Bibliometric Analysis of Strategic Digital Leadership to Boost Innovation in Organization

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ABSTRACT
This paper aims to give an extensive bibliographic literature review based on concepts and terms about digital leadership to boost innovation in the organization. All the supporting publications were searched in Google Scholars, Scopus, and Harzing’s Publish or Perish software. Resulting in 96 papers that qualified to be studied, ranging from 1994 to 2021. The papers were also reviewed through VOSviewer software, resulting in that strategic digital leadership can boost innovation in the organization. After screening and filtering, it can be concluded that papers on Q1 and Q2 have a more significant impact on this matter. The result is that strategic digital leadership can boost innovation in the organization. The density and network visualizations shown by VOSviewer software presented that innovation is indeed a keyword in most digital leadership-themed papers, and strategic digital leadership can boost innovation in an organization.

Keywords: Bibliometric analysis, strategic digital leadership, boost innovation.

1. INTRODUCTION

In the wake of technological advances, organizations are facing many changes in work design and leadership. These massive changes, such as the Internet and mobile computing, really break the boundaries between online and offline settings, creating a large-scale network of workers and peoples, objects, and computers, making everything can be connected [1]. The fast access to information, social networks, and instant messaging service also allows direct communications from employees to leaders on all organizational levels, changing how leadership is deployed [2].

One of the good sides of this matter is that instead of leaning towards their intuition and experience, leaders' decisions are increasingly based on thorough and smart analysis of big data stored digitally [3]. Also, now that the world is in the fight with the Covid-19 pandemic, the change is that now the employees are working from home in virtual teams, forcing contemporary leaders to have different behaviors and skills, especially the digital one. These changes are expected to change the way employees work and how they can contribute, giving innovation to the organization [4].

There are a few previous research about strategic digital leadership, a research conducted by [5] resulting in that digital leaders have different perspectives and abilities than more traditional leaders. While their research is detailed literature research, it proves that digitalization and technological developments have led organizations to transform their structures, business models, strategies, and process. According to [5] also stated that Digital Leadership is essential for an organization to survive the new digital era by transforming and adapting business strategies. To accomplish this, digital leaders shall use and improve the company’s digital data and assets.

Another researcher [6] examined how digital transformation affects organizations with key themes in leadership and work design. The result is that leaders have to increase their attention to employees' health more because digitalization has broken the boundaries between private and work life, employees could work from anywhere that resulted working is no longer defined by working hours between 8 am and 6 pm. Leaders will experience higher job demands because they will be pressured for more innovations, act with higher speed, and take more fast managerial decisions. The increased work in virtual teams may also force the...
leaders to communicate through different media that suits them and the employees. Leaders also have to be more engaging toward the employees, incorporating their employees innovation and ideas during decision making.

Based on our research and findings, there is no bibliometric analysis of how strategic digital leadership can boost innovation in an organization has been conducted. This paper aims to provide a substantial bibliometric analysis of the literature to see how strategic digital leadership can boost innovation in the organization.

This paper is organized as follows. First, we briefly review the literature relevant to the concept of digital leadership and innovation in organizations. Then, the theoretical relationship between digital leadership and innovation is described. Lastly, the discussion of the matter and the conclusion of the results.

1.1. Strategic Digital Leadership to Boost Innovation

Leadership itself is a process in which a manager or a leader intentionally influences other [7]. Leadership also functions as interpersonal information processing and a decision-making role [8]. Leadership also can be described as the management of employee relations and the exercise of authority to coordinate tasks within a company to fulfill whether it is a strategic or company operational goal [9].

Leadership is a leader's ability to drive their followers towards particular goals [10]. Divided by behavioral types, there are transactional and transformational leaders [11]. Transactional leaders are sensitive to the needs of others that, in turn, will follow them to satisfy their needs.

In Defining The Concept (Digital Leadership) by [12], Digital Leadership transcribed that a leader should do the planning, organizing, motivating, and controlling in a digital environment with the achievement of the organizational goals, where the relationship between the digital leader and the employees/ team of the organization is based on mutual trust. A Digital Leadership, according to [13], is defined by ten capabilities they are adaptability, collaborative, innovative, user-centered, self and other awareness, systemic intelligence, protects voice from below, understanding the difference between digital technology and digital culture, technology, and pace awareness.

