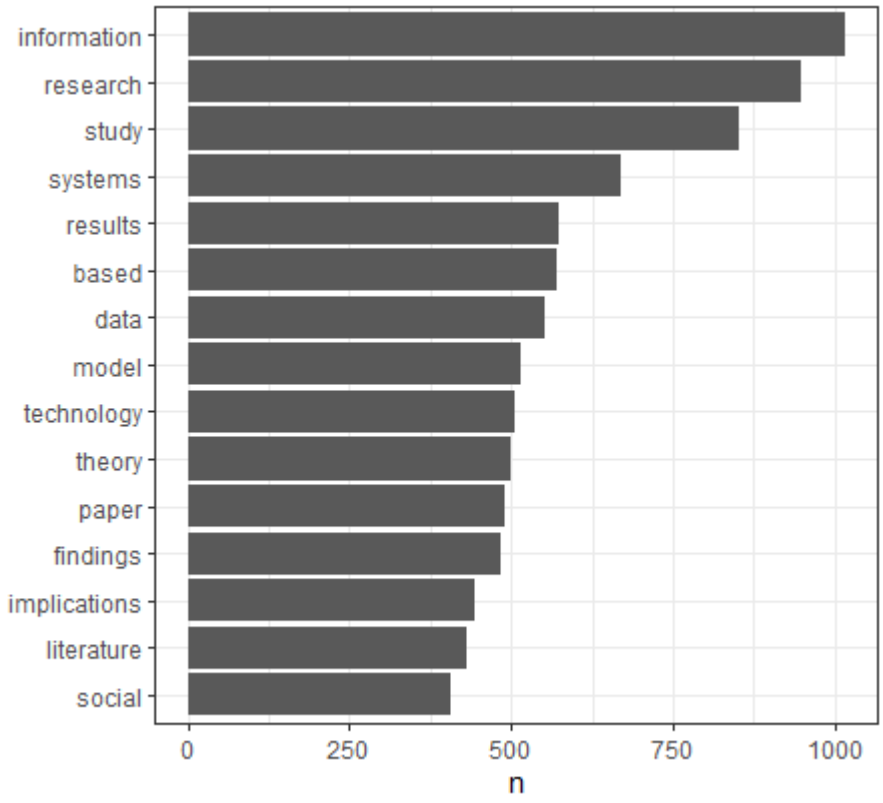
The visualization, "Top Keywords in IS Over Time" analyzes the prevalence of specific keywords in Information Systems (IS) research from 2011 to 2020. Each year is represented by a panel, with the vertical axis indicating keyword frequency (ranging from 0 to 0.00015) and the horizontal axis listing the keywords. The bars within each panel denote the frequency of each keyword for that year. Over the decade, the dominant keywords have been ICT, cache, codification, corruption, adaptiveness, depreciation, interruptions, blockchain, and gamification. In 2020, due to the significant impact of Covid-19 on the IS field, it emerged as the top keyword.

4 What are the most common themes and in IS research over the decade?

To analyse the most common topics and themes in information systems research over the past decade, we used CTM topic modeling. We then got the top 10 terms in each CTM topic, we went a little further to label each CTM topic based on its keywords. This gives every topic a theme. Lastly, we visualized the top words over the decade. These are words with the highest appearance over the decade.

