

Haihun Marquis Tomb in Western Han Dynasty: Social Value and Future Prospects - A Knowledge Graph Analysis with Citespace

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Abstract

This paper uses the CiteSpace knowledge graph visualization tool to analyze the research evolution path and trend of 583 academic papers in the CNKI database in the past ten years. The results show that the unique position of the tomb of the Haihun Marquis in the field of history and cultural heritage of the Han Dynasty, the mainstream of research in the field of Han Dynasty culture, artistic innovation and application, the evolution of cultural heritage research, and the interdisciplinary research of the deep integration of cultural heritage research and advanced technology in the future will provide strong support for promoting the cultural and museum industry and the recreation of traditional Chinese culture.

Keywords: *Tomb of the Haihun Marquis; Knowledge graph; Social value.*

Introduction

The Western Han Dynasty tomb of the Haihun Marquis is the biggest, best-preserved, and most culturally significant mausoleum discovered in China to date. It is the sole "model tomb" that adheres to the Han Dynasty system of interment for a marquis. Numerous "firsts" were achieved by the Haihun Marquis tomb in the annals of Qin and Han archaeology in China. These include the first physical copy of the "Edict of Removal of the Marquis of Haihun Marquis State" edict from the Western Han Dynasty, the earliest likeness of Confucius, the first tangible evidence of traditional Chinese medicinal soaking products, and the first authentic chariot and horse burial pit found south of the Yangtze River. Very high historical, scientific, artistic, and sociocultural standards are held by this tomb. Its excavation serves as a "living fossil" of the multifaceted, multiregional, and multilevel history of Chinese civilization during a particular era. It not only reveals the thriving civilization of the Han Dynasty, but it also perfectly captures the allure of the exceptional traditional Chinese culture. It offers us a priceless lens through which we can comprehend the historical and cultural legacies of the Han Dynasty.

Since the archaeological excavation of the Haihun Marquis Tomb in 2011, this significant historical and cultural heritage has attracted wide attention from domestic and international academic circles. Many scholars have conducted in-depth reviews and analyses in various fields. For example, Xu Changqing, Yang Jun, and others have focused on the archaeological value of unearthed artifacts (Yang Jun, 2015); Zhou Yihang, Wang Kai, and Huang Xize have analyzed the materials and cultural techniques of unearthed artifacts (Guan Li, Wu Hao, Wei Yanfei, 2019); Dai Yu, Liu Wentao, and Li Chao have discussed the beauty of object decoration from a design aesthetics perspective and its application in modern design (Dai Yu, Liu Wentao, Li Chao & Xiao Xuejian, (2017)). In addition, publishing institutions such as Jiangxi People's Publishing House, Sanlian Bookstore, Jiangxi Education Press, Jiangxi Art Publishing House, etc. have released monographs, archaeological exhibition results, and catalogs of unearthed artifacts related to the Haihun Marquis Tomb, providing valuable visual and textual materials for research in related fields (Jiangxi Provincial Museum, 2018). As of now, there are only two review articles on the Haihun Marquis Tomb, focusing on the owner's background, political situation, tomb structure, and excavation of unearthed artifacts. In terms of research methods, there are still limitations, with no objective analysis using scientific literature metrics tools for a review of the Haihun Marquis Tomb.

This article aims to quantitatively analyze the research trends of the past decade in the excavation of the Haihun Marquis Tomb using Citespace visual mapping through the study of keyword co-occurrence

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clustering, research evolution paths, and trends. This analysis can objectively reflect the changing research hotspots and development trends in this field, with the goal of supporting the specific practices and efforts towards achieving China's strategic goal of comprehensive revitalization of traditional culture by 2025 and providing references for research in the field of Han Dynasty Haihun Marquis.

