



## Bibliometric Analysis: Rewards using the Scopus Database



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### Abstract

This research explores the role of rewards in improving employee performance and related aspects. Bibliometric analysis was conducted using the Scopus database from 2013 to 2023 to evaluate the effect of rewards on performance. The literature review identifies types of rewards, both material (salary, bonus) and non-material (verbal recognition, organizational commitment). The results provide in-depth insight into reward dynamics with practical implications for human capital management and a basis for further research. The focus of article publication on Scopus has fluctuated, with a peak in 2019, a decline in 2020-2021, and a surge in 2022-2023. Research findings include the positive effect of extrinsic rewards on intrinsic motivation, variations in satisfaction relationships to employee rewards and moving intentions, and the positive impact of organizational characteristics on the adoption of open innovation. Journal publication graphs show trends in Scopus, with Compensation And Benefits Review and Human Resource Management International Digest leading the way with 7 articles. Cluster analysis using VOSviewer identified 38 reward-related topics, including "reward system", "reward function", and "performance".

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## 1 Introduction

In the current era of massive technology, rewards have become a parameter for employees in choosing a company that can provide the most adequate rewards. In the world of work, rewards or rewards are often related to employee reward systems, such as financial bonuses, job promotions, or verbal recognition. Providing rewards can motivate employees to work harder and achieve company goals. The concept of reward is also used in psychology and management to shape desired behavior through reinforcement (Chelazzi et al., 2013). However, it is important to carefully consider the design of the reward system so as not to provide the wrong or detrimental incentives. This phenomenon is reflected in the era of globalization where companies need to compete, and rewards are an important factor in retaining employees and improving performance. Companies need to pay attention to reward indicators such as salary, benefits, health programs, pensions, promotions and promotions. Therefore, scientific research related to rewards plays a significant role in shaping the quality and quantity of human resources (Hofmans et al., 2013).

This research analysis uses the Scopus database with a time range from 2013-2023. This website is an information resource that provides fast and comprehensive access to scientific works, including journals, articles, conferences, and books. We will apply a bibliometric approach, namely a quantitative analysis method using statistics, to assess and evaluate literature and scientific works (Merigó et al., 2018). The focus of bibliometric analysis allows the mapping of specific scientific disciplines to evaluate the development of knowledge in scientific research. Bibliometric analysis focuses more on the quantitative aspects of scientific activities in the field of library and information science, which are characterized by quantitative characteristics in scientific activities that have been carried out (Khan et al., 2022). Bibliometric analysis methods are used to quantitatively examine certain indicators or keywords in published literature, creating concept maps about these themes based on big data. In this way, researchers can summarize information from previously published articles regarding the distribution of articles based on year, author, institution, journal name, and scientific discipline. To obtain a research database, bibliometric analysis uses Publish or Perrish 8 software, while for visualization of research trends, VOSviewer software is used. VOSviewer is a free computer program used for the visualization and exploration of bibliometric concept maps (Konys, 2019).

According to previous research, rewards are a form of recognition of achievements that can be given in material or verbal form. In an organizational context, the term often used is incentives, which involve rewards in both material and non-material form from company leaders to employees, aimed at encouraging high motivation and achievement in achieving company goals. Rewards can be interpreted as awards given to someone for successfully achieving their goals. Rewards can be understood as a form of appreciation given by companies to employees in return for the contributions, services or efforts they have provided (Firdaus et al., 2023).

Rewards are an organization's responsibility towards employees as a form of reward for their role in achieving organizational goals. Many experts argue that awards are the main source of motivation for employees. It is known that every individual needs motivation to operate effectively and efficiently. According to Armstrong (2010), a reward is a form of recognition of a person's contribution, which can be material or non-material, which is based on individual performance, competency or skills (performance-based or variable pay) or for the services they provide in the job (related with payment for services) (Somoye & Eyupoglu, 2020).

Financial rewards involve the fixed income (salary) that each employee receives in exchange for his services, variable compensation related to his performance, and other forms of financial rewards provided by the company either as an internal initiative or due to legal requirements. Financial rewards are generally considered to be an effective instrument to motivate employees and have a positive impact on their performance, thereby contributing to the fulfilment of basic needs, such as food and housing. In addition, financial rewards can also satisfy higher-level needs, such as the desire to participate in work groups and gain recognition from third parties (Papaioannou & Serdaris, 2022).