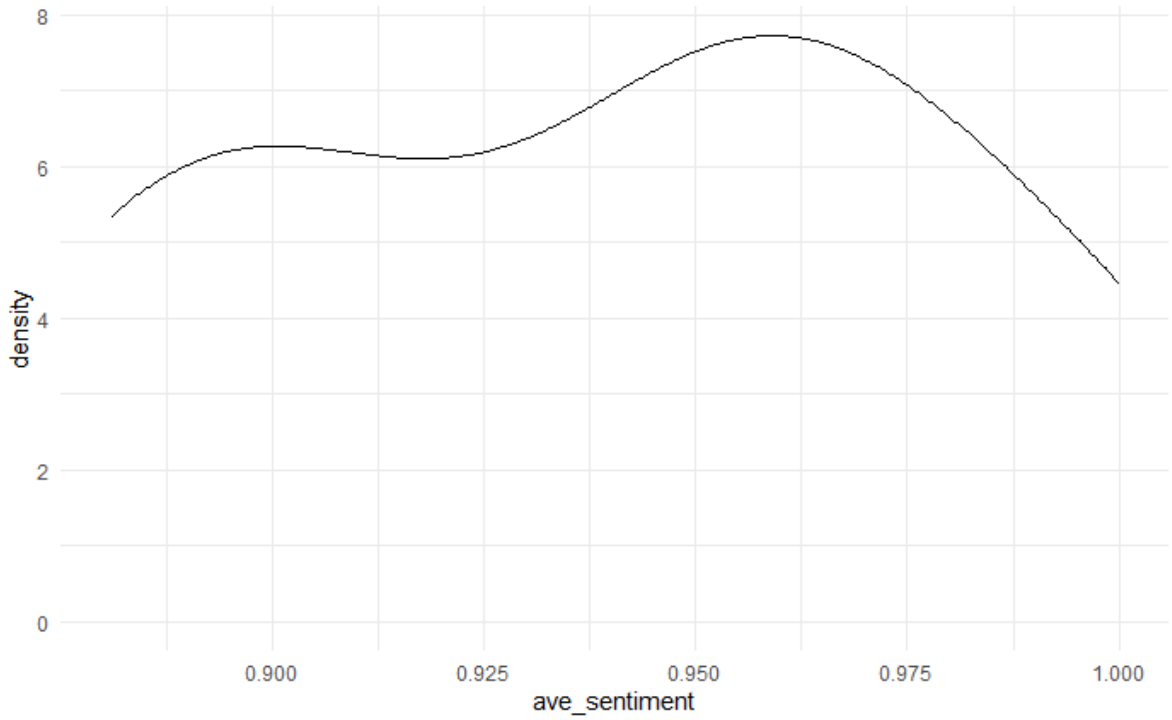


This Visualization shows the words that appeared the most in IS research from the years 2011 to 2020.