Data Sources and Research Methods

Data Sources

Based on the information database of the China National Knowledge Infrastructure (CNKI), this study set the precise search conditions and used "Haihun Marquis Cemetery" and "Haihun Marquis Cemetery" as the combination of subject headings, supplemented by the keyword "Liu He." The time frame is limited to November 17, 2015, to December 31, 2023, starting with the official exhibition of the archaeological excavation results of the tomb of the Haihun Marquis. A total of 885 documents were retrieved. In order to ensure the accuracy of the retrieval data, 582 valid literature data were finally obtained by manually cleaning the literature and eliminating duplicate literature and news reports, newspapers, conferences, reviews, etc. that were not related to the research topic.

Research Methodology

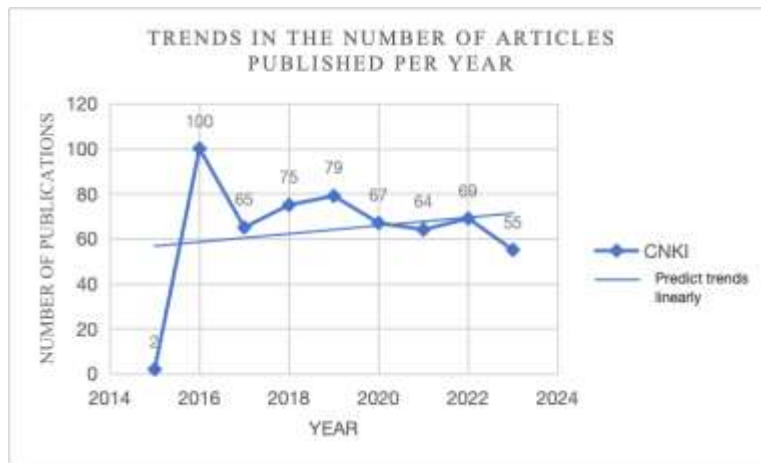
In order to accurately reveal the research status and development trend in the field of sea dusk marquis, this study uses the CiteSpace software developed by Chaomei Chen's team at Drexel University in the United States and visually presents the publication trend and evolution path in the form of charts through the visual analysis of the literature knowledge graph. As a visualization tool widely used in the field of scientometrics, CiteSpace can evaluate the research status of a field in a specific period of time through scientific analysis methods such as clustering word sources, co-citations, and field contributions, which has an important impact on the field of scientometrics.

In this study, the co-word cluster analysis method, Price's law, and time coordinate diagram method were used for econometric analysis, and the visual knowledge map of the relevant fields of the Tomb of Haihun in the past ten years from 2015 to 2023 was drawn. Through this map, we can interpret the research status, social value, and future development trend prospects of the related fields of the Tomb of the Haihun Marquis in the Western Han Dynasty in China and then better explore the evolution path and knowledge inflection point of the hot spot of the Tomb of the Haihun Marquis.

Research and Analysis of Related Fields in the Tomb of the Haihun Marquis

Analysis of the Number of Academic Publications in China

The number of published papers is an important indicator to evaluate the development status of a specific field in a specific time period, which can more intuitively show and predict the research trend in this field. Therefore, it is of great significance for the study of project trends [5]. Before visualizing the number of publications, Excel was used to statistically analyze the relevant samples of the tomb of the Marquis of Haiyang in the CNKI database, and then the annual publication volume of the literature in the past ten years was plotted as a trend chart. This is shown in Figure 1.

Fig. 1: Annual distribution and trend of the number of publications in the field of the tomb of the Haihun Marquis

(2015–2023).

Figure 1 clearly shows that from 2015 to 2023, the number of publications has shown a steady increase, reflecting the degree of academic attention to related fields. The tomb was excavated in 2011 and opened to the public on November 17, 2015, after five years of comprehensive archaeological work. This important event catalyzed the rapid development of research in this field in China. According to the statistics of Dajiang.com Data Center, in 2015, the archaeological excavation of the tomb of the Haihun Marquis in the Western Han Dynasty in Nanchang became one of the top ten news stories of the year in the province, ranking fifth. In the 2015 National Top Ten Cultural Relics Event Network Selection sponsored by China Cultural Relics Network, the archaeology of Haihun Marquis topped the list and became the most influential cultural relics event of the year.

