Review

Hoshin Kanri Process: A Review and Bibliometric Analysis on the Connection of Theory and Practice

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Abstract: The review assesses the Hoshin Kanri process from the point of view of theory and practice implementations in different organizations. There are several adaptations of Hoshin Kanri and a wide range of tools used in each organization. This review aims to determine which and how companies have implemented the afore-mentioned methodology into their strategic management. The PRISMA statement was the framework for the present research. The structure for this study was obtained through a review of articles from two of the most important databases (Scopus and Web of Science). The review focuses on three parts: the theoretical basis of the methodology, a bibliometric overview of the selected articles, and practical insight into the implementation of Hoshin Kanri within the case-study organizations. Since the study's purpose is to determine not only the companies where Hoshin Kanri was implemented but also the reasons and results of those implementations, therefore, 26 journal articles covering detailed implementations were selected.

1. Introduction

Hoshin Kanri [1] is a process of deploying the goals and initiatives of top-level corporate management down to the lowest levels of the corporate hierarchy. Its purpose is to manage and achieve significant improvements in the performance of companies. Hoshin Kanri includes the management division into three- to five-year goals with realizable parts and actions for different levels and departments of the organization. It helps to build focus, engagement, and continuous improvement in the areas identified as the most important.

Several Hoshin Kanri adaptations have aligned the technique with Western thinking and management approaches. For example, *Policy deployment* at AT&T and Lucent Technologies, *Control for Results* at Xerox, *Goal Deployment* at Exxon Chemical, *Policy Management* at Florida Power and Light, *Hoshin Planning* at Hewlett-Packard, and *Management by policy* at Texas Instruments. Several authors have also referred to Hoshin Kanri by different names: *Policy control*, *Target and means deployment*, *Policy management*, *Providing direction*, *Direction management, and Strategy deployment* [2–4].

Many organizations have used the Hoshin Kanri methodology to align the work and activities of employees to achieve strategic goals.

At the beginning of this review, the extent of the previous analysis of this area by bibliometrics or systematic review was researched. No systematic review or bibliometrics analysis of Hoshin Kanri was found in Scopus or Web of Science databases (WoS). However, there were six reviews in the databases.

In his review, Soltero presented "how Hoshin Kanri can improve an organization's overall performance" [5]. Tennant and Roberts introduced Hoshin Kanri as a technique for strategic quality management [2]. Witcher presented the findings from the project on the use of Hoshin Kanri in the UK. The study found Hoshin Kanri "to be, in essence, a policy-led organizing framework for managing" [6].

Dias and Tenara presented a review oriented toward integrating a balanced scorecard and Hoshin Kanri [7]. This article discussed six integrated models found during the literature review. The author stated: "the different applications of each methodology in various organizations and different contexts have shown some weaknesses". Therefore, they presented a new framework, which combined the best of each approach. In this framework, Hoshin Kanri was integrated to deploy and implement the strategy in daily activities. This review did not compare the results of implementations in companies.

An interesting contribution in this area is the article by Silveira et al., who presented the evaluation results of the Hoshin Kanri guidelines [8]. The basis was a model obtained through a literature review, completed through a systematic process of expert interviews. The authors presented a set of twenty guidelines for implementing Hoshin Kanri in different types of organizations.

The literature has focused more on the Hoshin Kanri methodology and less on the implementation process. A few practical pieces of evidence exist on how to successfully introduce Hoshin Kanri, but the data are often only conceptual and theoretical. Authors compare the implemented models and looked for an ideal model for implementation. Hoshin Kanri should be solved in a wide-ranging organizational system.

The Hoshin Kanri methodology is not used to manage organizations in our region (The Visegrád group—the Czech Republic, Hungary, Poland, and Slovakia). Therefore, the aim of this review is to find out in what types of companies the methodology has been implemented and the results of those implementations. This information was obtained through a review of articles from two of the most important databases (Scopus and WoS). As the study wanted to determine not only the companies implementing Hoshin Kanri but also the reasons and results of those implementations, only journal articles covering detailed studies were selected. Other types of publications were excluded.

This review provides bibliometrics analysis and quantitative analysis of the content of the found articles. Ten research questions that were easily readable and understood were formulated to our detection code in this review. From our point of view, the research questions serve as a summary of our proposed classification.

The bibliometric analysis is intended to answer the following research questions:

RQ1: Which journals have published Hoshin Kanri's studies?

RQ2: What are the most cited articles? Who are the most productive authors?

RQ3: What are the most used keywords? What are the relationships between keywords?

The qualitative approach is used to look for answers to the following research questions:

- Research questions regarding the found articles:

  RQ4: How many companies/organizations is research focused on?

- Research questions regarding the case of companies/organizations:

  RQ5: What types of companies/organizations are studies published about?

  RQ6: Where are the case companies/organizations located?

  RQ7: From where comes the top management in the case-study companies/organizations?

  RQ8: Do the case-study companies/organizations have previous experience with Hoshin Kanri? If they are not experienced, which ones are introducing the Hoshin Kanri process?

- Research questions regarding the Hoshin Kanri process in the case of companies/organizations:

  RQ9: What is the key reason for the research or implementation of the Hoshin Kanri process?

  RQ10: What different quality tools are used? What experiences are published about Hoshin Kanri implementation in the found articles?

2. Hoshin Kanri

Hoshin Kanri is a strategic management system developed in Japan as a Management by Objectives (MbO) concept in the 1960s. It was seen as more flexible in dealing with quickly changing economic situations. The term is derived from four Chinese characters, "*Ho*" (method) and "*Shin*" (shiny metal showing direction), "*Kan*" (into control or channeling), and "*Ri*" (reason or logic), and can be translated as a methodology for setting the

strategic direction [9,10]. Although the translation of the Hoshin Kanri involves ten steps, authors have adapted the previous Western interpretation and used their own application experience to create a six-level framework: five-year vision, annual plan, deployment, implementation, monthly review, and annual review [11].

Hoshin Kanri began in Japan between 1950 and 1960. After 1970, Hoshin Kanri was widely used in the Japanese industry and quickly became one of the main elements in management. It reached Western organizations after 1980 when managerial skills were transferred from Japan. Gradually, there has been an interest in implementing Hoshin Kanri among Western experts, managers, and consultants.

Table 1 summarizes the historical background of Hoshin Kanri [1,3,9,12,13].

Table 1. History and background of Hoshin Kanri.

Leader	Activity
Gen. D. Mac Arthur (1945)	Helped Japan rebuild its economy and infrastructure after WWII, called on many American experts to help
H. Sarasohn (1946)	Headed the Civil Communication Section (CCS), established an information and education center, worked with the Japanese Union of Scientist and Engineers (JUSE)
W. A. Shewhart (1950)	Training Japanese managers and engineers in the management techniques of Statistical Quality Control (SQC)
W. E. Deming (1950)	Began training hundreds of engineers, managers, and scholars on three areas: PDCA cycle, Causes of variation, and Process control through the use of Control charts
J. M. Juran (1954)	Lecture on management's responsibility to lead quality improvement efforts. A breakthrough in the qualitative maturity of Japan
P. Drucker (1954)	Published a book in Japanese: *The Practice of management, which described the concepts of Management by Objectives* (MBO)
K. Ishikawa (1957)	Published a paper stressing the importance of management and operational policies
J. M. Juran (1960)	By the visit in Japan emphasizing the planning techniques used by Deming Prize winning companies. The techniques described were given the name Hoshin Kanri
Japan (1975)	**Hoshin Kanri was widely accepted in Japan**
USA (1980)	Hoshin planning began to creep into the USA: Xerox, HP, Texas Instruments, Florida Power Light
USA (1990)	Most US early adopters of Hoshin Kanri began to regard the process as a competitive advantage

The most important milestone was in 1968, when The Bridgestone Tire Company published a report to analyze the planning techniques used by companies that had won the Deming Prize (including Toyota). These techniques were given the name Hoshin Kanri as a management system integrated with the Total Quality Control (TQC) methodology, later Total Quality Management (TQM) [1]. The companies that implemented the method have received many awards, but the Hoshin Kanri process has not yet gained general recognition and popularity [14].

The first authentic document regarding Hoshin Kanri belongs to Yoki Akao, translated into English from the Japanese language in 1991. Experts at Toyota focused on creating five major system alignments [9]:

1. Strategic alignment;
2. Horizontal alignment;
3. Vertical alignment;
4. Process management alignment;

5.   Employee development alignment.

These five alignments were invented, tested, and refined in managerial situations. The first three present a continuous process with constant evaluation of key customer priorities. In the other two, great efforts must be made to achieve the company's competitiveness through employee involvement [9].

The Hoshin Kanri process starts with senior management assigning strategic goals to middle management, which gradually cascades to lower departments, implementation teams, and are evaluated from the bottom up. It is step-by-step planning with a change control in place [15,16].

Achieving the desired results of the organization with Hoshin Kanri is possible through employees who understand the long-term direction and are involved in designing steps. The aim is to apply staff working directly in the process with a specific problem so that they can propose a potential solution [15]. The result is increased sophistication and specification of performance plans at lower levels of the organization. This cascade model works on the PDCA cycle principle, representing a scientific approach to the control and continuous improvement of daily activities. Top management identifies the goals, which initiate the Hoshin Kanri cycle extended by unique components. The cycle begins with a *Plan phase* that moves to lower organizational levels as a set of annual hoshins. These are the goals for the lower level of the organization. The *Do phase* ensures that each level implements its plans through activities to realize the identified objectives in the Plan phase. Furthermore, the *Check phase* focuses on a set of planned periodic evaluations that measure the progress of each hoshin target and identify a planning deficiency. Over time, it comes to the *Act phase*, in which the organization decides what worked well or should be changed. The organization will complete the cycle by analyzing the data and examining the steps for the following year [12,15].

As is the most recurring, the most used model is the FAIR model developed by [17]. FAIR is an acronym that relates to the PDCA cycle [3,8,18]:

1. *Focus (Act)*—involves selecting a few vital strategic priorities for the year. Priorities are innovative breakthrough changes required to accomplish the company's medium- and long-term objectives. They represent the corporate strategic direction and are referred to as "*Hoshins*".
2. *Alignment (Plan)*—annual policies are developed and deployed vertically and horizontally throughout the company using the catchball mechanism.
3. *Integration (Do)*—the performance targets and action plans agreed upon by using the catchball mechanism is integrated into the work routine, so the progress on targets and plans are properly managed.
4. *Review (Check)*—the last step involves conducting an annual diagnosis by top management to check how the company uses Hoshin Kanri. The annual diagnosis provides insights that fuel the selection of policies for the next annual cycle of the Hoshin Kanri process.