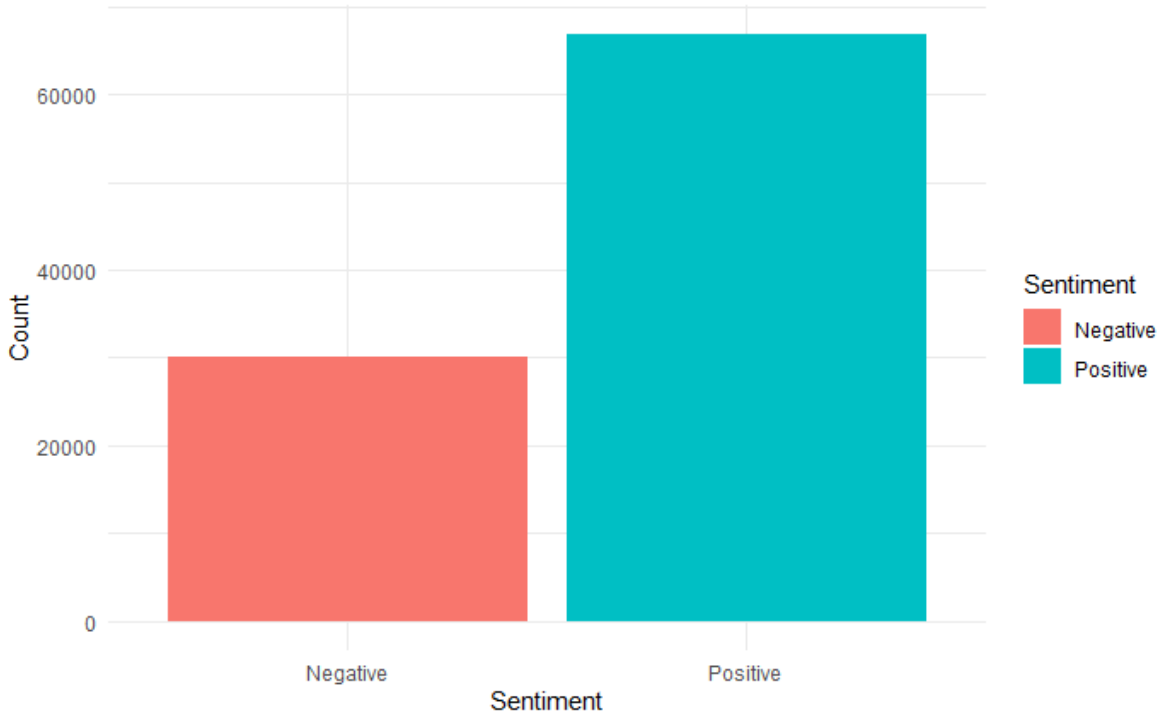


5 Sentiment Analysis

Sentiment analysis is a technique used in natural language processing to determine the emotional tone. It can identify whether the sentiment is positive, negative, or neutral. Here is used to determine the tone of the abstract column. The dataset is first grouped by 'Title' and 'Year', and the 'Abstract' text is collapsed into a single string for each group. For the visualisation the sentiment scores are rescaled to keep zero as neutral, meaning that scores above zero represent positive sentiment and scores below zero represent negative sentiment. The graph you see is a density plot of these scores. The x-axis represents the average sentiment scores, which range from -1 (negative sentiment) to 1 (positive sentiment). The y-axis represents