Lawler's (2011) opinion states that various types of rewards can be received by employees, depending on how the company presents them to increase their motivation and performance. Individual preferences also play an important role when it comes to reward systems, with some workers more likely to choose bonuses, while others are more interested in paid vacations, and still others see promotional opportunities as a desirable reward. Satisfaction with these rewards has a significant impact on organizational results, making reward strategy a determining factor in overall workforce quality (Alassaf et al., 2020). Rewards, also known as awards, are a sign of appreciation for someone's achievements or service, both in material and non-material form. In an organizational context, the term incentive is used to refer to rewards given by company leaders to employees to increase motivation and achievement in achieving company goals. There are two main forms of rewards, namely financial (salary, bonuses, commissions, allowances) and non-financial (insurance guarantees). The use of reward systems by organizations aims to stimulate employee performance and productivity. A fair reward system, including rewards, remuneration and career advancement, is

considered to increase employee performance efficiency, while an unfair system can cause a lack of employee motivation, commitment and productivity, especially related to salary variables (Sihombing et al., 2018).

## 2 Materials and Methods

### *Methodological overview of analytical steps*

In this section, the screening methodology is described in detail. First, systematic reviews and meta-analyses require appropriate methodological adjustments to ensure clarity, transparency, repeatability, and reduce bias in the process. This is done to comprehensively include and reduce the large amount of bibliographic information obtained, which will be used as material for current research and future research. Although bibliometric analysis has the potential to provide insight into data-driven scientific research activities and provide evidence-supported comparisons and visualizations of research outputs, it still provides an understanding of the quantitative and qualitative aspects of the data under consideration. The proposed research procedure consists of the following main steps: (1) Document search; (2) data preparation; and (3) data classification. Each of the mentioned stages is then explained further by detailing the systematic literature review and predetermined search strategy, content analysis of the sources reviewed, evaluation of keyword occurrences, filtering results, and efforts to group the identified keywords (Snyder, 2019; Brereton et al., 2007).

### *Searching for documents*

#### *Search strategy*

To achieve the research objectives, we adopted systematic literature review procedures as well as bibliometric techniques and tools. In general, bibliometric analysis is often performed using one of four popular databases, such as Web of Knowledge, Scopus, Google Scholar, and PubMed. In this context, bibliometric analysis of literature is carried out using the Scopus database (Martín-Martín et al., 2018). Each time, the same study domain was maintained (reward), and an equivalent time range was set (2013–2023). For this research, we extracted 294 documents from the Scopus database as primary references. Next, we filtered keywords identical to the article titles, resulting in 26 relevant documents. However, due to several obstacles, such as difficulty accessing some documents and the existence of paid documents, we were only able to select 6 documents as the main reference source (Thwin et al., 2023; Boukis et al., 2023). We considered document types (articles, articles in the media, reviews) during the search process, while other types of documents, such as books, conference papers, erratums, and so on, were excluded (Chand et al., 2022; Chan, & Hooi, 2023). The Scopus database was searched for the subject of sustainability entrepreneurship. The initial search expression involves the article title, abstract, and keywords to obtain research output in the form of a list of 294 sources displayed. The captured documents are exported to a CSV file, and as a result, the output data is prepared for further analysis.

### *PRISMA methodology*

A systematic literature review procedure is required to adopt a systemic and reliable methodology. Most importantly, this step allows systematic reviews to be carried out clearly and transparently, ensuring repeatability and the absence of bias in this process (Ogor & Fidelia, 2022). To minimize bias, only articles related to awards were considered, and after that, the documents were filtered based on article title, abstract, and keywords. It is recommended to carry out an initial analysis using results from the Google Scholar database because journal indexing is easier and more efficient. As a result, the article search was completed by collecting data from the Scopus database. In the context of this case, the question is formulated as follows: TITLE-ABS-KEY (reward and employee), as illustrated in Figure 1. Bibliometric analysis related to rewards using the Scopus database is planned for the period 2013–2023. From these results, we succeeded in collecting 294 documents which were saved directly in an Excel worksheet. Information can be sorted by author name, affiliation, document type, source title, or subject. The document search process has been completed, resulting in a set of filtered documents. Because the Scopus database automatically avoids duplication, no additional records were identified from other sources (Yadewani & Wijaya, 2019; Dias et al., 2022; Hassan, 2022). Next, a manual filtering process was carried out by comparing the title of the research data with the exact keywords in the title of this article. Based on these steps, after filtering, we selected 6 sources that could be used as references

for further consideration.

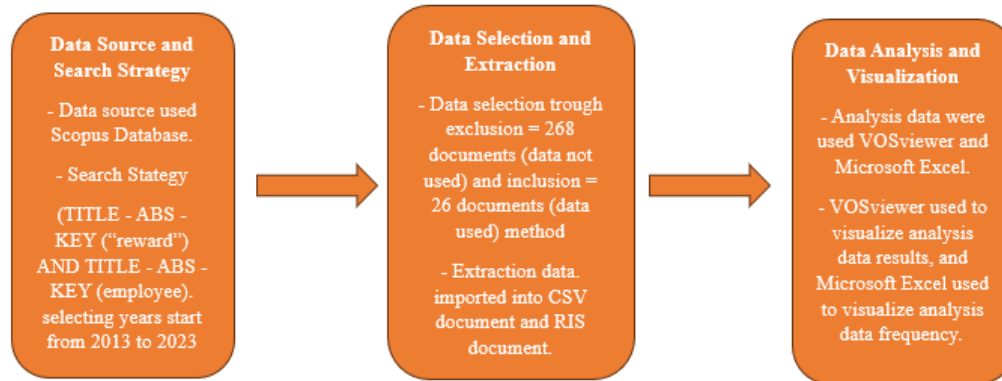


Figure 1. Selection flow to data analysis from the Scopus database 1.3 data preparation