There is a strong relation between Hoshin Kanri and Balanced Scorecard (BSC) in its role as a strategic framework. Kaplan et al. [19] describe BSC in their book: "BSC is initially introduced as a performance measurement system and draws the organization's strategic route by focusing on cause and effect relationships between strategic objectives." The BSC was developed as a model that focused on transforming an organization's vision and strategy into goals, actions, and objectives from four perspectives: financial, customer, internal business processes, and learning and growth. Since its publication, it has been widely used by academics and practitioners.

Cross-functional management is necessary for the successful implementation of Hoshin Kanri, along with a concept known as Catchball. The term catchball refers to an interactive process in which information and ideas are "thrown" and "caught" vertically and horizontally throughout an organization. Catchball consists of discussions and feedback about goals and the means to achieve them. During the process, goals can be changed, and different resources can be allocated to them [8,12,20–22].

Catchball is a Western term, but for the Japanese, this process of negotiation and consultation to reach an agreement is known as "Nemawashi". Nemawashi is an aspect that is present in a range of formal and informal habits in decision-making processes, which prepare the "roots" for sharing and discussing ideas and making decisions. Returning to the central principle of catchball, the action plan is to propose ideas. This proposition is then passed on to the manager, who will check the proposition's effectiveness. The main activities [3,8,11,15] in catchball methodology are:

1. Define horizontal catchball—during this activity, the manager responsible for the higher-level performance plan gathers all managers with draft performance plans, evaluated in cross-functional consistency. Gaps, discrepancies, and other discrepancies are identified.
2. Define vertical catchball—once the cross-functional discrepancies are resolved, the performance plan is reviewed and discussed with the manager responsible for the higher-level performance plan. This ensures vertical consistency and the ability to provide defined enhancements.
3. Define review and reporting process—includes the definition of a review and reporting mechanism (who, whom, when, where, and what) during implementation.

Although this has not been mentioned much in the literature, practitioners consider the X-Matrix the main tool in implementing the catchball mechanism [23]. An X-Matrix is a chart or diagram that makes a correlation matrix between targets and actions. The X-Matrix and other formats of the correlation matrices use a cascading control process. This process is as Quality Function Deployment (QFD) and has gradual strong, medium, and weak relationships between strategy and processes and goals and actions.

As the policies are integrated into management routines, they should be regularly monitored, and inspections carried out systematically. After the Hoshin Kanri process in its annual cycle, top management must make a diagnosis. This diagnosis is commonly referred to as a Top Executive Audit (TEA) [18]. During the TEA, top management members visit the work areas and speak directly to employees. The idea is that co-workers at lower levels will be allowed to reflect on how their daily actions affect the company's strategy.

All organizations practice some form of Hoshin Kanri because they communicate about goals and try to implement mechanisms to achieve them. If a company enhances its strategic capabilities, planning, and process management, Hoshin Kanri will bring benefits. It has three important components: the goal, the means to achieve the goal, and the metric, according to which the achieved goal/success is measured [12].

3. Methodology

According to PRISMA [24] international standards, a bibliometrics analysis and review were conducted to answer our research questions. Our objective was to identify a set of original empirical research articles/studies in the field of deployment of Hoshin Kanri.

In February 2022, data were collected from two main databases: Scopus by Elsevier and Web of Science (WoS) by Clarivate Analytics. These international databases were used to find articles containing the search string/keyword "hoshin kanri" or "hoshin planning" (title-abstract-keywords).

The selection criteria were based on the PRISMA statement. The initial result set included journal articles (published or in press) only in English with the timespan set to "all years". In all, 126 articles were found, out of which 71 were in the Scopus database and 55 in the WoS database (without book chapter articles). Up to 40 duplicate articles were removed. Screening (abstract and title), during which inclusion/exclusion criteria were applied, started with 86 articles. Three researchers conducted this review using the same descriptors and inclusion/exclusion criteria.

Each article had to meet the inclusion criteria and not match any exclusion criterion defined in Table 2. Articles were included if they presented empirical research focused on Hoshin Kanri and published in English. Studies/articles were excluded if they did not focus on Hoshin Kanri as the main method or if they presented non-empirical or purely

theoretical research. Literature reviews, book chapters, conference proceedings, books, or other types of publications except for journal articles were excluded.

Table 2. Inclusion and exclusion criteria.

Inclusion Criteria	Exclusion Criteria
Hoshin Kanri context	Not oriented on Hoshin Kanri
English language	Other language than English
Journal articles	Literature reviews, book chapters, conference proceedings, books, or other types of publications
Empirical research	Non-empirical, purely theoretical research
Abstract available	Empty abstract
Full text available	Unavailable full text

The screening phase started with 86 articles. Nine articles were excluded because of the criteria. The full text of 15 articles could not be retrieved. The full texts of 62 articles were assessed for eligibility. After that, 36 articles were excluded: 11 articles did not focus on Hoshin Kanri as the main or deployed method, and 25 articles were purely theoretical without empirical research. The remaining 26 articles were included in this review. Figure 1 shows the PRISMA flow diagram of this process.
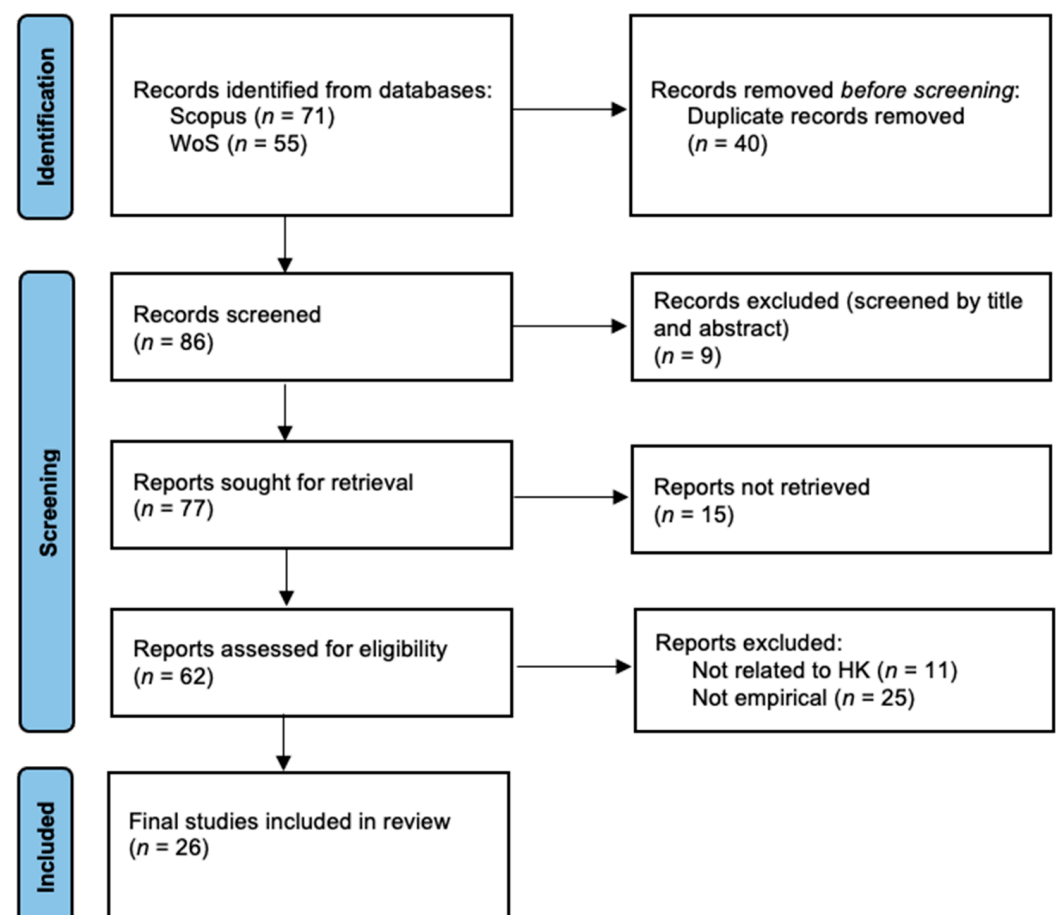
**Figure 1.** Flow diagram by Prisma 2020.

In the data extraction phase, 26 articles (Table A1) were selected for analysis to identify the answers to the research questions. Data including bibliographic information, implementations (type, number of implemented companies/organizations), companies/organizations (characteristics, location, top management, previous experiences with

Hoshin Kanri), Hoshin Kanri process in case companies/organizations (key reason, tools, experiences) were collected.

4. Results

4.1. Bibliometric Analysis

This section presents a bibliometric overview of the selected articles. For this analysis R package Bibliometrix [25] was used. The dataset contained 26 articles from 22 journals published between 1996 and 2021 (Figure 2).
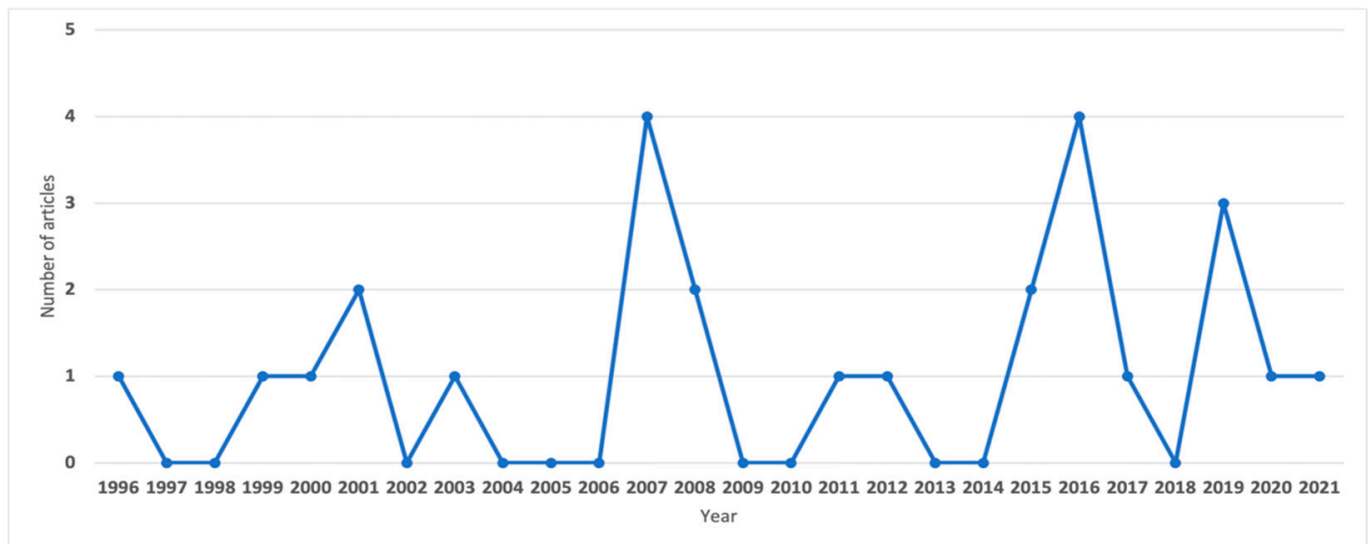
Figure 2. Number of articles per year.

