Research Paper

An Invisible Knowledge Network of Human Resources Studies:Tag Cloud Analysis

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ABSTRACT: *The purpose of this study is to identify the evolution of the intellectual structure of human resources studies and to propose a theory of an invisible network of knowledge. Tag cloud analysis was used to trace the development path of human resources research. By analyzing 22,487 citations of 840 articles published in SCI and SSCI journals in the human resources field from 2002 to 2011, this study maps the intellectual structure of human resources studies. This article dwells upon the wide spreading social tags of website applications. By so called "crowd wisdom," the tag cloud analysis reveals the preliminary investigation from a social network viewpoint, provides researchers with profiles of human resources related subjects and theories, and sheds light on future directions of studies. The results profile the invisible network of knowledge production in the human resources studies. The contribution of this study is to provide important insights and implications of current and future research paradigms for both management scholars and practitioners.*

Keywords: Human resources, intellectual structure, invisible network of knowledge, tag cloud analysis.

I. INTRODUCTION

Theoretical Development If I have seen further, it is by standing on the shoulders of giants (Sir Issac Newton, 1645-1736). It's said "stand on the shoulders of giants (the under-box slogan of Google Scholar®)" in which giants means the highly cited authors, papers and books. As shown in the following INK poem inspired by Kotler [1], we realized that via INK model [2] could help a novice like a brand new doctoral student in nurture process to escape from vicious cycle of chick-egg with a clear scientific map at hand first to navigate the blue ocean of knowledge domain when the novice knows nothing [3]:

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I don't know in which field I am.

I don't know what theory in the field is.

I don't know when they created good theories.

Now, what was it you wanted to tell me?

The past decade has especially seen extensive research on human resources. Yet even though human resources has established itself as an academic discipline, its establishment has been a slow process because researchers in this area prefer to publish their best work in more established journals. Another major obstacle to the development of human resources lies in the subject's unusually high degree of interaction with other disciplines. This overlapping blurs the boundaries of human resources and as a result its distinct theoretical model and analytical tools are unjustly attributed to other competing fields. With limited resources contributing to the development of human resources, the cross-fertilization of ideas between scholars of human resources will be much more difficult to obtain. Consequently, while there is no doubt that there is an area or field of human resources, the question remains somehow unclear on what it is, how good its work is, and what are its prospects and needs for future development.

The aim of this study is to provide human resources researchers with a unique map to better understand human resources related publications and to provide a systematic and objective mapping of different themes and concepts in the development of human resources field. This study also attempts to help identify the linkage among different publications and confirm their status and positions in their contribution to the development of human resources field.

This article attempts on the sociality marks one of website widespread application characteristics: The tag cloud carries on the preliminary inquisition, pondered from the social network angle, uses the populace wisdom, a little at a time mounts up, or may be "human resources" the theory and the real diagnosis, provides a new ponder direction.

II. THE MEANING OF TAG CLOUD

The tag cloud is the common display mode for the search results in folk taxonomy-based websites, presenting tag sizes according to the frequency and the popularity of the key words. It is called the weighting detailed list in the visual design domain, one of user interface main design elements, uses for the achievement to describe the website content vision tool [4]. According to Rivadeneira [5], the tag cloud presents for the writing collection vision, usually for the tag collection which chooses based on some kind of reason, using the size, the weight, the color attributes and so on, to take the correlation character word the characteristic. While some people regard as the tag cloud as a thing semantics field the vision symbol [6].

The tag cloud in essentially may the emerging glossary which classifies the vulgar people transform for the public relations leads the survey tool (social navigation tool), and provides filters (Filtering), quality (Quality), the society corresponds the relations (Social Affordance), the use remoulds the peaceful experience (Use Reshapes Experience) and so on the survey functions [7], [8]. In 3 other words, the tag cloud is one kind the sole glossary, demonstrated by the different color size font, encircles the shape with the succinct sole vision to present the subject index the network application way, may let human one see the popular tag, each tag all is a directional

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same subject group linking, simultaneously also is one kind of survey tool.

The tag cloud took an information vision new technology, describes individual information the effect to win in the association, may for the populace communication and the ponder new method; The website designs master Jefhey Zeldman the tag cloud to describe for the pop culture tidal current element, is the Web20 application big creativity. Some people thought the tag cloud is very practical, may take the information survey tool, also some people thought may take the abundant series the use analysis tool.

III. TYPES OF TAG CLOUD

There are three main types of tag cloud applications in social software, distinguished by their meaning rather than appearance.

The first type, there is a tag for the frequency of each item, size represents the number of times that tag has been applied to a single item [9]. This is useful as a means of displaying metadata about an item that has been democratically "voted" on and where precise results are not desired. Examples of such use include Last.fm (to indicate genres attributed to bands) and Library Thing (to indicate tags attributed to a book).