### *Bibliometric analysis - assumptions*

The literature search on rewards involved a thorough content analysis, covering several key dimensions. The focus of this analysis is to investigate and understand the characteristics of literature that has been published in the 2013–2023 period. Some of the dimensions explored in this analysis include: First, counting the number of published documents and the frequency with which keywords appear over the period, provides insight into how intensively this topic is investigated in the literature. Second, identify the most productive journals and review the number of documents published by a particular author in the reward domain. Next, an evaluation of the geographic distribution of research is carried out to understand whether there is a significant research focus in a particular area. Finally, an analysis of the performance of each country is carried out, providing an overview of the global contribution to research on rewards. In the context of this research, significant emphasis was placed on the occurrence of keywords, and analysis was carried out using VOSviewer software from the Center for Science and Technology Studies (CWTS) of Leiden University, the Netherlands. The software allows the creation of bibliometric visualization maps, helping in understanding the relationships and groups of main keywords in rewards. Output data is explored to present relevant and comprehensive information regarding creative behavior. The visualization map visualizes groups of related keywords, while the average citation analysis provides a picture of the impact of a particular publication. The use of density maps also supports understanding the distribution of keywords in the literature. The results of this research have potentially major implications for the development of understanding rewards (Opoku et al., 2022; Reizer, & Siegrist, 2022; Nsiah et al., 2022). This analysis aims to identify and differentiate the main aspects of this topic, supported by previous bibliometric analysis. Understanding the development and main focus in the scientific literature on rewards becomes clearer through this approach.

## 3 Results and Discussions

### *Distribution analysis - results obtained*

This collection of 6 papers focuses on keywords researchers have previously determined according to the reward domain. To analyze the occurrence of keywords in research published in this domain, VOSviewer software was used. The main goal of this software is to create visualization maps based on network data and apply "similarity visualization" mapping techniques as well as clustering techniques. VOSviewer software provides powerful bibliometric network analysis capabilities, enabling thorough examination of bibliometric maps.

The map creation process by VOSviewer is based on the co-occurrence matrix. First, the similarity matrix is calculated based on the co-occurrence matrix. Next, a map is built by applying the VOS mapping technique to the similarity matrix. The idea of the VOS mapping technique is to minimize the weighted sum of the squared Euclidean distances between all pairs of items. The higher the similarity between two items, the higher the weight of the squared distance in the sum. The next process involves translation, rotation and reflection of the map to obtain optimal visual results (Siswanto et al., 2021; Salleh et al., 2020).

This research aims to conduct a survey and test bibliometric performance indicators to understand some determining factors in the reward domain. The approach used involved the use of the Scopus database to access publications and systematically collect data. Additionally, bibliometric techniques are commonly used to evaluate scientific research trends and results. Performance indicator surveys are evaluated based on the total number of documents published, while research quality is assessed using h-index and citation rates. The road map related to scientific activities in sustainable entrepreneurship is presented in a mature and detailed manner, showing dimensions and results as a result of in-depth analysis and careful evaluation (Kinman, 2019; Hamilton, 2019).

#### *Keyword Co-occurrence analysis—results obtained*

The bibliometric analysis results of this research refer to (Donthu et al., 2021). There are two categories of analysis, namely performance analysis in the form of: the number of publications each year, articles with the most citations, journals with the most articles, journal rankings and countries with the highest number of articles; and science mapping in the form of: Circles Network Visualization, Frames Overlay Visualization, and Density Visualization. Data from search results for Scopus-indexed articles related to rewards for the period 2013 to 2023 experienced fluctuations as shown in the following figure.