4.1.1. Which Journals Have Published the Hoshin Kanri Studies? (RQ1)

The selected articles were published in 22 journals. Table 3 presents a list of journals, with a number of articles, journal's quartile, and SJR (SCImago Journal Rank, the year 2020). The first 4 journals published two articles each, and the other 18 journals only one article each. Fourteen articles were published in Q1 journals, seven in Q2 journals, four in Q3 journals, and two in non-quartile journals. The best-rated journals are the *Journal of Management Studies* (one article), *Long Range Planning* (two articles), and *International Journal of Project Management* (one article). No journal has published significantly more articles in this research area.

4.1.2. Which Are the Most Cited Articles? Who Are the Most Productive Authors? (RQ2)

The selected articles had 408 citations and 1036 references. Figure 3 presents the average citations per year. Table 4 shows the top ten most cited articles. Out of 10 articles, all but 2 were published in high-ranking journals (8—Q1 journals, 2—Q2 journals). Witcher B. J., the first author of the most cited article [26], is also the most productive author (Figure 4). The second and the third place belong to his co-authors. This connection is confirmed by the authors' collaboration networks (Figure A1). Witcher B. J. and his articles are also important in our co-citation analysis (Figures A2 and A3). It is confirmed that both Witcher as an author and the published articles had a high citation rate. The author has worked at Norwich Business School, University of East Anglia, United Kingdom, and was mostly active in 1993–2012 (Scopus).

Table 3. Journals.

Journal	Number of Articles	Quartile (SJR) [1]
Long Range Planning	2	Q1 (3.85)
Journal of Manufacturing Technology Management	2	Q1 (1.29)
Total Quality Management and Business Excellence	2	Q1 (0.73)
TQM Journal	2	Q2 (0.54)
Journal of Management Studies	1	Q1 (4.40)
International Journal of Project Management	1	Q1 (2.76)
International Journal of Operations and Production Management	1	Q1 (2.16)
British Journal of Management	1	Q1 (2.41)
Managing Service Quality: An International Journal [2]	1	Q1 (1.17)
Management Decision	1	Q1 (0.92)
The Joint Commission Journal on Quality Improvement [3]	1	Q1 (0.84)
Business Process Management Journal	1	Q1 (0.67)
Benchmarking	1	Q2 (0.64)
Team Performance Management	1	Q2 (0.43)
Managerial Auditing Journal	1	Q2 (0.42)
Measuring Business Excellence	1	Q2 (0.34)
International Journal of Renewable Energy Research	1	Q3 (0.31)
Lecture Notes in Business Information Processing	1	Q3 (0.21)
Journal of International Education in Business	1	Q3 (0.25)
Direccion y Organizacion	1	Q3 (0.18)
Australian Journal of Basic and Applied Sciences	1	x
Sigma Journal of Engineering and Natural Sciences-Sigma Muhendislik ve Fen Bilimleri Dergisi	1	x

[1] https://www.scimagojr.com (accessed on 12 April 2022). [2] Continued as *Journal of Service Theory and Practice*. [3] Continued as *The Joint Commission Journal on Quality and Patient Safety*.
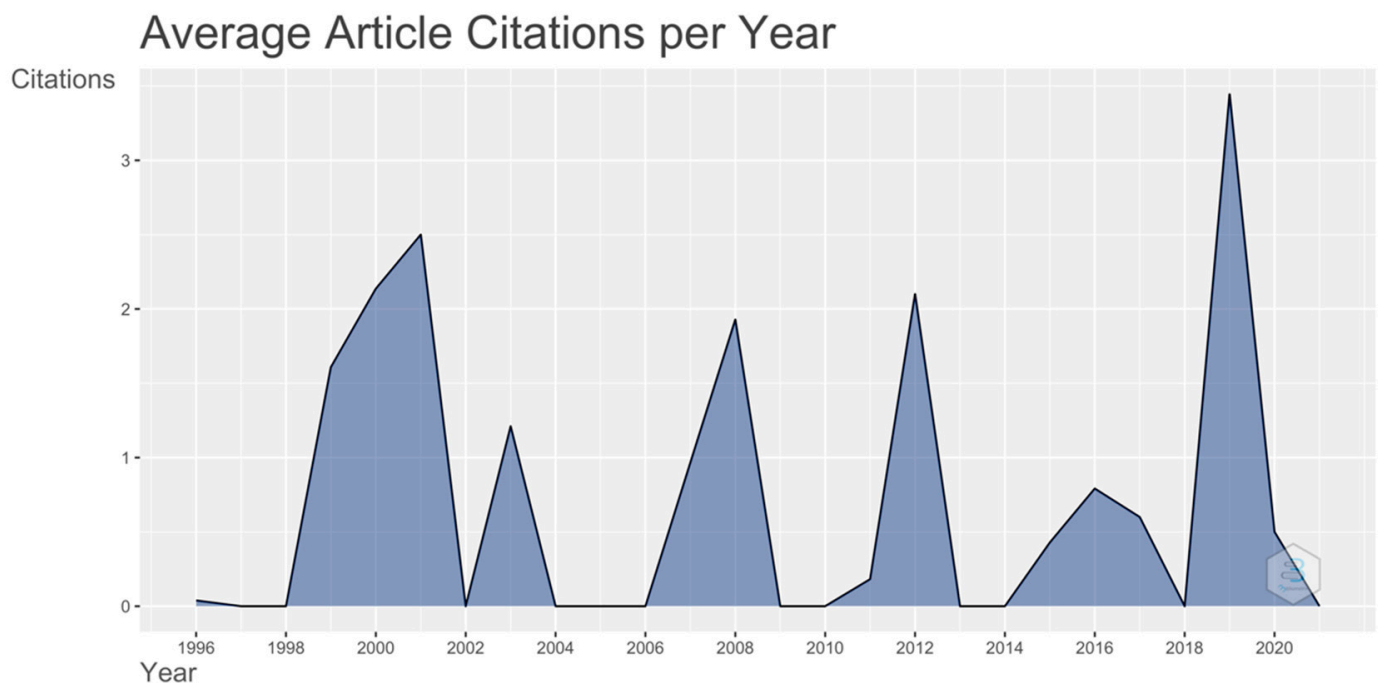

Figure 3. Average article citations per year.

Table 4. The most cited articles.

Rank	Authors, Years	Title	Journal	NC [1]
1	Witcher B. J., Butterworth R., 2001 [26]	Hoshin Kanri: Policy management in Japanese-owned UK subsidiaries	Journal of Management Studies (Q1)	56
2	Tennant C., Roberts P., 2001 [27]	Hoshin Kanri: Implementing the catchball process	Long Range Planning (Q1)	49
3	Pun K. F., Chin K. S., Lau H., 2000 [28]	A QFD/hoshin approach for service quality deployment: A case study	Managing Service Quality: An International Journal (Q1)	47
4	Witcher B. J., Chau V. S., Harding P., 2008 [29]	Dynamic capabilities: Top executive audits and hoshin kanri at Nissan South Africa	International Journal of Operations and Production Management (Q1)	37
5	Witcher B. J., Butterworth R., 1999 [30]	Hoshin Kanri: How Xerox manages	Long Range Planning (Q1)	37
6	Asan Ş. S., Tanyaş M. 2007 [31]	Integrating Hoshin Kanri and the balanced scorecard for strategic management: The case of higher education	Total Quality Management and Business Excellence (Q1)	29
7	Tennant C., Roberts P., 2003 [32]	The creation and application of a self-assessment process for new product introduction	International Journal of Project Management (Q1)	23
8	Witcher B. J., Chau V. S., 2012 [33]	Varieties of Capitalism and Strategic Management: Managing Performance in Multinationals after the Global Financial Crisis	British Journal of Management (Q1)	21
9	Gonzalez M. E., 2019 [34]	Improving customer satisfaction of a healthcare facility: reading the customers' needs	Benchmarking (Q2)	19
10	Chau V. S., Witcher B. J., 2008 [35]	Dynamic capabilities for strategic team performance management: The case of Nissan	Team Performance Management (Q2)	17

[1] Number of citations.
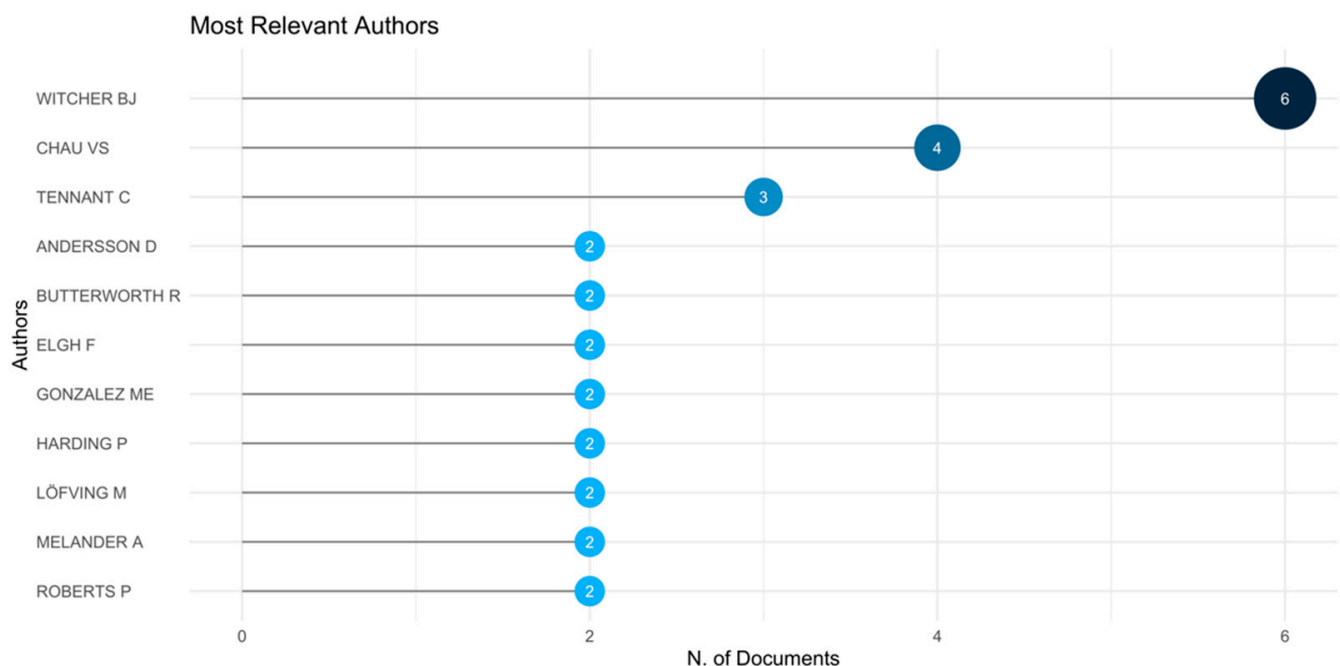
Figure 4. Most productive authors.