The second type, there are global tag clouds where the frequencies are aggregated over all items and users. More commonly used type, size represents the number of items to which a tag has been applied, as a presentation of each tag's popularity. Examples of this type of tag cloud are used on the image -- hosting service Flickr, blog aggregator Technorati and on Google search results with Deeper Web.

The third type, the cloud contains categories, with size indicating number of subcategories. Tags are used as a categorization method for content items. Tags are represented in a cloud where larger tags represent the quantity of content items in that category. There are some approaches to construct tag clusters instead of tag clouds, e.g. by applying tag co-occurrences in documents [10]. More generally, the same visual technique can be used to display non-tag data [11], as in a word cloud or a data cloud. More generally, the same visual technique can be used to display non-tag data, as in a word cloud or a data cloud.

IV. TAG CLOUDS ANALYSIS

A tag cloud is a visual representation for summarizing text data, used to depict keyword metadata (tags) on websites. Typically, the tag size in a collection (cloud) signifies its frequency of use. It offers a spatial view of the frequency of keywords and draws our attention to high frequency ones in a specific area [12], [13], [8]. Early application are Web 2.0 sites such as Flickr, del.icio.us and 4

Technorati. E-Commerce websites such as Amazon or O'Reilly Media successfully provide tag clouds service to help users navigate through aggregated data [11]. However, tag clouds are not only used to display tag sets but are also increasingly applied in other contexts and for various data sets, for instance, in the areas of information visualization or text summarization [14], [15]. Clouds are an effective way to make the most of limited page space by showing tags alphabetically as well as ranked by popularity. In addition, they are a graphically interesting way to display a long list of tags [16].

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The system user who marks the foundation may in the tag free choice join the key word: The network resources, are oneself perhaps everybody use together, browses in the vision in the tag gathers, in achieves by the dissimilar way. Generally speaking, in the tag defines the user limits the area represents a tag cloud to propose approximately the number also most Chang Yongdao. The typeface size represents this tag the number of times which quotes, therefore very easy to be possible to distinguish [17]. The tag cloud cartography and the graph plan, by passes through is short very much is used. Montero and Lei Luo Solana [18] proposed the improvement cluster similar symbol and removes some tags, carries on the tag cloud the layout. Rice roentgen, Feinberg, dynamic can eliminate not the remarkable mark with Kerr [19] suggestion user, and increases an index tag, thus it can be seen, is more convenient and is fast. Bielenberg proposed the circular tag cloud, in is not the typical rectangular layout, in which most important weighting tag can appear and the stem for stem in among. However, the tag cloud is only a representative of a specific instance. For example, Dubinko, Kumar, Maigenani, Novak, LAC, and Tomkins [20] proposed a model to represent the timesheet tag, and Russell [21] suggest a tool to study tags the cloud change over time. Jaffe, Tassa, and Davis [22], to consolidate information into a map, as in a fixed location of photo, a volume in the volume tag will be displayed.

The past few years, Internet users to create and gather your own data concept have been on the rise. Information on the physical or digital resources (such as books, files, images, and so on). Most of them are based on the description, data structure and management [23] distinction. For metadata description of a resource, to promote discovery and resolution. Such as the title, abstract, author, and keywords or journals. Structural metadata and resources, for example, combining all the chapters in the book. Managing metadata support resource management, will provide the information, such as date created, file type, PIN, is all about understanding of resources and security. Overview: metadata is data about data [9]. Mass classification to replace the traditional classifications becomes trends. Popular classification is simple, and provides the ability to freely chosen keywords, so anyone can operate. Now determine not only involve information, and a common understanding. Knowledge of the service, such as Flickr, Delicious, and Technorati, created a lot of interest in the tagging system, which allows users to freely [8] select keywords for different resource allocation (otherwise known as the volume tag). Volume tagl has been the focus of research in recent years [8], [24]–[29].

V. LIMITATION OF TAG CLOUD

The first limitation, the tagging itself is extremely powerful, it also has some shortcomings. The problem is that the natural language we use is ambiguous. While taging data with tags we make use of our personal understanding of this data and these tags. However, keywords are usually not specific enough.

The second limitation, it is not clear whether the tag "design" is related to graphic design, web design, software design or the design of hardware architecture. Most words have a number of different meanings, which is why the quality of tag clouds quickly gets messy and useless once you tag data with too many common tags.

The third limitation, an interesting tendency is the use of tag indexes instead of tag clouds. In some cases tag clouds might be not the best solution for precise content presentation. For instance, if visitors are looking for some specific topic they would prefer a search engine rather than "weighting" proportions of the tags. In such

situations a "reference index" of tags comes in handy [30].

VI.   THE FINDINGS

Tag clouds are excellent ways to display long lists of tags. It was surprising to observe that tag clouds were not used extensively. The combination of tag clouds offers a spatial view of the frequency of words and draws our attention to high frequency words in a specific geographical area [13].