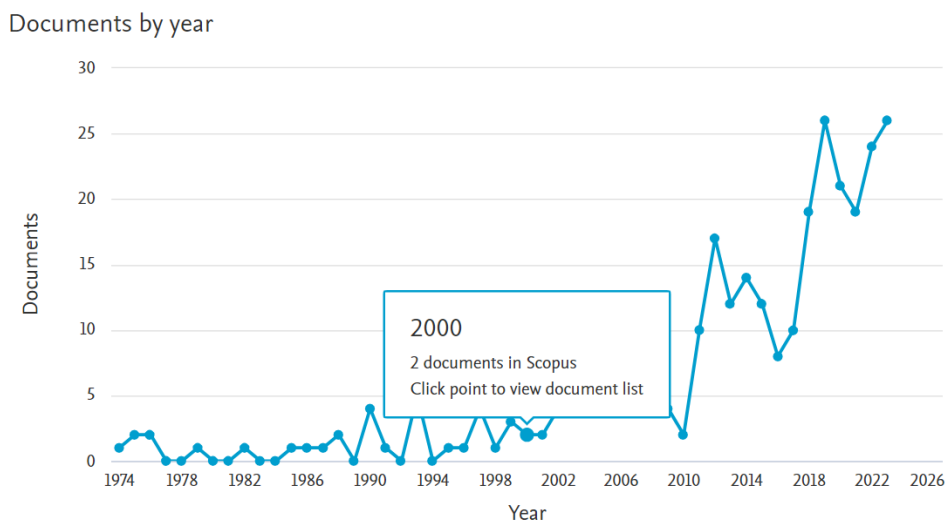


Figure 2. Number of Reward Article Publications from the Scopus Database

Based on the data in Figure 2, the number of articles in the period 2013 to 2017 did not fluctuate too much, the increase and decrease in the number of articles were not very significant. A significant increase occurred from 2017 to its peak in 2019. In 2019, the highest number of articles was obtained, namely 26 articles. Meanwhile, from 2019 to 2021 the number of article publications has decreased. Even though the COVID-19 outbreak is still hitting the world in 2020 and 2021, the trend of writing articles has decreased. In 2022 to 2023 the number of publications increased quite significantly and peaked in 2023 at 26 articles. Articles in Scopus-indexed journals are often used as reference material for other research. The greater the number of quotations or citations from an article, means that the research results are often used as references in other research. Search results using CSV show the number of citations or citations was 429 citations from 26 articles from 2013-2023. The articles with the highest number of citations are presented in Table 1.

Table 1  
Articles with the highest number of citations

No	Writer's name	Article Title	Year	Journal Name	Number of Quotes
1	Malik MAR; Butt AN; Choi JN	<i>Rewards and employee creative performance: Moderating effects of creative self-efficacy, reward importance, and locus of control</i>	2015	<i>Journal of Organizational Behavior</i>	177
2	De Gieter S.; Hofmans J.	<i>How reward satisfaction affects employees' turnover intentions and performance: an individual differences approach</i>	2015	<i>Human Resource Management Journal</i>	54
3	Alassaf D.; Dabić M.; Shifrer D.; Daim T.	<i>The impact of open-border organizational culture and employees' knowledge, attitudes, and rewards with regards to open innovation: an empirical study</i>	2020	<i>Journal of Knowledge Management</i>	46

The data in Table 1 illustrates that the article with the title Rewards and Employee Creative Performance: Moderating Effects of Creative Self-efficacy, Reward Importance, and Locus of Control (Malik et al., 2015) has the highest number of citations, namely 177 citations. Followed by How Reward Satisfaction Affects Employees' Turnover Intentions and Performance: An Individual Differences Approach (De Gieter et al., 2015) is the article that has the second highest number of citations, namely 54 citations. Followed by an article entitled The Impact of Open-border Organization Culture and Employees' Knowledge, attitudes, and Rewards with Regards to Open Innovation: An Empirical Study (Alassaf et al., 2020) which has 46 citations. This can be used as a reference source for further research on rewards in the world of management and economics.

Based on the results of research in the first journal, it was found that a sample of 181 employee-superior pairs largely supported this expectation. This analysis enriches the creativity literature by combining different perspectives in a coherent framework, demonstrating the positive effects of extrinsic rewards on intrinsic motivation, and showing that the relationship between rewards and creativity varies among employees depending on their differences (Khatib & Barki, 2022). In the second journal, it was discovered that a group regression analysis method was used which resulted in research that regarding task performance, no employee types or individual differences were found. However, we identified three types of employees that revealed unique patterns of relationships between satisfaction with financial, material, and psychological rewards and turnover intentions. These three types of employees also differ in sociodemographic characteristics and work values (Kollmann et al., 2020; Miao et al., 2013). Our findings illustrate that to fully understand the underlying relationship between employee rewards and outcomes, scholars need to adopt an individual different perspective and methodology. Implications for practice, limitations, and opportunities for future research are discussed (Wine et al., 2019). Meanwhile, in the third journal, quantitative analysis using a logistic regression model produced findings showing a positive impact of organizational characteristics on OI adoption (including adoption of OI activities from outside and from within participating organizations), indicating that the openness of an organization's culture increases the likelihood of to adopt the OI paradigm (Beqiri & Aziri, 2022). Scopus indexed articles about rewards in international journals. The five journals with the highest number of articles are presented in the following figure.