4.1.3. What Are the Most Used Keywords? What Are the Relationships between Keywords? (RQ3)

The selected data contain 61 author's keywords. Four articles did not have the author's keywords. After unifying different names of the same terms, 56 author's keywords were obtained. The most frequently used keywords were "hoshin kanri" (f = 17), "strategic management" (f = 7), "quality function deployment" (f = 4), "balanced scorecard" (f = 3), "benchmarking" (f = 2), "competences" (f = 2), "implementation" (f = 2), "performance

management" (f = 2), "policy deployment" (f = 2), "sme" (f = 2), "strategic planning" (f = 2), and "tqm" (f = 2). Figure 5 shows the author's keywords' word cloud.

Figure 5. Author's keywords.

The author's keywords co-occurrence analysis was used to find the relationship between keywords. Figure 6 shows the author's keyword co-occurrence network generated by Biblioshine for R Bibliometrix package [25]. Each node is one author's keyword with a proportional size based on the strength of its co-occurrence; each edge represents the nodes' co-occurrence connection. As it was expected, "Hoshin Kanri" was the most frequent keyword and had the strongest co-occurrence with "strategic management", "quality function deployment", "balanced scorecard", "policy deployment", "TQM", "competences", "implementation", "sme", "benchmarking", "strategic planning", "performance management", "chief executives", and "auditing". Figure 6 shows that the two main clusters of Hoshin Kanri-related studies are "Hoshin Kanri" (green) and "Strategic management" (blue). Small clusters (pink, red, light green, yellow, purple, grey, and brown) represent keywords with a single connection between nodes.

4.2. Analysis of the Selected Articles

Companies and organizations that implemented Hoshin Kanri and the countries they operated in were extracted from all articles (Table A1). These companies were divided into four basic groups (RQ5): large companies (Table 5), SMEs (Table 6), healthcare organizations (Table 7), and education organizations (Table 8). If several articles discussed the same company, they were merged. A total of 42 companies were identified in 26 studies (RQ4). These studies were further split into the following groups:

1. The first group included two studies (Table 5, white section). These research studies bring analysis and comparison of management processes in several large companies. Chiarini [36] and Witcher and Butterworth [26] are integrated into this group.
2. The second group included eight studies (Table 5, light grey section). The common element of studies in this group shows that the implementation of Hoshin Kanri incorporates companies such as Nissan Motor Company, Land Rover, and Xerox.
3. The third group included seven studies about large companies (Table 5, grey section).
4. The fourth group included three studies about SMS companies (Table 6).
5. The fifth group included three studies of organizations from the healthcare area (Table 7).
6. The sixth group included three studies concerning the implementation of Hoshin Kanri at universities (Table 8).

Table 5. Large companies (first group, second group, and third group).

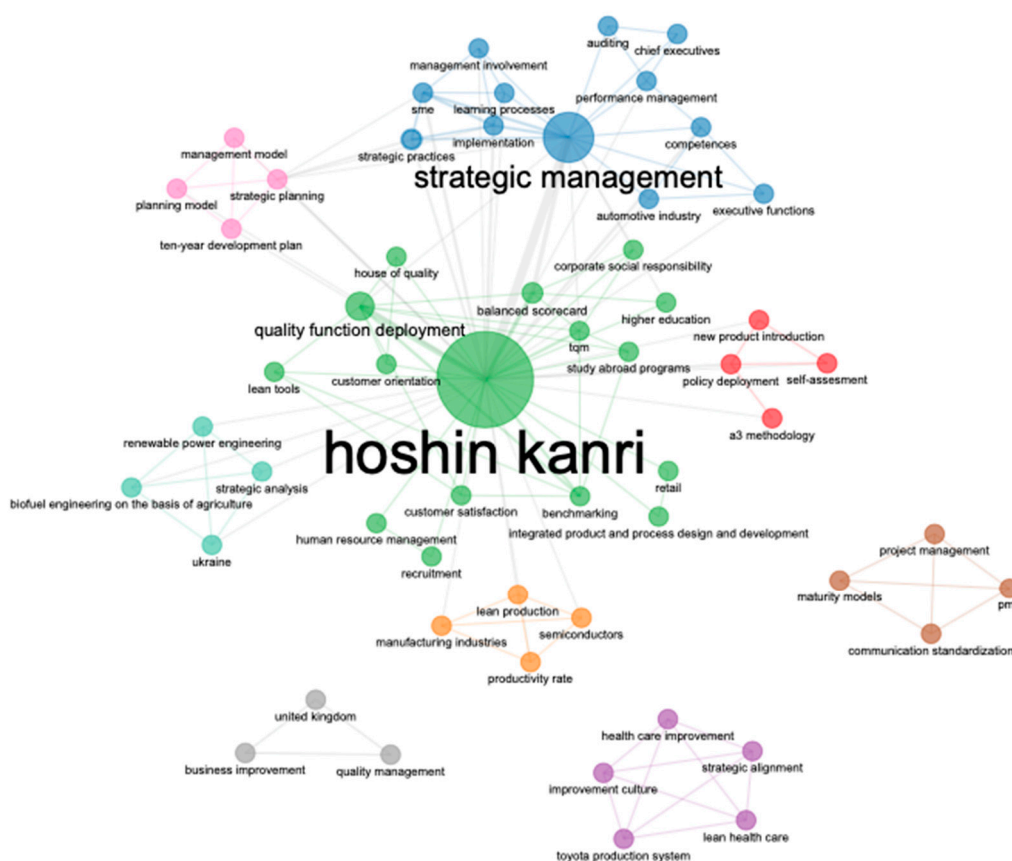| Article	Company	Country
[36] (Chiarini, 2016)	• Industrial filters • Oil and gas • Oil and gas • General contractor • Food • Firearms • Engineering • Motorcycle components • Automotive components • Automotive components	Italy Germany Italy France Italy Italy France Spain Italy Italy
[26] (Witcher and Butterworth, 2001)	• Supplier of pressed steel parts • Manufacturer of bearing • Manufacturer of car components	UK UK UK
[33] (Witcher and Chau, 2012) [35] (Chau and Witcher, 2008)	• Automobile manufacturing company Nissan Motor Company	Japan
[29] (Witcher et al., 2008) [18] (Witcher et al., 2007)	• Automobile manufacturing company Nissan Motor Company	South Africa
[32] (Tennant and Roberts, 2003) [27] (Tennant and Roberts, 2001)	• Land Rover	UK
[30] (Witcher and Butterworth, 1999)	• Xerox	UK
[37] (Villalba Díez and Ordieres Meré, 2016)	• Global equipment manufacturer	Global company
[38] (Yang and Su, 2007)	• Semiconductor	Taiwan
[39] (Su and Yang, 2015)	• High-tech manufacturing	Taiwan
[28] (Pun et al., 2000)	• The manufacturing engineering laboratory	Hong Kong
[40] (Yazdi and Mennatib, 2011)	• Porcelain factory	Iran
[20] (Tortorella et al., 2019)	• Auto parts manufacturing company	Mexico
[41] (Ozkavukcu and Durmusoglu, 2016)	• Food retail	Turkey
[42] (Yakubiv et al., 2020)	• Biofuel engineering development	Ukraine

Figure 6. Author's keywords' co-occurrence network.

Table 6. SMEs (fourth group).

Article	Company	Country
[14] (Löfving et al., 2021) [43] (Melander et al., 2016)	• Sawmill • Supplier to sport and activity centers • Manufacturer of entrances • Manufacturer of building components • Manufacturer of houses • Sub-supplier of sheet metal • Manufacturer of modular buildings	Sweden Sweden Sweden Sweden Sweden Sweden Sweden
[44] (Tennant, 2007)	• Metal	UK

Table 7. Healthcare organizations (fifth group).

Article	Company	Country
[34] (Gonzalez, 2019)	• Medical center	USA
[45] (Simon and Houle, 2017)	• Alberta Health Services	Canada
[46] (Hyde and Vermillion, 1996)	• Residential psychiatric center	USA

Table 8. Education organizations (sixth group).

Article	Company	Country
[47] (Gonzalez et al., 2019)	● Four universities	USA
[48] (Triana et al., 2015)	● University Jose de Caldas	Colombia
[31] (Asan and Tanyaş, 2007)	● One study program	Turkey

4.2.1. The Case Companies/Organizations Location (RQ6, RQ7)

In the selected articles, 42 companies/organizations that deployed Hoshin Kanri were identified (Education—6, Healthcare—3, SMEs—8, LE—25). In some studies, the authors reported several implementations from different countries. The most companies presented (Chiarini, 2016) were 10 companies from four EU countries (France, Germany, Italy, and Spain). Most companies were from Sweden (seven companies, two articles), the UK (six companies, five articles), the USA (six organizations, four articles), and Italy (six companies, one article). Figure 7 provides an overview of the implementing countries. Among the 25 large companies, 10 had Japanese management (RQ7).

The group of large companies could be further subdivided into companies operating in Europe, Asia, and other countries such as Iran, Mexico, and Turkey. All companies from the second subcategory had Japanese management and operated in Japan, Taiwan, Hong Kong, or South Africa (a branch of a Japanese company). The healthcare group was composed only of companies from the USA and Canada, and the SMEs group contained companies from Sweden (VINNOVA project) and the UK. The education group was more diverse; each implementation came from different countries.