In Stage 1, based on the results of tag cloud analysis shown in Fig. 1 and Fig. 2, there is clearly an immediate visual impact of these tag clouds that identifies dominant words, making what was tacit within the document more implicit. This study looks at changes in the use of words over time, describes the tag clouds for the individual documents, and identifies the prominent messages (see Fig. 1, Fig. 2, and Table 1). The largest tag in the Stage 1 analysis (indicating the most frequently used term) is "human resources" (1071). The words "organizational" (112), "management" (152), and "theory" (74) are also dominant.

In Stage 2, there is a tag cloud of the 30 most popular Author in the selected number possible words (see Fig. 3). The word "de" appears 22 times in the document followed by "da" (20), "bj" (19), "rj" (18), "jc" (17), "ma" (16), and "anonymous" (13). Although there is still a focus on the word "expatriate," we can see the beginning of the practice of replacing management words by the word "adjustment." That is, the cross-cultural management words have been replaced by "cross-cultural adjustment," and perhaps this shift in research emphasis is reflected in this change of wording (see Table 2).

Fig. 1. Keyword analysis of tag clouds from 2002 to 2006: showing top 30 possible words

Fig. 2. Keyword analysis of tag clouds from 2007 to 2011: showing top 30 possible words

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Fig. 3. author analysis of tag clouds from 2002 to 2006: showing top 30 possible words

Fig. 4. author analysis of tag clouds from 2007 to 2011: showing top 30 possible words

In Stage 3, there is a tag cloud of the 30 most popular company litle in the selected 1,013 possible words (see Fig. 5, Fig. 6 and Table 3). The largest tag in the Stage 3 analysis is "human resources" (538), followed by "performance" (317), "management" (179), "behavior" (137), "model" (125), "charismatic" (128), "transactional" (152), "work" (150), and "transformational" (127) (see Table 3).

Fig. 5. The company specify a title analysis of tag clouds from 2002 to 2006: showing top 30 possible words

Fig. 6. The company specify a title analysis of tag clouds from 2007 to 2011: showing top 30 possible words

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In Stage 4, there is a tag cloud of the 30 most popular title analysis in the selected number possible words (see Fig. 7, Fig. 8, and Table 4). The largest tag in the Stage 4 analysis is "human resources" (861→1505), followed by "schoolwe(92→153), "managementby(54→103), "developmenty (54→96), "organizationalsT(46→95), "transformationalhe(55→94), "educationalio(90→na), and "study" (41→78), (see Table 4).

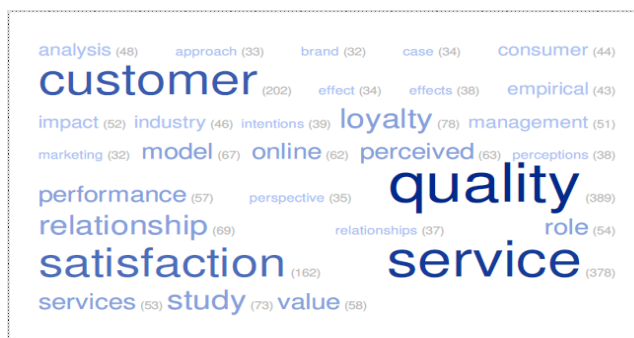**Fig. 7. Title analysis of tag clouds from 2002 to 2006: showing top 30 possible words**

Fig. 8. Title analysis of tag clouds from 2007 to 2011: showing top 30 possible words

VII. CONCLUSION

7.1 The Advantages of the Invisible Network of Knowledge

The past decade years have seen extensive research on human resources. This study investigates human resources research using citation and co-citation data published in SCI and SSCI from 2002 to 2011. This study constructs the INK of human resources studies for the period 2002–2011. Moreover, the so-called research procedures provided in the INK model can be applied to other fields of research. This methodology can easily be applied to other disciplines and provides a powerful research tool for understanding the epistemology of a field as it evolves. By tracing the research path of a specific field in which they are interested, researchers would be able to navigate through time to discover how certain ideas may have evolved into respected scientific concepts, theories, or practices. Researchers can also use this methodology to explore the knowledge network of their own fields so as to gain a vantage position with respect to their field and conduct seminal research.

The contribution of this paper is thus to provide valuable research directions in the human resources studies field, and to propose an objective and systematic means of 12 determining the relative importance of

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different knowledge nodes in the development of the human resources studies subfield of management. This study offers value added, not only because it is the first study to apply tag cloud analysis, but also because it complements and improves the findings of other studies that have approached the subject from the qualitative perspective.

This article attempts on the sociality marks one of website widespread application characteristics: The tag cloud carries on the preliminary inquisition, pondered from the social network angle, uses the populace wisdom, a little at a time mounts up, or may be "human resources" theory and the real diagnosis, provides a new ponder direction.

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