In the academic world, the study of the tomb of the Haihun Marquis has always attracted much attention. The revelation of major events has increased the attention of the academic community to related fields. Since 2016, the number of research papers published in this field has increased significantly, and the number of papers has exceeded 100 in that year, and it has continued to become a hot topic in the academic community. In 2017, it was rated as one of the top ten academic hotspots in China. In 2019, the tomb of the Haihun Marquis was named one of the "World's Major Field Archaeological Discoveries," further consolidating its position in the academic community. In 2020, the Nanchang Han Dynasty Haihun Marquis Museum was officially opened to the public, providing the public with a window into this important cultural heritage. In 2021, the Tomb of the Marquis of Haiyang won the honor of "Top 100 Archaeological Discoveries in 100 Years," once again demonstrating its important position in the academic community and the public. As of December 2023, the main tomb of Liu He has been fully displayed and opened, presenting an intuitive archaeological site to the public, providing the latest research results and information for the academic community, and promoting in-depth research in related fields (Capital Museum, 2016).

Distribution of Authors and Research Institutions

Through in-depth combing and analysis of research literature authors and research units in a certain professional field, we can clearly identify the research institutions and core researchers with important influence in the field, as well as their research results and contributions. In this study, CiteSpace visualization software was used to systematically analyze the authors of 582 valid pieces of literature. The results of the analysis showed that there were 231 authors, and 231 nodes were formed. According to Price's law $M=0.749\sqrt{N_{Max}}$, the standard of the current core authors in this field is calculated, that is, $M=0.749\times 4.89$. Therefore, authors with more than or equal to four papers can be considered core researchers in this field. As shown in Table 1, the most prolific authors in this field are mainly found in the Institute of Antiquities and Archaeology, institutions of higher learning, and associated museums. The Jiangxi Provincial Institute of Cultural Relics and Archaeology is a leader in this field, and its research results have high authority and influence. In this institution, researcher Yang Jun, the archaeological leader of the tomb of the Marquis of

Nanchang Haiding, has performed particularly well, publishing 24 papers. In addition, Prof. Changqing Xu, Prof. Wenhuan Li, and Prof. Dan He have published 21, 19, and 16 papers, respectively, and their research results have laid a solid foundation for the development of the field. He Gang, He Dan, Xia Huaqing, and other scholars from universities and museums have also promoted the innovation and practical exploration of academic theories in this field.

Table 1 Statistics of the most published authors of the study of the tomb of the Haihun Marquis in China from 2015 to 2023 (top 10)

The same number is tied	author	Research institutes	Number of papers/article	Year of first publication
1	Yang Jun	Jiangxi Provincial Institute of Cultural Relics and Archaeology	24	2015
2	Xu Changqing	Jiangxi Provincial Institute of Cultural Relics and Archaeology	21	2016
3	Li Wenhuan	Jiangxi Provincial Institute of Cultural Relics and Archaeology	19	2018
4	Wang Gang	Jiangxi Normal University	17	2016
5	Guan Li	Jiangxi Provincial Institute of Cultural Relics and Archaeology	16	2018
6	He Dan	Nanchang University	7	2017
7	Xia Huaqing	Jiangxi Provincial Museum	6	2018
7	Hu Dongbo	School of Archaeology, Culture and Museums, Peking University	6	2018
7	Zhang Jianwen	Nanchang Han Dynasty Haihun Marquis state Museum	6	2020
7	Wang Qinglei	Institute of Music, Chinese Academy of Arts	6	2017

Trend Analysis and Research Hotspots

Analysis of Research Hotspots

The research hotspot information and change trend in various time periods are calculated based on the frequency of their occurrence and co-occurrence pattern, while keywords are the essential, condensed information about the study topic. It can be a useful tool for researchers to find and comprehend important details and the development of different study topics, hence revealing future development trends.