the density of these scores. The line on the graph shows the distribution of sentiment scores. It peaks slightly above zero and then declines, indicating that the majority of the sentiment scores are positive. This suggests that the overall sentiment in the abstracts of these research papers is more positive than negative.



The second visualization is a bar graph showing the number of positive and negative words in the Abstract. From the graph it clear that the tone of the articles in IS research is positive as it has more positive than negative words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40000
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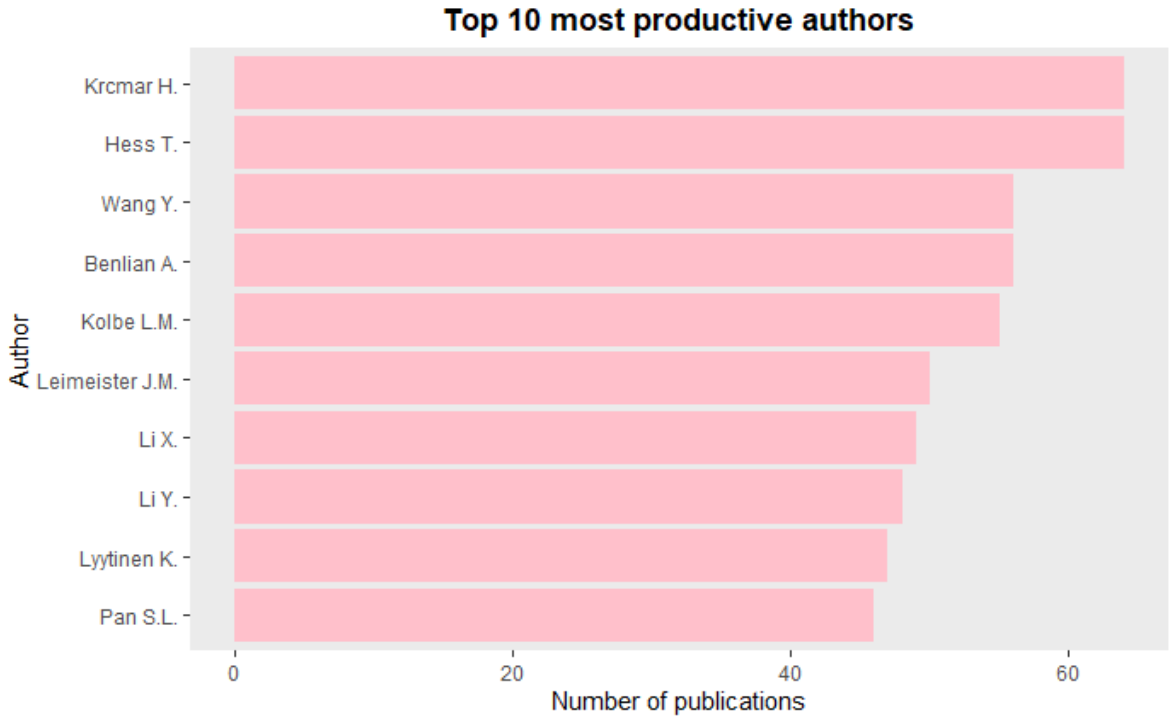
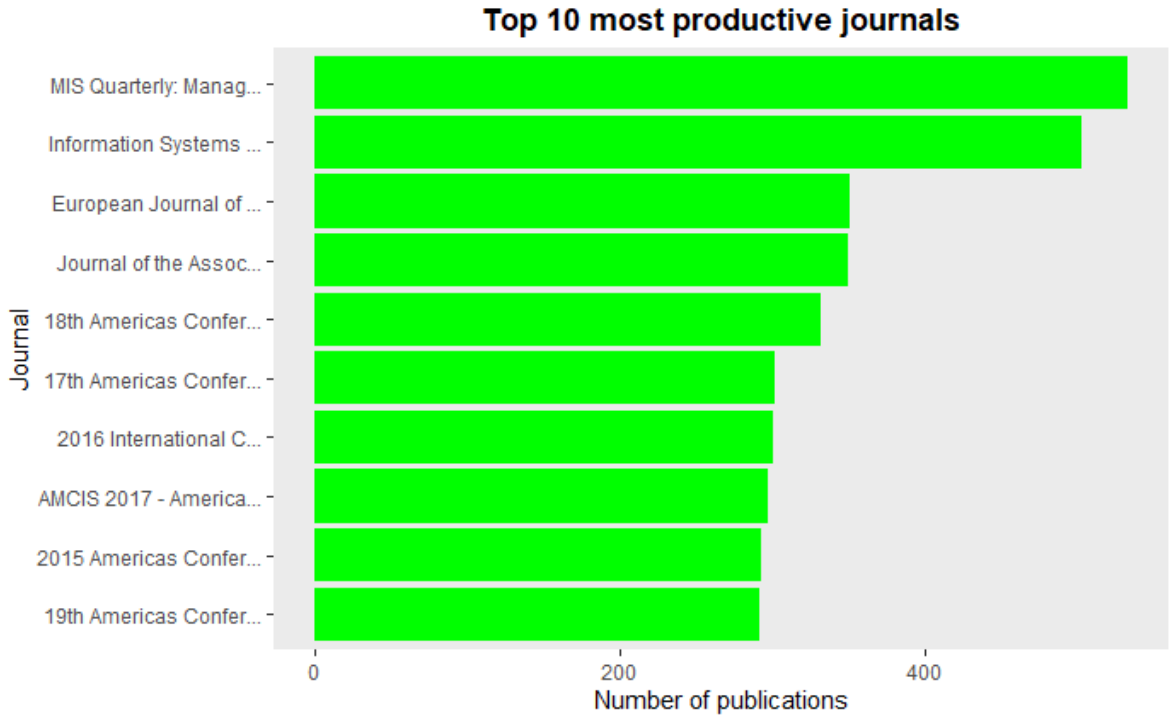
0
Count
Negative
Positive
Sentiment
Sentiment
Negative
Positive