No Hoshin Kanri implementation was found in our area, but in Europe, there are implementations in Sweden (7—SME implementations), the UK (5—large companies and 1—SMEs implementations), Italy (6—large companies implementations), Germany (1—large company implementation), Spain (1—large company implementation), France (1—large company implementation) and in Ukraine (1—large company implementation). While there are 23 implementations, they appear only in seven countries.

4.2.2. Studies of the First Group

The research analysis published in [36] compares whether the Hoshin Kanri can achieve the same results as BSC. The comparison obtained results of 10 companies from four European countries (France, Germany, Italy, and Spain). Hoshin Kanri was implemented for all the monitored companies over many years, and the relevant conclusion is that "Hoshin Kanri is a good alternative for managing and deploying corporate social responsibility (CSR) strategies. The flexibility and suitability of the managing strategies have been confirmed." Ten companies from this study implemented several strategic, environmental, safety, health goals, and CSR goals in general. The main ones were a better relationship with employees, community, and unions, ensuring a better place to work, health, and safety at work. Then, being a green company, being more responsible for the environment, and improving supply chain sustainability.
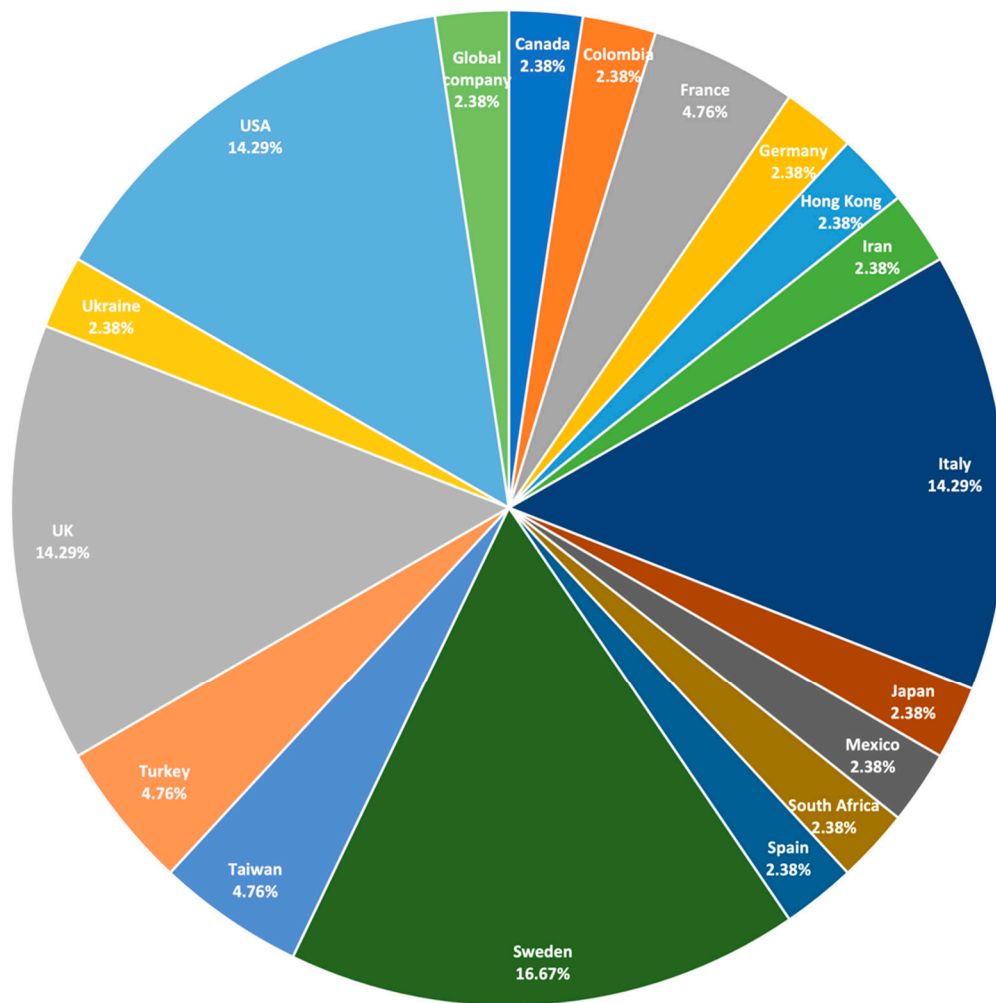
Figure 7. Implementing countries.

The case study [26] processes two years of research on three Japanese subsidiaries based in the UK. The mentioned companies had a long-term implemented Hoshin Kanri. The main data collection tool was a pre-prepared series of 100 interviews in each of the case companies. The case study provides a unique point of view to research in this area with a sophisticated theoretical framework and an extensive discussion of individual problems in their companies with Hoshin Kanri. Hoshin Kanri overcomes the difficulties in compiling a list of goals and CSR goals in a particular group.

The first case company "had saved millions of pounds and had markedly improved its supplier status: in 1997, it had been recognized as its main customer's most improved supplier." Nevertheless, they had a problem sustaining the Hoshin Kanri due to neglect of review meetings in the organization. The problems came with a change of general manager when the responsibility for Hoshin Kanri in the whole organization remained unclear. The second case company had formulated many goals, which represent a big problem for sustaining Hoshin Kanri. The main objectives of the Hoshin Kanri policy were determined through a form of catchball called nemawashi. The organization's annual policy remained in force, but after the implementation of sent confusing signals to the workforce. In the third case, there was a problem of sustaining the company's state of transition from a functionally based to a process-led organization.

The focus of Hoshin Kanri's implementation for the studies of the first group was the QCDE targets: Quality (primarily customer issues), Cost (financials), Delivery (innovation, logistics), and Education (Employee issues). The main mission is to achieve the lowest cost base for manufacture, consistent with high quality and service levels. Senior managers

agreed that Hoshin Kanri is so flexible container, where you can manage every kind of strategy. There is no limitation in terms of the number and typologies of strategies.

4.2.3. Studies of the Second Group

These companies have a sophisticated management strategy with implemented specific elements and tools that are characteristic only of that company. The studies could be divided into the following:

- The studies of the Nissan Motor Company [18,29,33,35].
- The studies of Land Rover: [27,32].
- The case study of Xerox: [30].
- The case study of global equipment manufacturer: [37].

A common element for [18,29,33,35]. is the elaborate manner system TEAs, which "is defined as a detailed audit performed to obtain an overview of each activity that is supporting the company's stated strategic goals and objectives" [35].

Chau and Witcher [33,35] discussed the Hoshin Kanri program in the Japanese branch of Nissan. TEAs are a common integral part of the FAIR strategy.

Study [29] referred that the outputs of the audits help to inform employees about strategic goals.

With the arrival of a new manager in Nissan South Africa [18], Hoshin Kanri and the concept of TEAs was implemented in its company: "TEAs are a very important and integrative aspect of the holistic management of the organization. TEAs are also crucial to Hoshin Kanri and facilitate operational effectiveness." Informal structured audits were realized in every department in order to investigate the performance of the department.

In articles [27,32], they are developing a management process in the Rover Group. Article [32] focuses on the new product introduction process of the Freelander. The authors indicate that the lead-time for the Freelander program demonstrated levels of performance that were 19% faster than the European average and 6% faster than the Japanese average, compared to the results from the International Motor Vehicle Program.

The challenge for [27] is the effectiveness of the catchball process because the time required to complete it (across the nine key business processes involving 700 managers and lasting 12 months) is very demanding. Therefore, it is proposed to implement the new Delphi technique into the catchball process, which has become more efficient.

Witcher and Butterworth [30] contain six key points for implementing Hoshin Kanri in the company Xerox. The Blue Book specified Vital Few Programs. After the second implementation of the Hoshin Kanri reduced elements from 42 to 24, which clearly created a program for employment.

Villalba et al. [37] presented "Hoshin Kanri Tree", which "can be understood as a KPI-driven (KPI- Key Performance Indicators), behavioral process management method". The case of study is the use of Hoshin Kanri "to standardize communication among the process-responsible members at the Project management Offices".

The fundamental conclusion of the study is that when implementing management strategies, sufficient time, discipline, commitment, and awareness of each team member are essential.

The main reason for implementing Hoshin Kanri in studies of this group is their Japanese management.

4.2.4. Studies of the Third Group

The case studies [38,39] describe the EIDPER (Envision—Identify—Diagnose—Prioritize —Execute—Review) extension model for planning and implementation of Hoshin Kanri in the company, which does not have previous practical experience with Hoshin Kanri.

Executive management communicates its vision and mission and the defined "core team" implements this model in the case company. It is a study where the improvement of the planning process in human resource management is implemented. A common feature of both studies is the positive implementation of Hoshin Kanri in the case of companies. Su et al. [39] stated that "The results successfully reduce interview waste by 40% through

ECRS (Elimination, Combination, Regrouping, and Simplification) analysis and apply a new concept to forecast an HR plan to smoothen recruitment plan execution." The study describes a semiconductor manufacturing company based in Taiwan, whose number of plants doubled, and thus the number of employees. It is a functional company with multiple layers, resulting in complex communication during daily operations. The company adopted formal strategic planning and issue-based planning, and therefore, redundant activities and wastes were duplicated in the limited resources, including manpower and capital investment. Yang et al. [38] stated that "Labor productivity was improved by 6 percent over a two-year period."

The case study [28] described implementing a 13-step guideline for the quality strategy development at the organization Manufacturing Engineering Laboratory. The Hoshin Kanri was thus employed to improve strategy deployment processes. It linked the strategic vision to daily operations and measured the improvement goals of the service organization.

A3 methodology was used to integrate decision variability into the Hoshin Kanri process [20]. A better coordination of strategies and initiatives is needed across the company. This approach "allows visual, logical, continual and easy-to-track verification of targets and means throughout its implementation timescale".

The article [41] contains a design framework for Hoshin Kanri for retail food organization. The paper describes in detail the first stage, and the following stages are shown in the project plan. In an Industry 4.0 world, organization has to pay attention to increasing customer expectations and has to focus on customer experience.

Yakubiv et al. [42] offer an innovative approach for the development of biofuel engineering based on Hoshin Kanri. The authors built a "forecast of change development pace of biofuel production in Ukraine up to 2025". It is the only study that implements Hoshin Kanri in the agriculture sector for the country. This approach addresses economic, political, social, and technological factors.

Yazdi and Mennatib [40] combined using strategic planning, BSC, QFD, and Hoshin Kanri for organizational planning and company development. Hoshin Kanri served to eliminate weaknesses and set goals focused on creating an excellent company.