By using Citespace software to adjust the parameters, the keywords of the research on the sea dusk in the past ten years were condensed, and the top 15 high-frequency keywords were extracted, and the results are shown in Table 2. It can be seen that the core keywords in the research field of the Haihun Marquis tomb, such as "the tomb of the Marquis of Haihun," "the Hahun Marquis," "Liu He," "Western Han Dynasty," "Haihun Marquis," etc., appear frequently and have a high degree of centrality. In particular, the "Tomb of the Marquis of Haihun," as the core field of research, has appeared 99 times since 2016, and the centrality value is as high as 0.46, which has undoubtedly become the core node of this research field, further confirming its important position in academic research. In addition to the core topic of "the tomb of the Haihun Marquis," other keywords are also worth paying attention to, such as the earliest "Confucius Clothes Mirror" discovered so far (He Dan. 2023).). "lacquerware" and "cultural and creative products" reflect the expansion of the topic information and perspectives of many scholars in the field of the tomb of the Haihun Marquis. With the promulgation of a series of policies on building a socialist cultural power,

vigorously developing the cultural industry, and promoting the creative transformation and innovative development of Chinese civilization, the "museum" and "new media" in the relevant research of the tomb of the Haihun Marquis. The centrality of keywords such as "sunset culture" has gradually increased and become a new research focus. The emergence of these keywords not only highlights the importance of the academic community to the activation and utilization of cultural relics but also reflects the application and trend of digital technology in the field of research on the tomb of the Haihun Marquis.

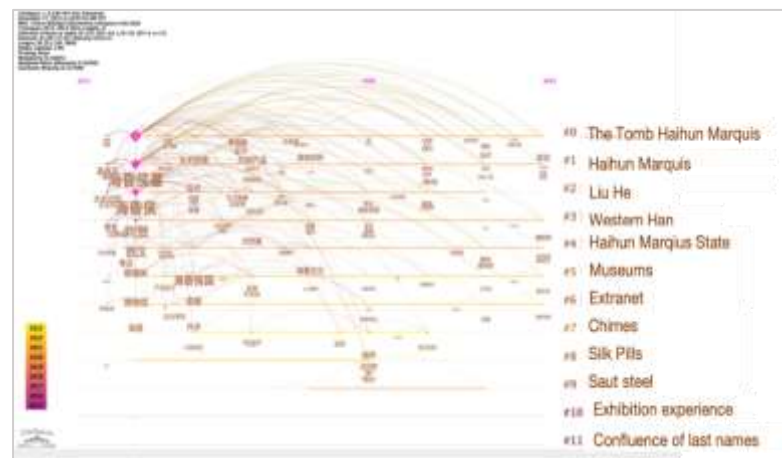
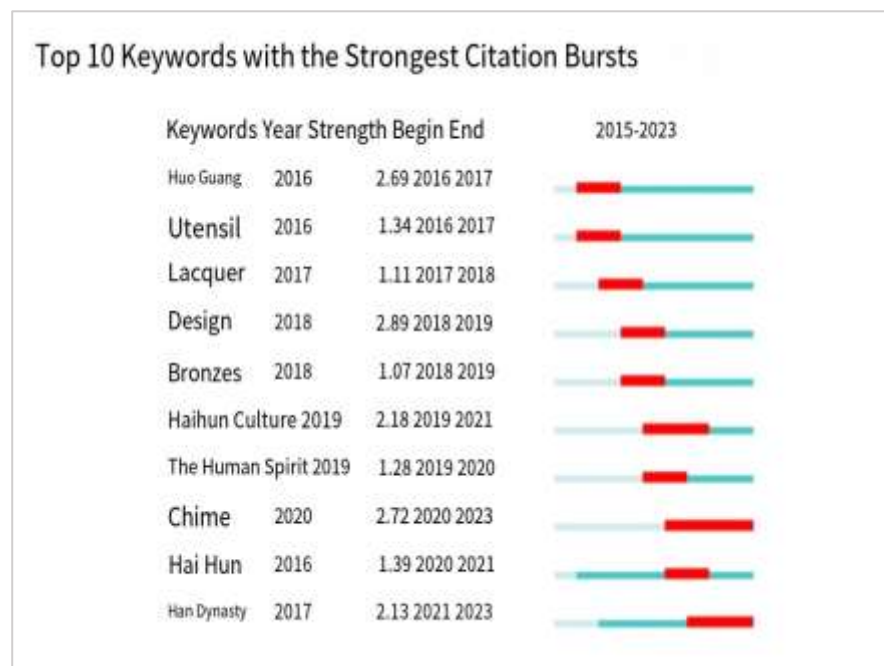
Table 2 Statistical analysis of the top 15 high-frequency keywords of the Haihun Marquis