Figure 3. Journals that have the most articles about rewards

Figure 3 shows the trend of Scopus-indexed journals with the highest number of articles about rewards. Compensation And Benefits Review and Human Resource Management International Digest have the most articles about rewards with 7 articles. The 5 journals in Figure 3 can be used as the best reference regarding rewards. Furthermore, the International Journal of Stress Management and Frontiers In Psychology ranked second with 5 articles. The last place is occupied by Sustainability Switzerland with 4 articles.

#### *Data filtering and cleaning results*

Complex visualizations with many terms and clusters can make it difficult to understand the relationships between keywords. Therefore, the next step involves reducing the number of keywords by eliminating those deemed less important. To provide further clarification, the minimum keyword appearance limit is set on one topic (reward). Thus, from the initial pool of 64 topics, only 38 topics were selected for further analysis. This approach is often used when creating maps based on bibliographic or text data. In this context, the use of a thesaurus becomes relevant. Thesaurus files are used to combine variations of words or eliminate differences in the way they are described and written in various documents. The goal is to unify synonyms, correct spelling differences, and combine short terms with full terms. Additionally, a thesaurus can help ignore irrelevant or less significant terms. Through this approach, the keyword selection process becomes more focused and directed towards terms that have greater impact and relevance in understanding the research topic. The use of a thesaurus file also helps ensure consistency and accuracy in keyword processing, reduces ambiguity, and increases the validity of analysis results.

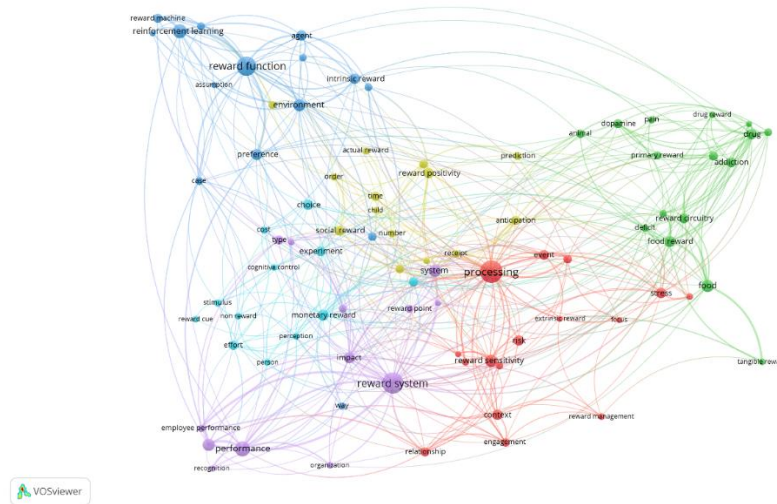


Figure 4. Circles network visualization before filters

### *Data classification*

#### *Results analysis—keyword occurrence*

The visualization in Figure 4 displays each circle representing a keyword, with the size of the circle reflecting how often the keyword appears in the article title, abstract, or related keywords. When keywords appear together frequently, they tend to be grouped in the visualization, as seen in Figure 4. All the keywords are grouped into 7 clusters, where 2 clusters are large, 3 clusters are medium-sized, and 2 clusters are small. The selection of keywords with the largest number of links becomes the focus, and after that, keywords that have the most intra-cluster co-occurrence relationships are organized in the same cluster. In other words, the larger the size of the sphere, the greater its contribution to the event being described. The orange cluster in the center of the visualization covers topics such as "reward systems," "employee," and "performance," with "cognitive control" located to the left of the image. The dark blue cluster, which consists of topics related to "reward function" as the largest circle, followed by "preference", "intrinsic reward", "reward machine", "case", "reward free rl", and "assumption" located to the right of the image.

The yellow cluster in the middle of the image contains topics related to "stress", "ability", and "reward sensitivity". The red cluster at the top of the image contains topics such as "food reward", "reward circuit", "primary reward", "natural reward", "reward management", and "extrinsic reward", followed by "sensitivity" at the bottom of the cluster. The purple cluster on the left of the image discusses topics such as "system", "reward point", and "organization", followed by "impact" and "success" at the bottom right of the image. The green cluster shows topics related to "monetary reward", "effort", "social reward", "anticipation", "reward anticipation", "time", "recognition", "non-reward", and "reward cue". Finally, a light blue cluster referring to the terms "reward positivity", "feedback", and "policy" is located at the bottom of the image. By presenting this information in visual form, observations regarding the relationships and trends between various concepts become easier to understand and interpret.