The main reason for the introduction of Hoshin Kanri [39] is business fluctuation, which affects the HR plan, leading to manpower shortage or overflow; thus, the company spends considerable time attempting to fulfill the hiring gap or handling the redundant manpower. Streamlining human resource processes with the EIDPER model will create organizational value and consider potential applications to improve service shortages, training efficiency, or cost reduction. The introduction of Hoshin Kanri [38] was due to changes in the workload of employees in order to maintain satisfactory customer requirements for product quality or reliable delivery times, and to improve operational efficiency.

The reason for the introduction of Hoshin Kanri in study [28] was to improve the current provision of laboratory services, enhance users' satisfaction, and more importantly, develop strategies and deploy tactics and plans for continuous improvement of service quality.

The aim of article [40] was to design a plan for managers to identify the internal and external environment and show a timely response.

Primary strategic targets in [42] for the implementation of Hoshin Kanri were the improvement of the economic and law mechanism of the state policy for the development of biofuel engineering, the increase in the volumes of attracting domestic and foreign investments, and the implementation of innovative biofuel engineering technologies in industry.

The main goal in article [42] was to be a leader in improving quality with a business structure that is as innovative and productive as it is customer-focused, trustworthy, and respectful to people, the community, and the environment.

In studies [28,38,39], the reason for the introduction of Hoshin Kanri is that the companies are located in Taiwan and have Japanese management. The second reason is to maintain market leadership in terms of growth and operating profitability, and generate long-term satisfactory returns for employees, business partners, and shareholders.

4.2.5. Studies of the Fourth Group

Papers [14] and [43] are reports of a research project financed by The Swedish Governmental Agency of Innovation Systems (VINNOVA) between 2013 and 2016. The project comprises 14 companies and a team of five researchers (coaches). Paper [14] describes the knowledge of the implementation of Hoshin Kanri in five small manufacturing companies and paper [43] in four companies; two companies in these studies are the same. Their conclusions are based on the characteristics of the companies.

Löfving et al. [14] showed that only one company improved financially and further developed the Hoshin Kanri management system. In the second case, the company's efforts to continue Hoshin Kanri implementation are still ongoing, and one company's implementation effort were over. Two companies ended their participation prematurely in the research project due to the non-involvement of their management team.

Melander et al. [43] offered review activities in four case companies. It summarized eleven learning points within the learning process and a revised model of the Hoshin Kanri implementation in this type of company.

The main goal of the case company [44] was to transform its organizational culture to achieve business results through quality improvement. The defined goal was only achieved after Hoshin Kanri led to significant improvements in business performance. Tennant [44] stated that "Specific business improvement results achieved (as reported in the Birmingham Post, UK) include tripling the turnover to £3 million, an increase in pricing of 61 percent, a 38 percent reduction in rework levels, and customer rejections have reduced from 35,000 kg to 5000 kg per month. Sales exports have increased by 19 to 86 percent of turnover, and the company expects to significantly increase profitability over three years".

4.2.6. Studies of the Fifth Group

The methodology of the case study by Gonzalez [34] led to an action-based approach. The goal was to identify, understand, and incorporate customer expectations and ways to meet them in a Medical Center in the USA. The ability to respond effectively in areas that customers consider strategic is expected to increase. Using a questionnaire, customer expectations were gathered and were reduced from a total of 183 to 46. Subsequently, the main 23 requirements were identified using affinity and interrelationship diagrams. This was the basis for the first planning matrix of the house of quality. For comparison, the information available from two other hospitals in the region was used, where the sales points that prevailed in competitiveness were identified. The interdisciplinary team identified how to meet these requirements and divided them into three groups. The results that should improve the market position, found from the Hoshin Kanri planning process, are identification cards for patients, electronic sharing of health records with other hospitals, assistance with financing services for patients, and improved center logistics. Further, the employment of professionals who help to increase efficiency, reduce waiting time, and have a trouble-free registration process.

In Simon and Houle [45], Cardiac Sciences describes the demand for increased quality and consolidation of the market's position. In the Cardiac Sciences program, the leadership had the foresight to understand the impact of quality and improvement in healthcare and realized that traditional approaches would not lead to the systemic and cultural changes required to transform health care. They focused on the solution using the Hoshin Kanri methodology, PDCA cycle, and an eight-step problem-solving method to ease the steps from patient admission to effective clinical patient care. The implementation was divided into three phases within a specified time horizon. The improvement program introduced cascading key performance indicators visible in all program areas. During the implementation, the sub-objectives were met, and improved results were recorded (the waiting time for urgent interventions was reduced from 7 to 3 days). In addition, staff was formally trained in problem solving, and 100% of the leadership and management were trained as coaches.

Hyde and Vermillion [46] implemented a continuous quality improvement program at a residential psychiatric center in the United States. In the first phase, the management team identified 70 and, using the affinity diagram, selected 15 critical care functions and surveyed customers to determine the most critical and most minor satisfactory functions. In the second phase, the management team decided to concentrate on the top eight functions based on the rankings. In the third phase, based on the interrelationship diagram, the three most important areas for improvement were defined: admissions, customer investment, and safety. In the fourth phase, meetings between departments were held through catchall, and improvements and control times were proposed through brainstorming. In the fifth phase, teams were recommended to work on implementing improvements. In the sixth phase, the management team checked the improvement progress at monthly and semi-annual intervals. After a year of implementation, there was a reduction in the admission process time up to 48 h. Additionally, staff, customers, and their families expressed satisfaction with the treatment planning process. The staff indicated that safety provided a safer working environment.

The study of the fifth group offered a perfect overview of the mentioned problem of individual healthcare organizations that need to implement the Hoshin Kanri methodology and the results. Each study focused on the voice of the patient, which is a key member of the service chain.

4.2.7. Studies of the Sixth Group

The study [47] aimed to identify the main factors students consider when choosing a study program, integrate quality functions, benchmarking, and Hoshin Kanri into the analysis of students' expectations, and examined the implications for research and practice. The motivation for this study was the realization that the opportunity to study abroad helps students to gain experience and knowledge and thus shifts the management of the host university to become a leader in offering quality study. Information for the study was obtained from 180 students from four US universities which participate in the study abroad program. Using affinity diagrams, only 17 significant student expectations (voices of students) were singled out, which are the input of the planning matrix of the house of quality. Experienced faculty members performed benchmarking. They designed a strategic map of Hoshin Kanri to set goals and steps to build a study program abroad that meets students' expectations. The motivation was that the number of Americans studying abroad was low (almost 90% of all American university students who graduate never completed an international program; this is a sign that something is not working). The three most important student requirements found are program cost, cost of living, additional activities, and learning other languages.

In article [48], there is a strategic plan at the university, but it does not provide sufficient goals. Therefore, there was an effort to implement Hoshin Kanri using Deming's PDCA principle. The Hoshin planning system was designed in a series of stages. It began with an analysis of the external and internal environment; then, top management created a set of goals, strategies, and monitoring. The first step in implementation was to present a set of objectives among the 16 participating committees of the university. Then, permanent monitoring was carried out through regular meetings. Finally, an evaluation of the objectives and plan was conducted each year. The defined planning system provided elements to facilitate and formulate the strategy through the Hoshin Kanri methodology into the current strategic plan. However, the implementation of the Hoshin Kanri methodology, in this case, can have a significant obstacle: the organizational culture. This is due to apathy and fear of change.

Article [31] discusses an educational program that has been in operation since 2000, and the number of applicants (industrial engineers directly from practice) is still the same. Therefore, the executive committee decided to change strategic management with a combination of a performance-oriented BSC and a process-oriented Hoshin Kanri. In the beginning, the strategy was selected using SWOT analysis and integrated into strategy

maps. The strategies were then fitted into implementation plans assessed by Hoshin Kanri, and the results were evaluated using both tools. Each plan goal, the means for its achievement, the measures for improvement, and the owners were determined. Two levels of Hoshin Kanri were generated for this case. At the end of the annual cycle, the overall performance was evaluated using the BSC, revealing gaps between the target, and achieved values, thus creating a fundamental input for the next cycle. As a result, there have been demands for measures in promotion, academic activities, and investment activities to develop and maintain the quality of education. By implementing the long-term implementation plans, the Eng-Man program is likely to achieve its vision of "being an internationally recognized engineering management program and a pioneer in Turkey." Merging the Hoshin Kanri and BSC, the results become not only performance- but also process-driven.

These studies of the sixth group were described in detail by identifying why they needed to implement the Hoshin Kanri methodology through the individual steps and using additional tools to the results after implementation. The motivation for implementing strategic planning with the help of Hoshin Kanri was mainly to improve the market position within the universities in the region or improve the attractiveness of the study program.

5. Discussion

The first section of the review focused on bibliometric analysis. The selected 26 articles were published in 22 journals between 1996 and 2021. The most cited article is "Hoshin Kanri: Policy management in Japanese-owned UK subsidiaries" by Witcher and Butterworth. Witcher B. J. is also the most productive author and his articles are also important in co-citation analysis. He has participated in interesting implementations of the Hoshin Kanri in companies such as Nissan Motor and Xerox.

The authors' keywords' co-occurrence network confirmed what was expected, that Hoshin Kanri was the most frequent keyword and had the strongest co-occurrence along with "strategic management" and "quality function deployment". The keywords contained all important terms and tools from the research area of Hoshin Kanri.

The second section focused on the analysis of the selected articles. Exactly 42 companies were identified in 26 articles.

The main objective contribution of this review is to provide an overview and group the implementation studies. The positive part is that the Hoshin Kanri methodology has been implemented in various companies. These are mainly large corporate companies, such as Nissan, Land Rover, Xerox, and global equipment manufacturers, operating in Europe, Asia, and other countries, such as Iran, Mexico, and Turkey. Most of the large companies had Japanese management and operated in Japan, Taiwan, Hong Kong, or South Africa. Smaller companies from Sweden and the UK were also assessed. A different implementation area was the healthcare sector in the USA and Canada and the education sector in the USA, Colombia, and Turkey.

Most companies did not have previous experience in implementing the Hoshin Kanri methodology, except for companies with Japanese management in branches or organizations headquartered in Japan. The large enterprises were introduced to Hoshin Kanri either by research teams [26,28,33,35,40], project teams [27,32,41], or by core teams [20,26,36,38,39,42]. In SMEs, Hoshin Kanri was implemented by research or project teams [14,43]. In the field of healthcare, it was introduced by an interdisciplinary team [34], and management was trained with an advisor for the implementation of Hoshin Kanri [45]. In the education field, it is not clear who implemented Hoshin Kanri.