Number	Centrality	High-frequency keywords	Frequency	Year
1	0.46	Haihun Marquis Tomb	99	2016
2	0.43	Haihun Marquis	88	2016
3	0.29	Liu He	61	2016
4	0.1	Western han dynasty	22	2016
5	0.1	Haihun Marquis State	22	2017
6	0.02	Confucius clothes mirror	13	2016
7	0.03	Cultural and creative products	11	2017
8	0.03	lacquerware	10	2016
9	0.02	Han dynasty	10	2016
10	0.04	Museum	9	2017
11	0.03	Horseshoe gold	8	2018
12	0.01	Bells	8	2019
13	0.03	New Media	7	2016
14	0.03	Haihun Culture	7	2017
15	0.02	Design	7	2017

Research Trend Analysis

Keyword clustering is an analysis method that constructs a key timeline diagram by arranging keywords in the same cluster in chronological order to show the historical evolution of keywords (Li Jie, Cheng Meichao 2016.). Based on the keyword clustering of the tomb of the Haihun Marquis, this study draws a key timeline diagram in order to gain a clear insight into the development trend of this research field. Combined with the evolution path of the tomb of the Marquis of Haiyang in Figure 2 and the key words in Figure 3, we can intuitively discuss the evolution path and trend of research in this field and then analyze the research focus and turning point.

Observing Figure 3, it can be seen that keywords such as "Huo Guang" and "utensils" frequently appeared in the early stage of the exhibition of cultural relics of the Hou Haidu, which became the focus of the time. This indicates that the early research mainly focused on the historical context of the life of the Haihun Marquis and the excavated artifacts themselves. Huo Guang is a key figure in the ups and downs of Haihun Marquis's life and a victim of his political schemes. It is an unavoidable focus of academic discussion. With the deepening of research, new keywords such as "chime," "sea dusk culture," and "Han Dynasty" gradually emerged. These spurts indicate that the field of research on the tomb of the Haihun Marquis is changing. In particular, the two keywords "chime" and "Han Dynasty" have been prominent for the longest time since 2020. As the treasure of the Haihun Marquis State Museum, the bell unearthed from the tomb of the Haihun Marquis, as well as the highest-level ceremonial instrument of the Han Dynasty unearthed at present, is empirical evidence of the hierarchical ritual system of the princes and kings recorded in the ancient book "Zhou Li." From these prominent keywords, we can infer that the focus of scholars' research has gradually shifted from historical

Fig.2: The research and evolution path of the tomb of the HaihunMarquis**Fig.3: The key words of CNKI's research on the tomb of the Haihun Marquis**

From the above analysis, it can be seen that the research on the tomb of the Haihun Marquis has gradually shifted from a simple archaeological excavation in 2015 to multidisciplinary, comprehensive research. This includes history, anthropology, art, communication, and other fields and can be divided into the following three main stages, which have important reference significance for subsequent multi-historical research and cultural heritage inheritance and protection.

