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# **‘LOCAL CONTENT’ OF CORPORATE SOCIAL RESPONSIBILITY IN INTERNATIONAL CONSTRUCTION**

**Meng Ye<sup>1</sup>, Weisheng Lu<sup>2</sup>, Fan Xue<sup>3</sup>, Roger Flanagan<sup>4</sup> and Dongping Fang<sup>5</sup>**

<sup>1,2&3</sup> *Department of Real Estate and Construction, Faculty of Architecture, The University of Hong Kong, Pokfulam Road, Hong Kong*

<sup>3</sup> *School of Construction Management and Economics, Whiteknights, P O Box 225, Reading, Berkshire, RG6 6AY, UK*

<sup>4</sup> *Department of Construction Management, Tsinghua University, Haidian District, Beijing100084, People's Republic of China.*

‘Local content’ is increasingly stipulated in international construction business. While it is agreed that ‘local content’ is a part of corporate social responsibility (CSR) agenda, what exactly constitutes a ‘local content’ remains controversial. The primary aim of this study is to (a) map out the status quo of ‘local content’ patterns as portrayed by International Construction Companies (ICCs), and (b) offer deeper insights on the concept by relating it to CSR localisation. By applying text mining to ICCs’ CSR reports, it is found that local contents implemented in various host regions are largely uniform. As for the indicators, ‘materials’ (EN1) and ‘Product and service labelling’ (PR2) are the most reported local content initiatives. Besides, ICCs also pay much attention to implementing other local content aspects, such as diversity and equal opportunity (LA4), local communities (SO1), and public policy (SO3). These research findings help deepen the understandings of local content and CSR concept, which could help ICCs and public project sponsors to better promote CSR in the international construction context. The findings could also be used for further investigation of the causal factors (e.g. impacts of institutional distance) leading to the different local contents.

Keywords: local content, corporate social responsibility, CSR, localisation

## **INTRODUCTION**

‘Local content’ is introduced as a part of CSR agenda by international companies recently (Tordo *et al.* 2013). In line with the social impact compensation argument (Warner 2011; Ado 2013), local content can be viewed as the reasonable benefit in return to local communities and economics, which may have been negatively affected by the operations of international companies. Local content is always regarded as one strategy for the resource-rich economies to avoid the ‘resource curse’ and to build sustainable capacity for the local while they join the irreversible economy globalisation. It is also frequently stipulated in the international construction markets, especially in the tender conditions on requirements of an engagement of local labour, equipment and materials, and local subcontractor (Han *et al.* 2010). In the construction market of Nigeria, for example, local content is emphasized by encouraging local companies to participate and improve their performance in the long run (Babatunde and Low 2013).

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<sup>1</sup> [megan828@connect.hku.hk](mailto:megan828@connect.hku.hk)

Although local content is increasingly stipulated in international construction projects, particularly for those sponsored by international organisations (e.g. the World Bank, the African Development Bank), what exactly constitutes the 'local content' is still unclear. Local content is a complex and fast-evolving area as mentioned by a World Bank study (Tordo *et al.*, 2013). It is generally agreed that Grossman (1981) provided the first and most important intuitive foundation for the small theoretical literature in the field of local content.

In his study, 'domestic content' was used instead of 'local content', which was demonstrated as the percentage of domestic value added or domestic components embodied in a specified final product. Grossman's study was followed by many theoretical works in the economics literature (Munson and Rosenblatt 1997; Lahiri and Ono 1998; Qiu and Tao 2001; Lahiri and Ono 2003; Veloso 2006). In these works, local content is regarded as one kind of requirements, stipulating that firms producing a good are to procure a certain proportion of intermediate inputs domestically (UNIDO 1986; Belderbos and Sleuwaegen 1997; Gu and Yabuuchi 2003; Kuntze and Moerenhout 2012). For resource-rich countries, local content has a wider understanding that it refers to value addition for the industry or the country by using local staff, local materials, and local services (Heum *et al.*, 2003). Its major objectives were transfer of technology, provision of local job opportunities, creation of backward and forward linkages, and increase in ownership and control (Ado 2013).

Putting it in the CSR agenda, local content is related to social impact compensation (Warner 2011; Ado 2013), which argues for the adoption of local content policies as a way to influence job creation and value addition for the local communities. This proposed several questions: (a) what is the exact interpretation of local content? (b) What is the relationship between local content and CSR localisation? (c) What is concluded in local content for International Construction Companies (ICCs) to implement? and (d) how do they implement the local content initiatives? Richer interpretations of 'local content' and CSR concept are desired by both ICCs and public project sponsors with a view to better promote both concepts in the international construction business.