Innovation is new creations, whether tangible or intangible material, that have significant economic value, generally made by a company/ organization and sometimes by an individual [14]. Innovations are the successful exploitation of a new idea or a knowledge mobilization, technological skills, and experience to create a new product, process, and service. Innovation is the main function of entrepreneurship [15]. Innovation can also be described as a new idea applied to initiate or fix a product, process, or service [16].

2. METHODS

A literature review provides both a comprehensive synthesis and an interpretation of the body of knowledge of a specific domain [17]. This research employed a literature review that should be conducted using a systematic, reproducible, and explicit method [18,19]. This research was also conducted as a bibliometric review generally used in scientific disciplines that focused on a quantitative study of journal papers, books, or other types of written media [20].

This research also used the five-step method adopted by [21] on their Bibliometric analysis of “Green Manufacturing” in 2018. These five steps are:

1. Defining Search Keywords

This literature search was performed in Mei 2021 by searching the keywords “digital leadership” and “innovation”. The search using Google Scholar, Scopus, and Harzing’s Publish or Perish (POp) software. The search resulted in 414 journals obtained using Scopus and PoP software in the initial search for the period from 1994 to 2021.

2. Initial Search Results

During the research, there were a lot of journals and books that were irrelevant to our search. PoP software's first results were over 1000 journals because of the keywords that are mostly general (digital, leadership, and innovation). Half of the search results from Scopus are irrelevant to the search of the 414 journals and books.

3. Refinement of the Search Results

After doing a screening and filtering manually, Table 1 below shows that there are over 200 articles and journals that have been reviewed for this research:

Table 1 Detailed search screening criteria (see online version for colors)

<table>
<thead>
<tr>
<th>Search screening</th>
<th>Number of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not relevant</td>
<td>21</td>
</tr>
<tr>
<td>Not in English</td>
<td>1</td>
</tr>
<tr>
<td>Unidentified/citation link only/rejected website</td>
<td>8</td>
</tr>
<tr>
<td>Double</td>
<td>1</td>
</tr>
<tr>
<td>Editorial/ book review</td>
<td>17</td>
</tr>
<tr>
<td>Q3/Q4 none from scimagojr list</td>
<td>38</td>
</tr>
<tr>
<td>Non-business topics</td>
<td>18</td>
</tr>
<tr>
<td>Q1/Q2</td>
<td>96</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
</tr>
</tbody>
</table>
Metrics data show by Table 2 below.

<table>
<thead>
<tr>
<th>Metrics data</th>
<th>Refinement search</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Query</strong></td>
<td>Journal, strategic digital leadership form 1994 to 2021</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td>Google Scholar, Scopus</td>
</tr>
<tr>
<td><strong>Papers</strong></td>
<td>1993365 (1994-2021) 27 years</td>
</tr>
<tr>
<td><strong>Citations Years</strong></td>
<td>124.63</td>
</tr>
<tr>
<td><strong>Cites Year</strong></td>
<td>16.83</td>
</tr>
<tr>
<td><strong>Cites Paper</strong></td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Authors Paper</strong></td>
<td>25</td>
</tr>
<tr>
<td><strong>h_index g_index</strong></td>
<td>51</td>
</tr>
<tr>
<td><strong>hI_norm</strong></td>
<td>25</td>
</tr>
<tr>
<td><strong>hI_annual</strong></td>
<td>0.93</td>
</tr>
<tr>
<td><strong>hA-index</strong></td>
<td>11</td>
</tr>
<tr>
<td><strong>Query Date</strong></td>
<td>5/31/2021</td>
</tr>
<tr>
<td><strong>year_first</strong></td>
<td>1994</td>
</tr>
<tr>
<td><strong>year_last</strong></td>
<td>2021</td>
</tr>
</tbody>
</table>

The data shown in the table above came from the data gathered from the research journals searched from Google Scholar and Scopus websites and then analyzed using POP software. After screening and filtering over 1400 journals and articles, we finally have 200 journals, books, and relevant articles for this research. Table 2 above compares a few metrics data after the search process was refined.