Early Exhibition of Cultural Relics (2015–2016)

In November 2015, the archaeological excavation results of the tomb of the Haihun Marquis in the Western Han Dynasty in Nanchang were exhibited for the first time, attracting widespread attention. The exhibition not only focuses on the results of tomb excavations but also delves into various fields such as archaeology,

heritage conservation, and public display. Through the exhibition, the audience can appreciate the glory of the thousand-year-old Han Dynasty. A large number of precious cultural relics, such as gold, jade, pottery, and bronze, unearthed in the tomb not only have high artistic value but are also valuable evidence of the society, culture, and history of the Han Dynasty. The museum team carefully planned and systematically introduced the discovery, excavation, and research results of the tomb of the Haihun Marquis in the form of pictures and texts through a number of thematic exhibition areas, which is a useful attempt at public archaeology. This has enhanced public awareness and participation in archaeological and heritage conservation and contributed to the preservation and inheritance of cultural heritage.

Deepening of Academic Research (2016–2019)

Since the tomb of the Haihun Marquis was first exhibited, many scholars have devoted themselves to in-depth research on the tomb. They focus on a wide range of fields, including the geographical environment, political system, tomb structure, and artifact craftsmanship of the Western Han Dynasty, among which Liu He's personal life and family background are the focus of scholars' research. Regarding the geographical environment of the Western Han Dynasty, scholars have deeply explored the natural environment, administrative divisions, and geographical relationship with the surrounding areas by comparing historical documents and field archaeological findings. They found that the unique geographical location of the Haihun Marquis, close to the Yangtze River and dependent on Poyang Lake, provided Yuzhang County, the "land of prosperity in the south," with unique conditions for economic development and cultural exchanges at that time, and many scholars also had some controversy about the meaning of HaiHun, such as "water theory," "notoriety theory," and "geographical environment theory" (Jiang Bo, Zhou Shixia.2017). In terms of the political system, scholars have conducted in-depth research on the official system and the feudal system of the Haihun Marquis, as well as the relationship with the central government. They found that the political system of the Haihun Marquis was not only different from that of other vassal states but also reflected the characteristics of the centralized power of the Han Dynasty to a certain extent. This discovery provides a new perspective for us to understand the diversity of local political systems in the Western Han Dynasty.

In terms of tomb structure, after archaeological excavation and structural analysis, experts have revealed the uniqueness of the tomb of Haihun Marquis. The complex structure and large scale of this tomb not only show the excellent architectural skills of the Western Han Dynasty, but also highlight the noble identity of the tomb owner. The study of Liu He, a historical figure, is also one of the focuses of scholars. Through the combing of historical data and the interpretation of unearthed cultural relics, experts have a more comprehensive understanding of Liu He's personal life. They discovered that Liu He was not as promiscuous as the history books suggested, but also that he was a knowledgeable and cultured person. He has profound cultivation in the fields of Confucian etiquette, music theory, and art. In addition, scholars have also conducted in-depth discussions on the materials and pattern aesthetics of the unearthed artifacts. For example, the unearthed artifacts such as chariot and horse DangLu, bronze goose fish lamp, lacquer box and so on are not only exquisitely crafted, but also have exquisite patterns and far-reaching meanings. These artifacts demonstrate the superb craftsmanship of the Western Han Dynasty and provide an important reference for understanding the aesthetic concepts and cultural connotations of the Han Dynasty. In terms of Han Dynasty classics, culture, rituals, and music, scholars such as He Jin and Zhang Kebin have looked at the problems of modern and ancient texts through the study of bamboo slips unearthed from the tomb of the Haihun Marquis, including the Book of Changes, the Analects of Qi, the Book of Rites, the simplified version of the Spring and Autumn Period, and the Book of Filial Piety (Yang Bo. (2023).), and found that they have a historical process of evolution with the classics handed down from generation to generation (Li Jie, Chen Chaomei.2016).