Based on the used quality tools and experiences of Hoshin Kanri implementation, the Hoshin Kanri process can be summarized (Figure 8). One of the results of this review is that it provides a summarized seven-step process.
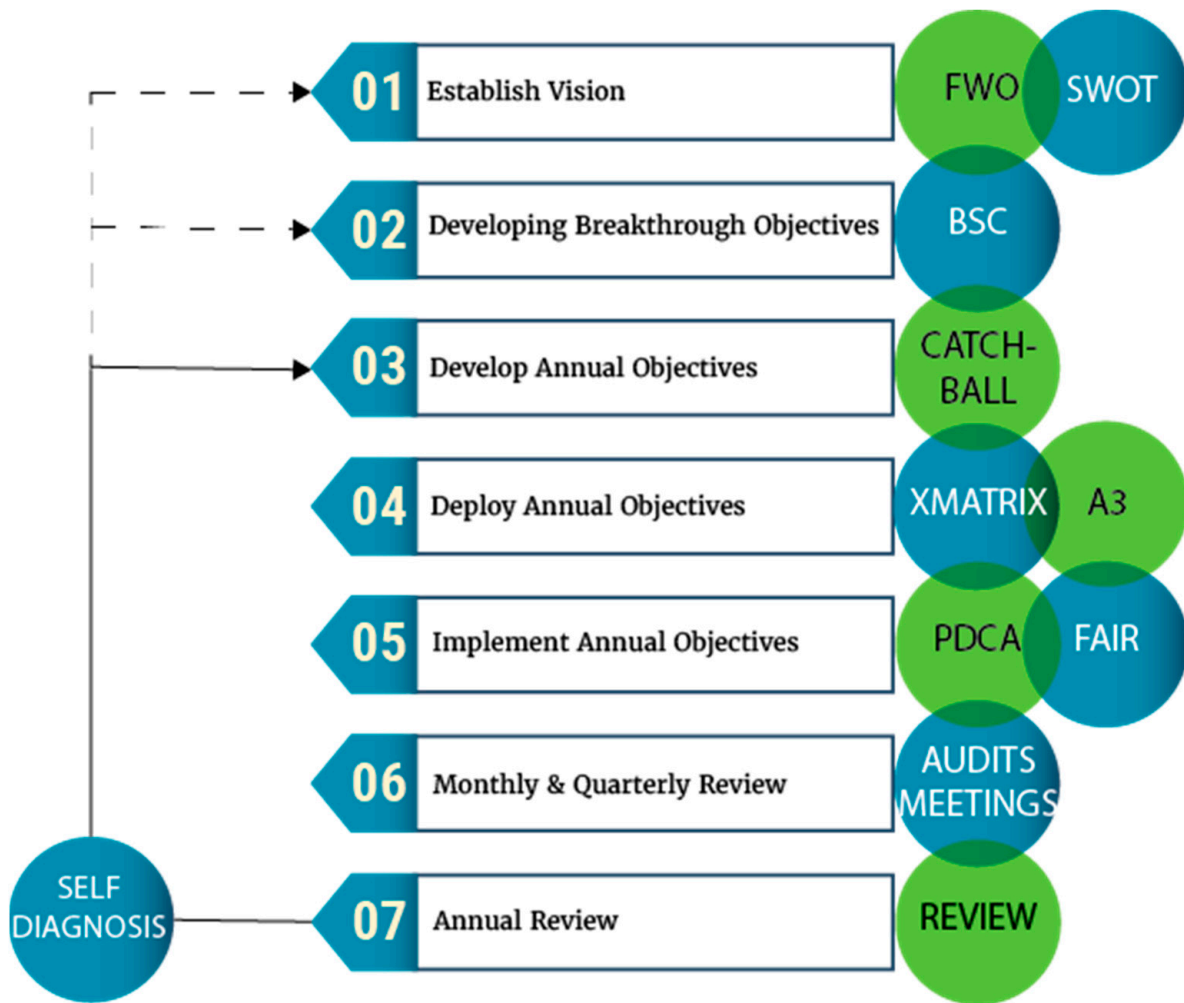
Figure 8. Hoshin Kanri process.

In the first step of the Hoshin Kanri cycle, an organizational vision was created in each study, considering the current situation and politics. The second step was the elaboration of breakthrough objectives, which are the improvements required by the companies/organizations. The third step is to draw up annual plans. The fourth step is deploying annual plans, and their transformation into breakthrough and realizable goals. The fifth step is the implementation of annual goals and control using QFD. The sixth step is to review the program after its completion, evaluate the corrective targets for the next year, and compare them with the set targets. An annual evaluation is carried out in the seventh step after each important one, which shows how the organization has shifted or lagged the objectives.

It can be concluded that implementation in large companies had been successful and improved over the years through 5-year cycles. The most serious issues with implementing Hoshin Kanri had SMEs participating in the INNOVA project. The healthcare area was very successful in the implementations of Hoshin Kanri due to having permanent employees overseeing the entire process. In education organizations, it was difficult to introduce Hoshin Kanri because of the shorter student life cycle.

6. Conclusions

This review described the Hoshin Kanri process (policy management), which has been known mainly in Japanese companies since 1960. Hoshin Kanri is concerned with integrating top management goals into daily work.

Our goal was to find real-world implementations of the Hoshin Kanri method and their results by systematically reviewing articles from two of the most important databases.

This review brought a brief theoretical basis for methodology and an overview of all published implementations in various sectors. It could be assumed that the Hoshin Kanri is a process control of corporations and large companies whose top management came from Japan. Additionally, it is an approach to managing mainly manufacturing companies or IT organizations. However, this review provided information about successful Hoshin Kanri implementations in the other sectors, such as healthcare, education, and even SMEs.

It can be said that it is the best evidence broader applicability of the methodology. The found articles presented mainly the successful implementation of Hoshin Kanri to improve the market position and become a leader. Other reasons are to achieve the company goals and to overall multiple increases in the annual turnover of the company.

Since these findings from implementation were published in scientific articles, the academic team also participated or co-participated in the performance of Hoshin Kanri in the company, as evidenced by how the results were presented. Another important conclusion is that the company does not implement all strategic management processes (seven steps) and combines various quality tools to achieve the set goals effectively (Figure 8).

As was mentioned, Hoshin Kanri is a process of deploying the goals and initiatives of top-level corporate management down to the lowest levels of the corporate hierarchy. Its purpose is to manage and control company processes to achieve significant performance improvements. Based on conclusions from publishing research, the Hoshin Kanri implementation has specific rules and a longer time horizon until the expected results are obtained.

This management dominates in multinational corporates company; this is the reason for its fundamental principles also reaching our region and thus our conditions (for example, Siemens Electronics and its branches).

This review was limited to journal articles published in the English language and indexed in two main databases. These databases were chosen because journals included in the Scopus and WoS must meet strict standards. Articles published in such journals are of high quality, have a certain scope, and go through a rigorous review process. While the authors typically work in academia and not in the industry, it is usually them who help companies to introduce new procedures, methodologies, frameworks, etc.

A limitations of this review is mainly that, despite the sophistication of the studies and the auxiliary tools, the results presented were not very visible. The process of Hoshin Kanri implementation can often be subjective, as it depends on the team working on it, whether internal or external. Another limitation is that companies do not publish all company practices and know-how details because of internal policies.

Appendix A

Table A1. Selected articles.

ID	Authors	Title	Year	Source Title	Reference
1	Hyde R.S., Vermillion J.M.	Driving quality through Hoshin planning.	1996	The Joint Commission journal on quality improvement	[46]
2	Witcher B. J., Butterworth R.	Hoshin Kanri: How Xerox manages	1999	Long Range Planning	[30]
3	Pun K.F., Chin K.S., Lau H.	A QFD/hoshin approach for service quality deployment: A case study	2000	Managing Service Quality: An International Journal	[28]
4	Tennant C., Roberts P.	Hoshin Kanri: Implementing the catchball process	2001	Long Range Planning	[27]
5	Witcher B.J., Butterworth R.	Hoshin Kanri: Policy management in Japanese-owned UK subsidiaries	2001	Journal of Management Studies	[26]
6	Tennant C., Roberts P.	The creation and application of a self-assesment process for new product introduction	2003	International Journal of Project Management	[32]
7	Tennant C.	Measuring business transformation at a small manufacturing enterprise in the UK	2007	Measuring Business Excellence	[44]
8	Asan Ş.S., Tanyaş M.	Integrating Hoshin Kanri and the balanced scorecard for strategic management: The case of higher education	2007	Total Quality Management and Business Excellence	[31]
9	Yang T., Su C.	Application of hoshin kanri for productivity improvement in a semiconductor manufacturing company	2007	Journal of Manufacturing Technology Management	[38]
10	Witcher B.J., Chau V.S., Harding P.	Top executive audits: Strategic reviews of operational activities	2007	Managerial Auditing Journal	[18]
11	Chau V.S., Witcher B.J.	Dynamic capabilities for strategic team performance management: The case of Nissan	2008	Team Performance Management	[35]
12	Witcher B.J., Chau V.S., Harding P.	Dynamic capabilities: Top executive audits and Hoshin Kanri at Nissan South Africa	2008	International Journal of Operations and Production Management	[29]
13	Yazdi A.K., Mennatib B.	House of excellence: Better BSC practice through QFD Plus Hoshin Kanri	2011	Australian Journal of Basic and Applied Sciences	[40]
14	Witcher, B.J., Chau, V.S.	Varieties of Capitalism and Strategic Management: Managing Performance in Multinationals after the Global Financial Crisis	2012	British Journal of Management	[33]
15	Su C.-T., Yang T.-M.	Hoshin Kanri planning process in human resource management: recruitment in a high-tech firm	2015	Total Quality Management and Business Excellence	[39]
16	Triana J.A., Rodríguez J.I., Palacios J.I.O.	Management model for planning articulation at Universidad Distrital Francisco José de Caldas	2015	Lecture Notes in Business Information Processing	[48]
17	Villalba Díez J., Ordieres Meré J.	Improving the management of projects through Hoshin Kanri	2016	Direccion y Organizacion	[37]
18	Chiarini A.	Corporate social responsibility strategies using the TQM: Hoshin Kanri as an alternative system to the balanced scorecard	2016	TQM Journal	[36]
19	Melander A., Löfving M., Andersson D., Elgh F., Thulin M.	Introducing the Hoshin Kanri strategic management system in manufacturing SMEs	2016	Management Decision	[43]
20	Ozkavukcu A., Durmusoglu M.B.	Product development by Hoshin Kanri approach: An application in the retail sector	2016	Sigma Journal of Engineering and Natural Sciences-Sigma Muhendislik ve Fen Bilimleri Dergisi	[41]
21	Simon J., Houle M.	Translating improvement methodology into healthcare culture	2017	Business Process Management Journal	[45]
22	Gonzalez M.E.	Improving customer satisfaction of a healthcare facility: reading the customers' needs	2019	Benchmarking	[34]
23	Tortorella G., Cauchick-Miguel P.A., Gaiardelli P.	Hoshin Kanri and A3: a proposal for integrating variability into the policy deployment process	2019	TQM Journal	[20]