4. Compiling the Initial Data Statistics

After the refinement, we import the results obtained using POP into Google Scholars and Scopus, then export it into a format that Mendeley software can recognize. All of the data then analyzed, sorted, and classified to make the analysis easier, resulted in 414 journals that obtained using Scopus and PoP software in the initial search for the period from 1994 to 2021, and after the screening, we have 200 journals, books, and articles that are relevant for this research.

Over 27 years of papers, there are 10 top authors whose papers appear frequently. Davidson, Glassner, Mihardjo, and Elidjen are the top 4 with more than three papers appearing. Figure 1 show author, Figure 2. Show by affiliation, Figure 3. Show by country as a follow:

### Figure 1. By Author

### Figure 2. by Affiliation

### Figure 3. By Country

Sorted by affiliation, the journals came from Bina Nusantara University, The Ohio State University, and Monash University became the top three. Meanwhile, by country, the United States came in first.

5. Data Analysis

This paper presents the bibliometric analysis of the literature to see how strategic digital leadership can boost innovation in the organization. A bibliometric review in this paper was conducted using Harzing’s Publish or Perish software, with the supporting papers also searched from Google Scholar and Scopus. We searched on 23 May 2021, obtaining 414 papers in the initial results. After refining the results, it left us with 96 papers. As previewed in Table 2 above, these findings indicate that the refined search results (Q1 and Q2) journals are the journals that have a significant impact compared to others.

3. RESULTS AND DISCUSSION

This study shows that Q1 and Q2 journals have the most impact on the metrics based on keywords. We used the keyword "Leadership" in cluster one and showed 90 occurrences, and "digital leadership" showed 12 occurrences. "innovation" had 77 occurrences in cluster two, and "digital transformation" showed 27 occurrences. This data is shown in Table 3 below.

<table>
<thead>
<tr>
<th>Most frequent keywords</th>
<th>Keywords</th>
<th>article</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership (9 occurrences); Digital Leadership (12)</td>
<td>Transformational Leadership; Government Leadership;</td>
<td>Leadership, Digitalleadership [22]; [23]; [24]; [25];[26]; [27]; [28]; [29]; [30];</td>
</tr>
</tbody>
</table>
On Scopus, the most cited papers with the keywords “digital leadership” and “innovations” are ‘Leadership, capabilities, and technological change: The transformation of NCR in the electronic era’ by [1] that has been cited 216 times. The second most cited paper is a paper by [64] titled ‘The next 20 years: How customer and workforce attitudes will evolve’ cited 178 times. Those papers discuss how technologies evolve and their impact on the organization from employees, leadership, and working behavior.

Other than using keywords analysis using POP software, we also analyzed the keywords from papers that we collected and accounted in POP using VOSviewer software to determine what keywords were frequently occurring.

![Figure 4. Network Visualization from VOSviewer](image)

VOSviewer is used to visualize bibliometric maps by showing the bibliometric mapping using Network Visualization, Density Visualization, and Overlay Visualization. The visualization used in this paper is Network Visualization and Density Visualization.

![Figure 5. Density Visualization from VOSviewer](image)

The Network Visualization above shows three clusters of innovation that are searched with digital leadership. Four substantial clusters are divided into red, blue, green, purple, and yellow. Red with the most prominent dots showing that innovation topics on digital leadership are the most occurrence keywords, followed by technology, challenge, leader, and other topics shown that are related to the discussions. The data previewed from Network Visualization are also in line with the Density Visualization below.

### 4. CONCLUSIONS

This research is conducted with 96 papers selected from the larger 414 papers before further screening and filtering. The keywords searched for this research are “digital leadership” and “innovation” to see how strategic digital leadership can boost innovation in the organization. After screening and filtering, it can also be concluded that papers on Q1 and Q2 have a more significant impact on this matter. The result is that strategic digital leadership can boost innovation in the organization. The density and network visualizations from VOSviewer show that innovation is indeed a keyword that showed in most digital leadership-themed papers.

### REFERENCES