Cultural Inheritance and Innovation Stage (2020–Present)

With the country's emphasis on cultural relic protection and cultural self-confidence, the research work on the Tomb of the Haihun Marquis, an important historical site of the Han Dynasty, continues to advance. Driven by relevant policies, the Nanchang Han Dynasty Haiyang Marquis Museum was officially opened in

2020 after four years of careful preparation. The museum not only provides a valuable platform for the study of the tomb of the Haihun Marquis but also increasingly becomes an important carrier for the inheritance and innovation of various cultural institutions and teams.

In the study of the tomb of the Haihun Marquis, researchers have paid more attention to and developed the cultural expression and innovation strategies of artifact images, cultural and creative products, and traditional production techniques in modern design art. These studies not only help us to have a deeper understanding of the history and culture of the Han Dynasty, but also inject new inspiration and ideas into modern design art. The excavation and promotion of local culture occupy a core position in the study of the tomb of the Haihun Marquis. Through in-depth research on the unique charm and profound connotation of local culture, researchers can gain a deeper understanding of the values and lifestyles of Han Dynasty society, thereby providing valuable reference and inspiration for modern society. In terms of communication, the publicity and promotion of the tomb of the Marquis of Haiyang have also achieved remarkable results. Combined with modern scientific and technological means, such as virtual reality digital technology, the development of virtual tourism, and scene-based museums, innovative communication methods have enabled the influence of the tomb of the Haihun Marquis to be more widely disseminated. The application of these technologies not only enriches the visiting experience of tourists but also injects new vitality into the publicity and promotion of the tomb of the Haihun Marquis. Interdisciplinary and multidisciplinary research plays a crucial role in the field of the tomb of the Haihun Marquis. Experts from various disciplines such as history, archaeology, art, and communication have participated in the study of the tomb of the Haihun Marquis, which has brought vitality to innovation and development. This interdisciplinary research method not only helps to dig deeper into the historical and cultural value of the tomb of the Haihun Marquis but also provides new ideas and methods for the development of related disciplines.

Conclusions and Prospects

In this study, 582 academic documents were comprehensively analyzed by using CiteSpace visualization tools, and the social value and emerging research trends of the tomb of the Marquis of Haiyang in the Han Dynasty were deeply discussed. At the same time, a visual knowledge graph was constructed, and the research hotspots and their evolution from 2015 to 2023 were drawn to evaluate the academic focus and development trend. The study sheds light on the evolution of the artifacts from the initial exhibition to the academic discussion to the current research trends, marking the gradual penetration of a multidisciplinary approach to the fields of history, anthropology, art, and communication. The distribution of research institutions shows that the Jiangxi Provincial Institute of Cultural Relics and Archaeology has become an important research institution, and a group of influential researchers have made outstanding contributions to the development of this field. The high-frequency keywords reflect the gradual shift from historical archaeology to the study of Han Dynasty culture and art. The research shows that the gradual increase in the degree of diversity, comprehensiveness, and ease of use of digitalization in the future will provide a solid foundation for academic research that reveals the historical and cultural complexity of the Western Han Dynasty. The Nanchang Hanhai Marquis Museum and its digital platform have also further expanded their communication influence.

To sum up, with the country's emphasis on cultural relic protection and cultural self-confidence, research on the tomb of the Haihun Marquis is gradually developing in the direction of diversification, in-depth, and digitalization. In the future, with the deepening of research, the value of the tomb of the Haihun Marquis will be more comprehensively excavated and understood. It is not only a witness to history but also a treasure trove of culture. Through the restoration and restoration of the cultural relics unearthed from the tomb of the Haihun Marquis, more historical mysteries will be solved in the future, and the unique charm of Chinese civilization will be presented. Deepen people's understanding of the value of Han cultural heritage. We will also make unremitting efforts to contribute more to the inheritance and development of Chinese culture.

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