5.1

6 Most Productive Authors in IS research over the past decade.

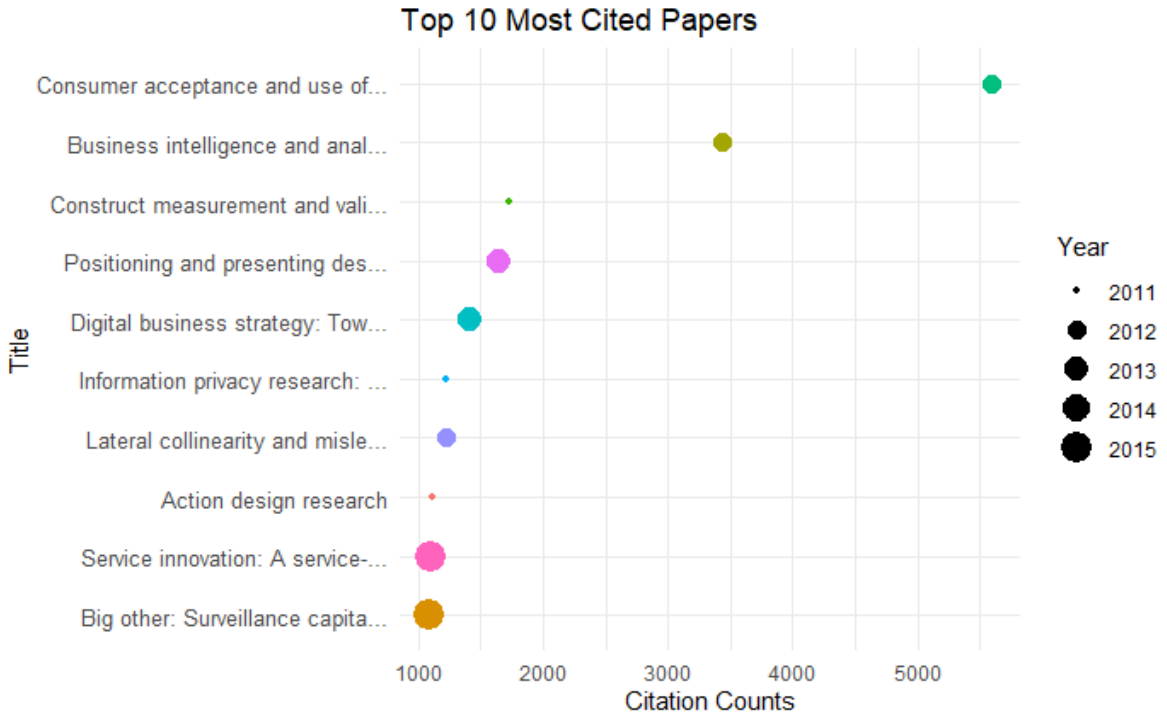


7 Most productive Journals in the Past Decade



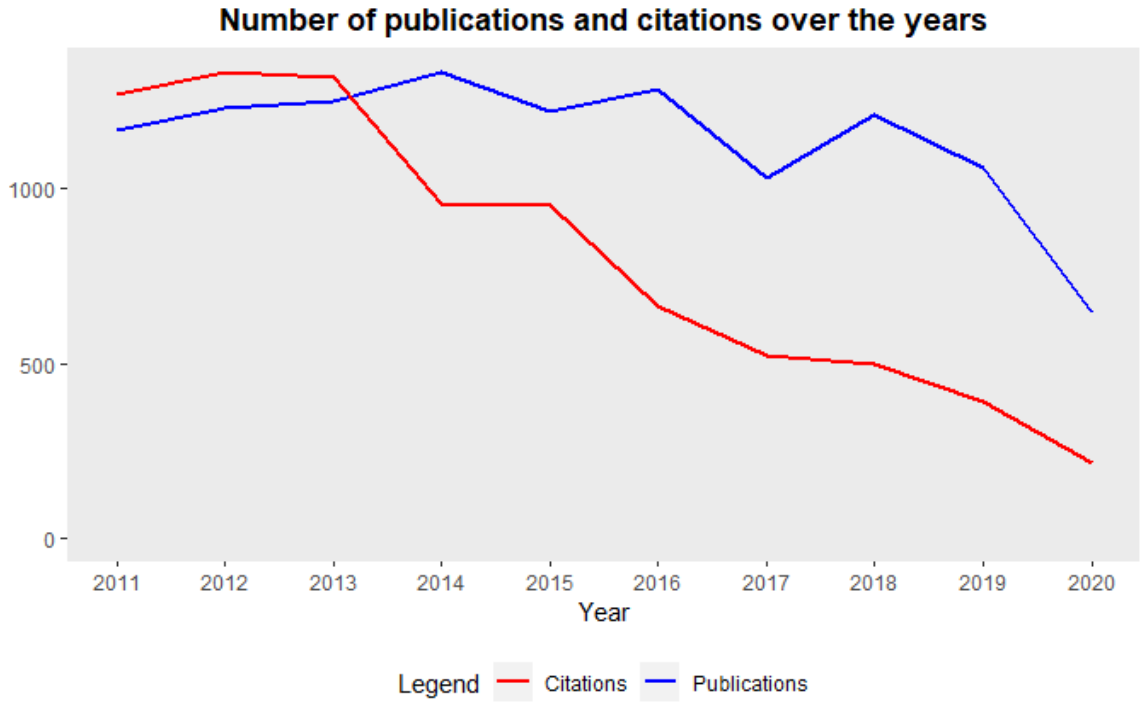
8 The most cited Articles in IS

Citation counts represent how often a research paper has been referenced by other scholarly works. In other words, it measures the influence and reach of a paper within Information Systems community. The more citations a paper receives, the greater its impact. The graph displays the top 10 most cited papers in the field of Information Systems. Each paper is represented by a colored dot, and the x-axis shows the citation counts (ranging from 0 to over 5000). The legend indicates the publication years (ranging from 2011 to 2015). Each dot's color corresponds to the year a paper was published. Consumer Acceptance and Use of Technology (2013), This paper is the most cited, with over 5000 citations. It likely investigates user acceptance of technology and adoption behavior. These highly cited papers contribute significantly to advancing knowledge and influencing industry practices in Information Systems



9 The growth in the number of publications and citations (Research Growth in IS)

The line graph presents a decade-long trend in the number of publications and citations, providing insights into the growth of research in the field of Information Systems (IS). It's evident from the graph that there has been a significant upsurge in IS research since 2020, as indicated by the increasing number of articles being published and cited. Notably, the year 2011 marked the peak of this trend, with the highest number of publications and citations recorded in the field.


Number of publications and citations over the years
1000
500
0
2011
2012
2013
2014
2015
2016
2017
2018
2019
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Year
Legend
Citations
Publications