Table A1. *Cont.*

| ID	Authors	Title	Year	Source Title	Reference
24	Gonzalez M.E., Quesada G., Martinez J.L., Gonzalez-Cordoba S.	Global education: using lean tools to explore new opportunities	2019	Journal of International Education in Business	[47]
25	Yakubiv V., Boryshkevych I., Piatnychuk I., Iwaszczuk N., Iwaszczuk A.	Strategy for the development of bioenergy based on agriculture: Case for Ukraine	2020	International Journal of Renewable Energy Research	[42]
26	Löfving M., Melander A., Elgh F., Andersson D.	Implementing Hoshin Kanri in small manufacturing companies	2021	Journal of Manufacturing Technology Management	[14]
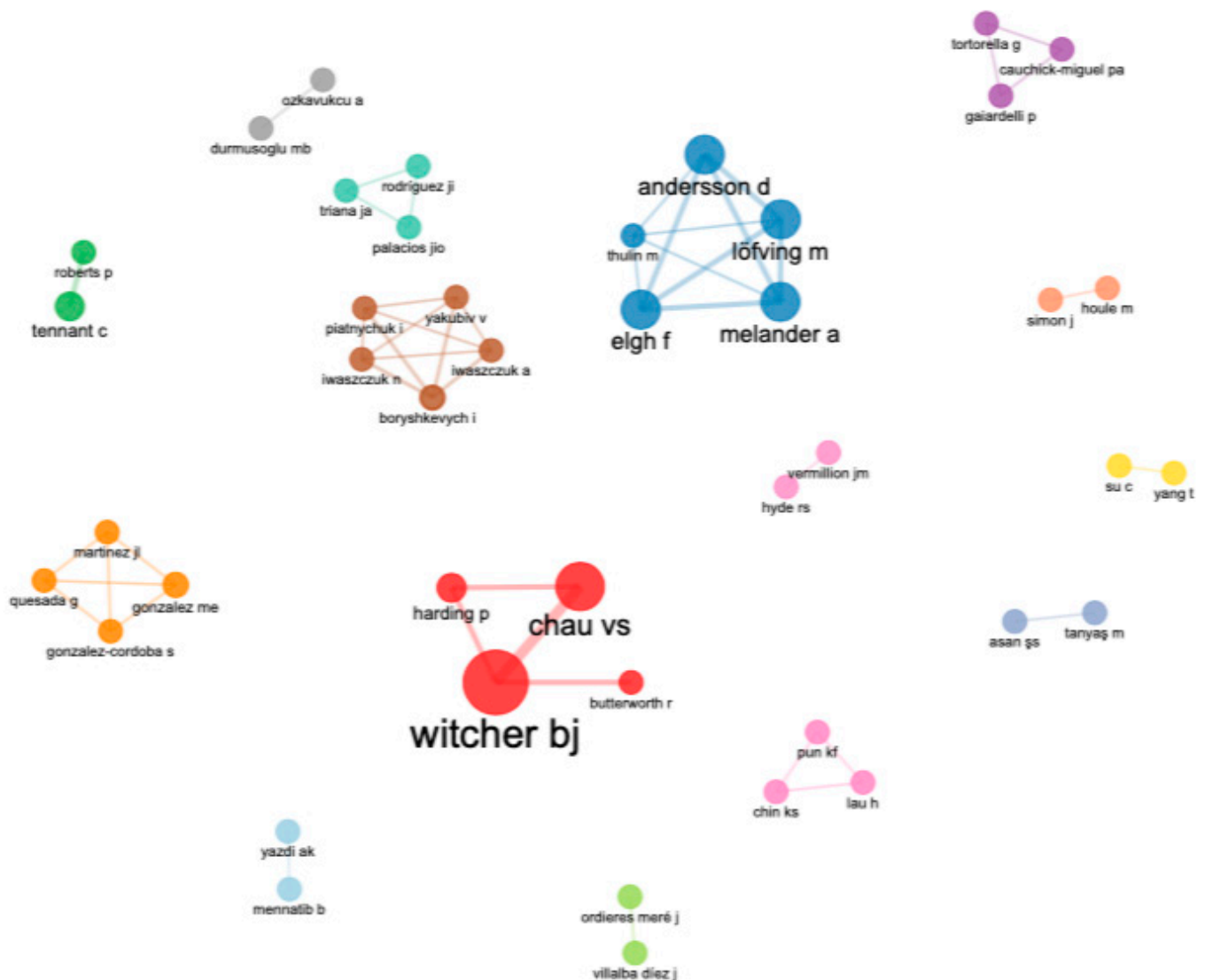
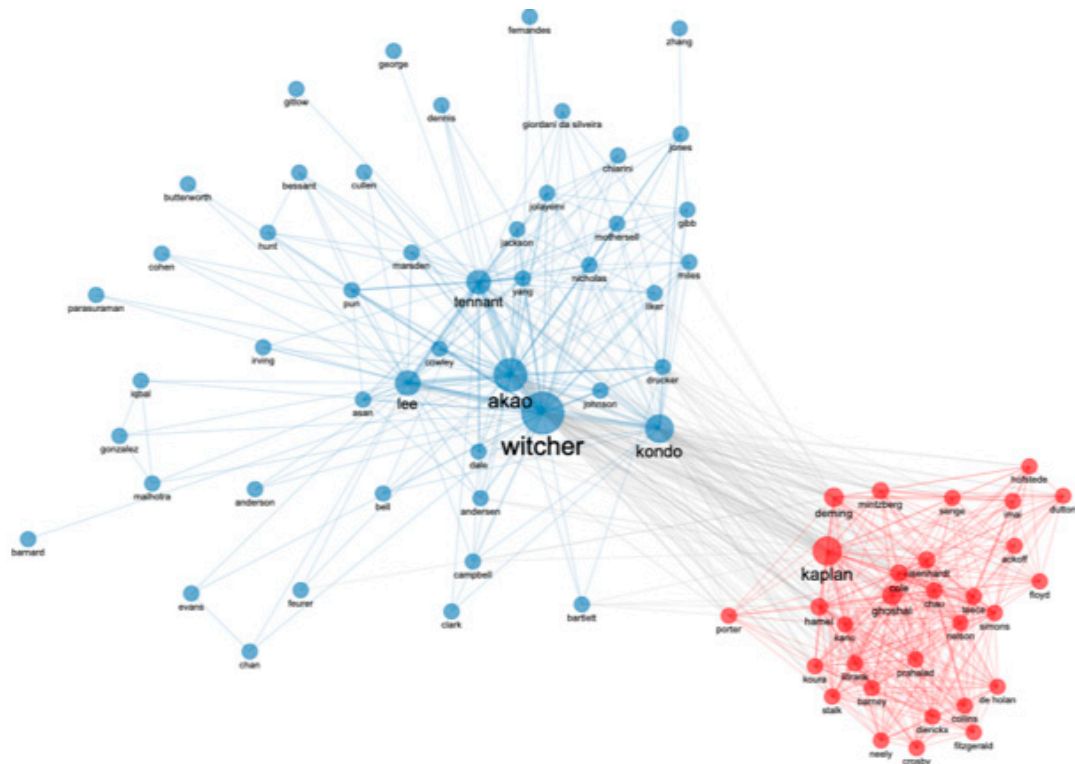**Figure A1.** Authors' collaborative network.

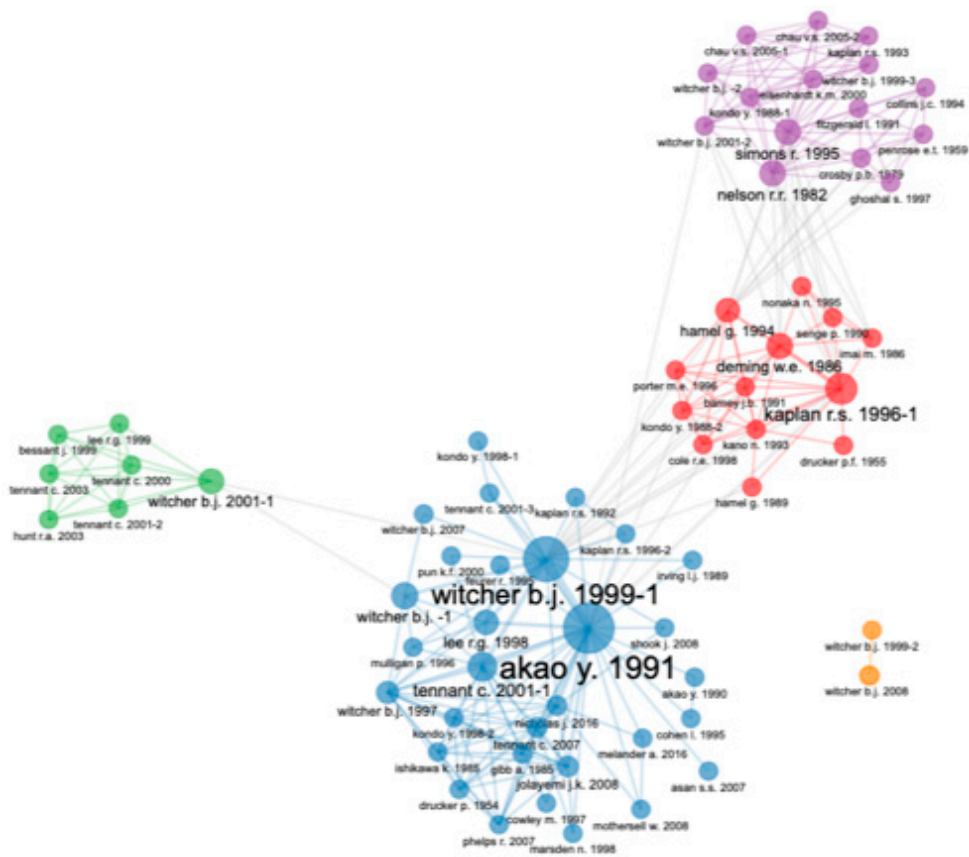**Figure A2.** Authors' co-citation networks.

Figure A3. Papers' co-citation networks.

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