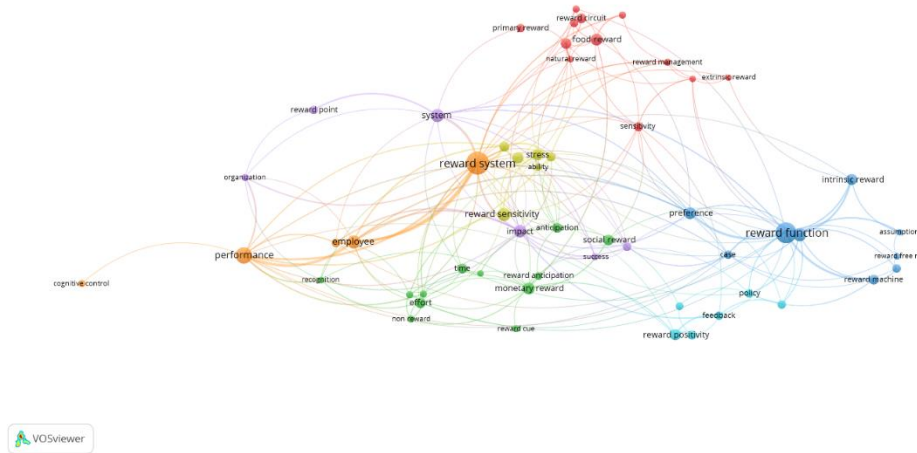


Figure 5. Circles network visualization after filters

This explanation provides information regarding the visualization of circles that reflect the strength and intensity of keywords in the research. The larger the circle, the higher and stronger the influence. In general, a bigger picture and a keyword that is more visible in the visualization means that the keyword is having a greater impact. The strongest shared links between keywords are also shown through lines. Therefore, in this context, the keywords that stand out are "reward system", "reward function", and "performance".

The next map visualization, as shown in Figure 6, displays an overlay display that uses color to reflect keyword values. Colors from blue (lowest score) to green and yellow (highest score) reflect the keyword value. This overlay visualization shows the average number of publications per year, with deadlines set from 2015 (blue) to 2020 (yellow). Using keyword scores as a guide, this visualization provides insight into how the strength and relevance of a particular concept evolves. The color change from blue to yellow reflects changes in keyword intensity and popularity over time. This can help stakeholders understand the evolution of research trends and focus over a defined period.

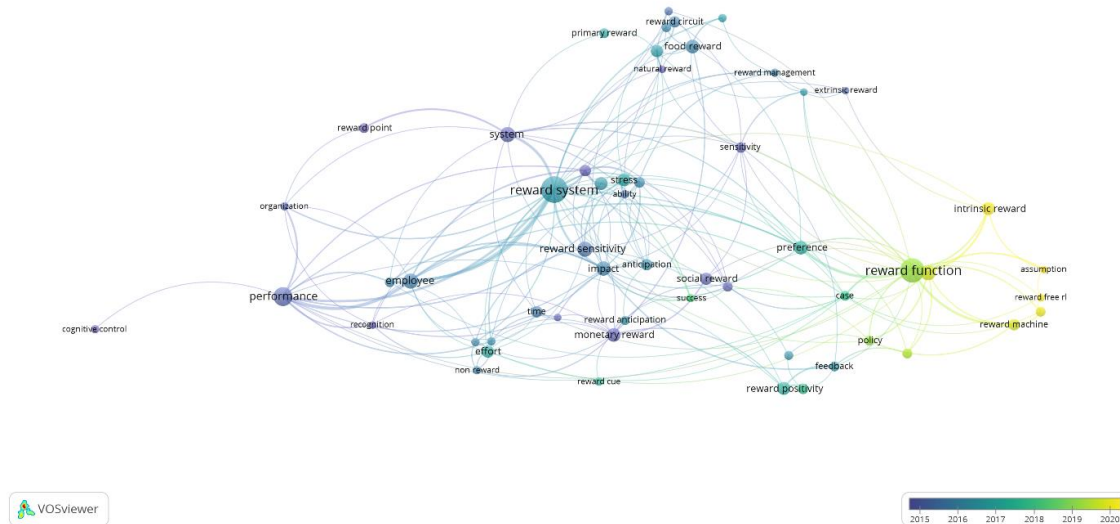


Figure 6. Keyword overlay visualization

The second overlay visualization provides information regarding the average citation score for publications involving specific keywords, as seen in Figure 7. From this observation, it can be concluded that the average citation score is higher for keywords such as "reward function", "intrinsic reward", "policy", "assumption", "reward free rl", and "reward machine" compared with other keywords such as "reward system", "preference", "reward sensitivity", "performance", "employee", "monetary reward", "reward positivity", "system", "social reward", "food reward",

Ramadhina, A. S., Asfiah, N., Nurhasanah, S., & Umami, R. (2024). Bibliometric Analysis: Rewards using the Scopus Database. *International Research Journal of Management, IT and Social Sciences*, 11(2), 75–88. <https://doi.org/10.21744/irjmis.v11n2.2416>

“cognitive control”, “case”, “stress”, “ability”, “reward circuit”, “primary reward”, “natural reward”, “reward management”, “extrinsic reward”, “sensitivity”, “reward point”, “organization”, “impact”, “success”, “effort”, “anticipation”, “reward anticipation”, “time”, “recognition”, “non-reward”, “reward cue”, and “feedback”. This shows that when publications cover concepts such as “reward function”, “intrinsic reward”, “policy”, “assumption”, “reward free rl”, and “reward machine”, they are likely to have a more significant impact and influence, as reflected by the high citation average. Conversely, other keywords may have lower citation rates, indicating that the focus or relevance of the concept may not be as great as the previously mentioned concepts.