The primary aim of this study is to (a) deepen the understanding of the concept of 'local content' by relating it to CSR standardization and CSR localisation, and (b) map out the status quo of 'local content' patterns as portrayed by ICCs. The remainder of this paper is structured into four sections. Following the introduction section, the two main constructs, local content and CSR localisation are elaborated. The research methods section provides a detailed description of the sample and research methods, wherein text mining of the CSR reports disclosed by ICCs is at the core. The fourth section presents the analyses, findings and discussion. Conclusion and limitations are presented in the last section.

## **Constructs Explanation**

### **CSR Localisation**

CSR can be understood as a management concept, whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders (Communities 2011). When companies act in different parts of the world, their social and environmental concerns may be different due to the various cultures, social norms and value systems of the respective stakeholders (Bustamante 2011). This means that CSR activities need to be adapted to the specific situation of the region wherein the companies operate (Wang *et al.*, 2016). CSR localisation is introduced to correspond to that, which refers to companies in host countries have a considerable

degree of autonomy to develop CSR strategies that are responsive to the local context and local stakeholders (Muller 2006). Localisation strategy is always under consideration compared with standardization strategy due to the “integration-responsiveness grid”, describing the forces for global integration on the one hand and the local responsiveness on the other hand (Prahalad and Doz 1987). As a strategy, CSR localisation would be shaped by three main factors including the issue in question, the character and distribution of major stakeholder groups and the general organizational approach and culture of a company (Bustamante 2011). As for the issues in question, Bustamante (2011) made a matrix measured by two aspects: degree of globality and degree of culture-sensitivity. In his opinion, those issues with low degree of globality and high degree of culture-sensitivity would more likely conform to the strategy of CSR localisation.

### **Local Content**

Local content is similar to CSR localisation since they both emphasize the adaptation to the specific situation of the region where a company operates. However, local content holds different meanings which incorporate more culture-specific expectations and local value addition than CSR localisation. On the one hand, local content is the implementation of CSR strategies. It cares more about the CSR issues, which require high degree of culture-sensitivity. In other words, those issues are characterized by a strong cultural grounding and which would require the adaptation to the local environment (Bustamante 2011). Poverty caring, social security or local employee training projects are examples for that. In this perspective, local content could be different from CSR localisation; the latter is a corporate strategy considering not only CSR issues but also corporate stakeholders, strategic approach as well as organizational culture. On the other hand, local content requires local value addition on the perspective of the industry or the host countries. For example, the Republic of Trinidad and Tobago (2004) defines local content as “local value-added” in terms of ownership, control and financing by citizens of Trinidad and Tobago. Paul (2013) suggested the definition that local content is the input to activities directly involved in operations along value chain, which are provided by nationals. Therefore, local content is regarded as local CSR in this study which refers to CSR implemented in the operating countries caring about local culture and local value addition.

## **RESEARCH METHODS**

### **Samples**

The sample of ICCs was determined by referencing to the Top 250 International Contractors List in 2015 compiled by ENR, an US-based construction, building and engineering-oriented magazine. Some of the ICCs are excluded due to the lack of CSR reports/sustainability reports. More ICCs in the Global Reporting Initiatives (GRI) list collected from the GRI’s Sustainability Disclosure Database were added into the sample in addition to ENR lists. As a result, seventy-five ICCs are chosen as the sample for the analysis. They are from twenty-five countries. Nine companies from North America, two from Latin America, thirty-four from Europe, twenty-seven from Asia and Australia, and three from South Africa. CSR/sustainability reports of the sample ICCs over the past five years (2011-2015) were retrieved from their websites or GRI’s Sustainability Disclosure Database. There are 270 reports collected for the analysis due to some missing reports in certain years.

**GRI Guidelines as the Analytical Framework**

An analytical framework is identified for the further analysis. It is based on the GRI Construction and Real Estate Sector Supplement (CRESS) G4, which provides indicators and disclosures that are important or unique to the construction and real estate sector (Lu *et al.*, 2015). There are 6 categories with 28 sub-categories of performance indicators in total (See Table 1).

*Table 1: The protocol for decoding CSR reports*

Code	Categories	Sub-categories
EC	Economic	EC1-Economic Performance; EC2- Market Presence; EC3- Indirect Economic Impacts
EN	Environment	EN1- Materials; EN2-Energy; EN3-Water; EN4-Biodiversity; EN5-Emissions; EN6-Effluents and waste; EN7-Products and services; EN8-Transport; EN9- Land degradation, contamination and remediation
LA	Labour practices	LA1-Employment; LA2-Occupational health and safety; LA3-Training and education; LA4-Diversity and equal opportunity; LA5-Equal remuneration for women and men
HR	Human rights	HR1-Non-discrimination; HR2-Child labour; HR3-Forced or compulsory labour; HR4- Security practices; HR5-Supplier human rights assessment
SO	Society	SO1-Local communities; SO2-Anti-corruption; SO3-Public policy; SO4- Anti-competition behaviour
PR	Product Responsibility	PR1-Customer health and safety; PR2-Product and service labelling