This analysis provides insight into how interesting and impactful certain concepts are in research among academics or researchers. These results can help researchers and stakeholders understand key trends and focus in the scientific literature, as well as provide direction for future research.

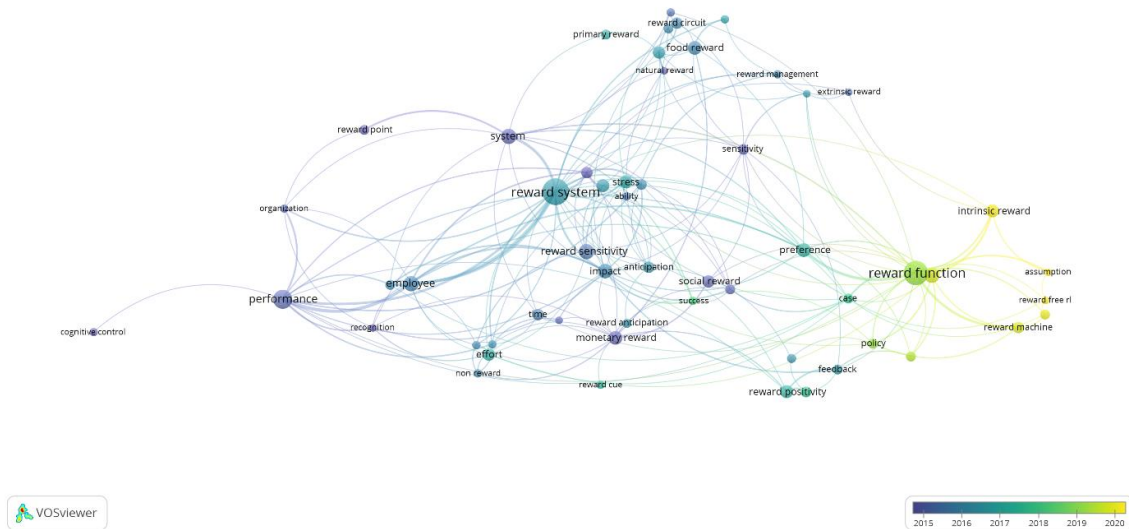


Figure 7. Network visualization of quotes

In the visualization in Figure 8, we can observe the distribution of keywords by using color to reflect the density of keywords in each location. The color of the points on the map provides an indication of the density intensity, with blue indicating low density and yellow indicating high density. In this analysis, special attention was focused on the areas of “reward system,” “reward function,” and “food reward.” This area shows a high level of density, indicating that keywords around this area have a significant presence and strong relevance. The more keywords and the higher the keyword weight in a point, the closer to yellow the point will be.

Please note that there is a clear separation between the three keyword areas, namely “reward circuit,” “reward machine,” and “performance.” There were also differences in link density and strength between the three significant keywords, namely “reward system,” “reward function,” and “food reward.” Visually, it can be concluded that the focus on reward systems in providing recognition to employees to improve performance has characteristics that are separate from certain aspects related to planning, implementation and evaluation of employee reward programs as well as aspects related to food as a type of reward that will be given to employees. Understanding the general structure of these keywords can help in investigating relationships and patterns among the concepts covered. By analyzing density maps, research can be more focused on exploring further the interactions between various concepts and understanding the complexity of the relationships between “reward system,” “reward function,” “food reward,” “reward circuit,” “reward machine,” and “performance .”