*\*Source: GRI Construction & Real Estate Sector Supplement G4*

**Text Mining**

The analytical framework as shown in Table 1 is developed as the protocol for decoding CSR/sustainability reports. Given the large volume of texts to be analysed, an innovative method of text mining, rather than human decoding only, is used for the analysis of CSR/sustainability reports. Although humans interpret the specific wording of a document in the much larger context of their background knowledge and experience (Gabrilovich and Markovitch 2007), text mining with computer algorithms could deal with large number of texts and present a quick view of the collected reports. The process of text mining is presented in Fig.1.

Step 1 is to convert collected CSR reports in PDF format to MS excel files. Step 2 is to extract the text in the MS excel files accordingly corresponded to country names around the world. There are 209 countries and other territories (e.g. Hong Kong, Bermuda) identified for this process. This step presents 5,956 descriptions of local content of an ICC in a certain year in a specific host country. In Step 3, stop words, such as function words (is, having, when, etc.), pronoun (it, you, etc.), are eliminated from the descriptions. Remained words with actual meanings are called ‘report words’.

Step 4 uses Explicit Semantic Analysis (ESA) method to do the text mining, which is proposed by Gabrilovich and Markovitch (2007). The idea underlying ESA is to represent and compare texts (from single terms to entire documents) as vectors in a high dimensional concept space (Gottron *et al.*, 2011). In this step, each report word is assumed to convert to a vector weighted by the inverted index with 28 dimensions based on the protocol mentioned above. Firstly, key words for each sub-category are identified according to the interpretations of sub-categories in the GRI CRESS G4. For example,

for sub-category EN1-materials, 10 key words are identified such as ‘renewable materials’, ‘raw materials’, etc.