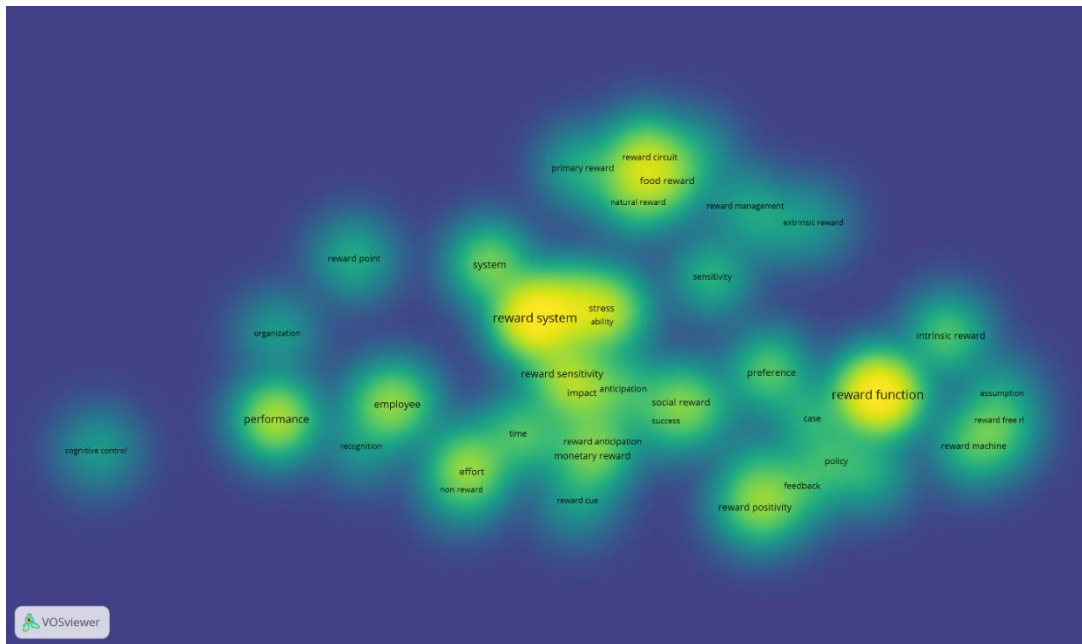


Figure 8. Density Visualization

#### *Identified keyword classification efforts*

Research on providing rewards to employees has produced significant findings, but the main attention has now shifted to the "reward system" aspect. The key distinction between rewards and reward systems lies in their focus. While rewards include rewards or compensation in general, the reward system focuses more on the system used to provide recognition to employees to improve performance in the company. For example, in the corporate context, the reward system involves concepts related to systems within the organization to provide appropriate rewards, motivate and strengthen positive employee behavior and improve performance. This includes aspects such as financial rewards (salary), non-financial rewards (awards), work-life balance (provision of leave), employee skill development opportunities (training), and creating a positive work environment. Therefore, the data visualization in Figure 8 shows that the key terms "reward system" and "performance" have a high level of clarity but are far apart, indicating the need for further research (Meyer & Maltin, 2010).

In other words, although reward systems are the main focus today, there are indications that further understanding and research into the concept is still needed. Additional research is needed to detail and understand in more depth the relationship between the reward system and performance in a more specific context or with a more detailed approach. Given the shortcomings of the visualization in Figure 8, future research should focus on gaining a more comprehensive understanding of the concept of reward systems and how they relate to performance so that they can be more effectively integrated into research contexts and organizational practice.

## 4 Conclusion

This research explores rewards in companies. Effective reward systems are identified as key to increasing productivity, employee retention, and a company's competitiveness in the job market. Bibliometric analysis of this research involves the Scopus website and the VOSviewer application, which provides an in-depth understanding of research trends and knowledge contributions in this field. The trend of writing articles in Scopus-indexed journals about rewards in the 2013-2017 period was not too fluctuating, a significant increase occurred from 2017 to its peak in 2019. Meanwhile, from 2019-2021 the number of article publications decreased. *Rewards and employee creative performance: Moderating effects of creative self-efficacy, reward importance, and locus of control* (Malik et al., 2015) have the

highest number of citations. The journal that contains the most articles about rewards is *Compensation And Benefits Review* and *Human Resource Management International Digest*.

It is important to note that network visualizations, as shown in Figure 5, Figure 6, and Figure 7, can provide a clear and easy-to-understand picture of the relationship between keywords, time evolution, and citation impact. Selection and analysis of keywords that appear together in clusters can provide in-depth insight into the relationships of these concepts. In addition, this research utilizes bibliometric analysis to evaluate and classify scientific literature. Using VOSviewer software, this research succeeded in creating a bibliometric concept map and analyzing the distribution of keywords, authors, and research institutions in reward literature. The selection of the Scopus database for bibliometric analysis provides fast and comprehensive access to scientific publications, and bibliometric analysis methods can provide valuable quantitative information about the selected literature.

Furthermore, keyword co-occurrence analysis provides further insight into the main focus of the research and the relationships between the concepts that appear in the literature. The selection of keywords with the highest number of links and the creation of clusters based on co-occurrence help to detail and group key concepts in the reward field. In this case, the main focus of research seems to include aspects such as "reward system", "reward function", and "performance", and other related concepts. These results provide a basis for further understanding trends and research focuses in the reward literature. In the next stage, the results are interpreted and discussed further to provide a deeper understanding of the contribution of this research to the understanding of rewards in the context of scientific research.

#### *Conflict of interest statement*

The authors declared that they have no competing interests.

#### *Statement of authorship*

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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