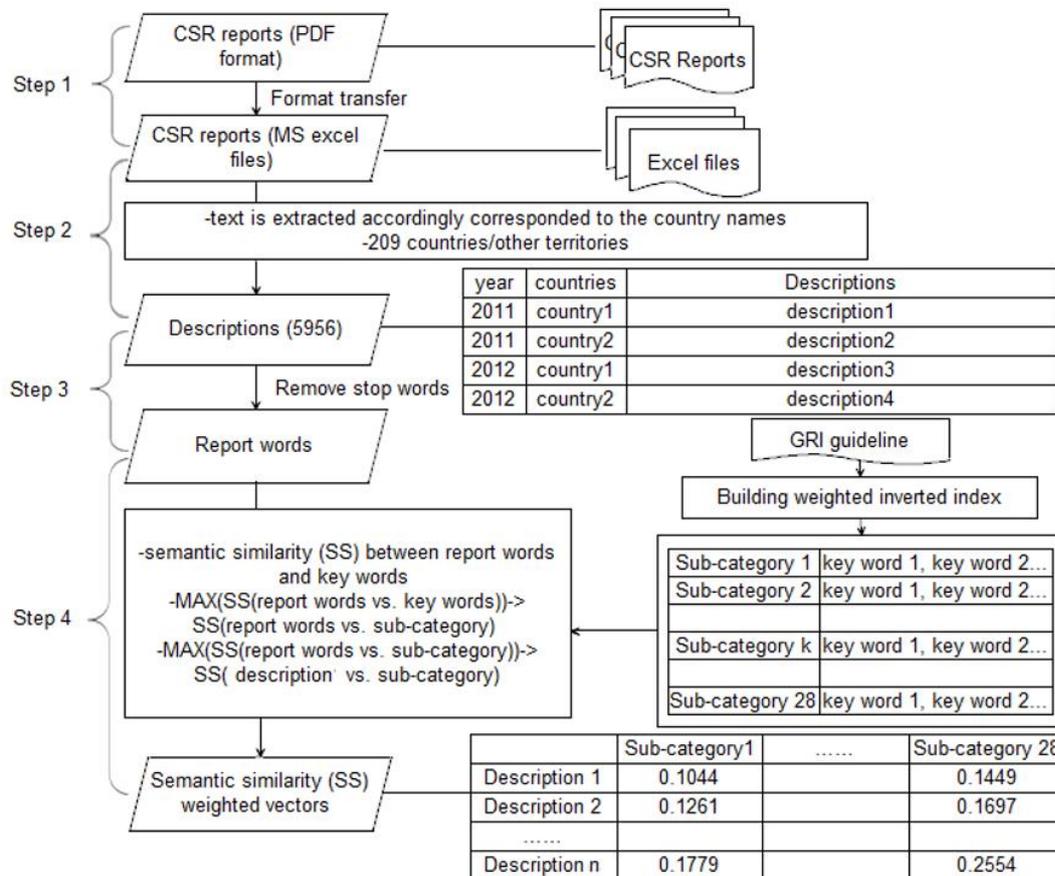


Fig. 1: The process of text mining

Weighted inverted index is built based on the key words for 28 sub-categories. Secondly, the semantic similarity between each report word and key word could be calculated, encoded into the general word corpus (i.e. Wikipedia), by dividing the frequencies of both words appearing in the Wikipedia corpus by the frequencies of each word. Thirdly, each report word could be expressed by a vector with 28 sub-categories, using the maximum semantic similarity between report words and key words in each sub-category. The vector for one description is the maximum of the vectors of its component report words, since it is assumed that the descriptions should be largely related to the sub-categories when report words show the high semantic similarity. These processes convert the descriptions into semantic similarity weighted vectors with 28 dimensions. When the score for a dimension is higher, the description is more likely to be classified into the corresponding sub-category.

### Measurement of Local Content Similarity

In this study, each description represents local content implemented in a host country. The similarity of two implemented local contents is assessed by the cosine similarity between the corresponding weighted vector representations. Cosine similarity analysis is commonly used for measuring similarity between two vectors (Singhal 2001). Two vectors with the same orientation have a cosine similarity of 1, which means the maximum score of cosine similarity is 1. When the score of cosine similarity is approaching 1, the two vectors are similar. It could be implied that local content

implemented in host countries is similar when the score calculated by cosine similarity analysis is high.

## ANALYSES, FINDINGS AND DISCUSSION

This study focuses on the regional market level only. The ENR adopts a convention to classify ICCs' operations in nine regional markets, namely, North America, Latin America, Caribbean Islands, Europe, the Middle East, Asia/Australia, North America, Central and Southern Africa, and Antarctic/Arctic. Africa is regarded as one continent and few contractors operating in the Antarctic/Arctic. As a result, seven regional markets are adopted. By merging host countries into the seven regional markets, the focus is on how local content of ICCs is practiced in the host regions instead of host countries. This has been incorporated in calculating the averaging semantic similarity weighted vectors of local content in host countries.

### Local content similarities among regional markets

ICCs from three home regions, i.e. North America, Europe and Asia/Australia are selected as groups for the analysis respectively. In each group, local content similarity for each two of the seven regional markets could be calculated and presented in Fig. 2. Each colour block represents the local content similarities between two regional markets. When the colour block is darker, it shows the higher similarity of the two regional markets.

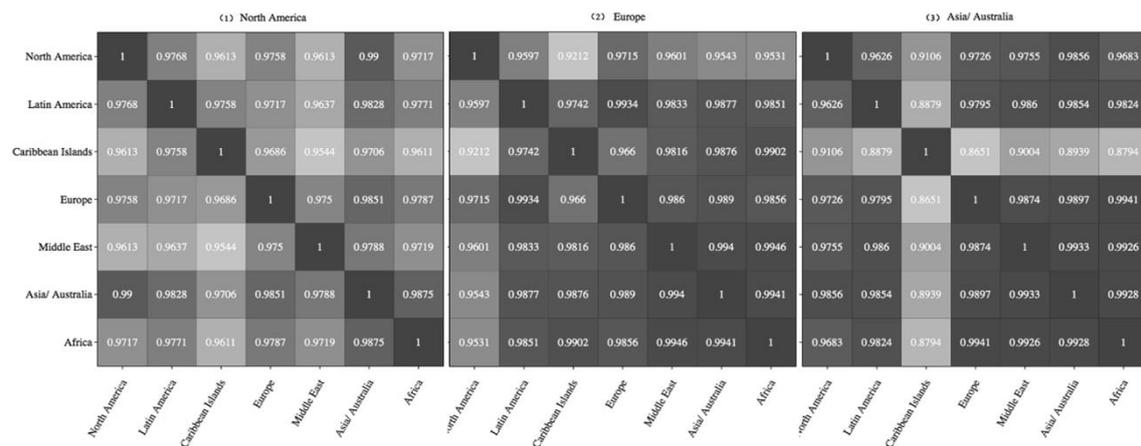


Fig. 2: Local content similarities among regional markets

It is shown that local content implemented by ICCs from North America, Europe and Asia/Australia in various host regional markets is similar with all the similarity scores larger than 0.9, although there also exist some slight differences. For ICCs from North America (see Fig.2 (1)), they implement quite similar local content initiatives in North America, Asia/Australia, Caribbean Islands, Latin America, and Africa, with the similarity scores larger than 0.97. Noteworthy, they do the most different local content initiatives in the Middle East compared to other host regions, evident by the lighter colour blocks for Middle East. It seems that ICCs from North America emphasize indicators related to environment very much, i.e. materials (EN1), energy (EN2), water (EN3) and biodiversity (EN4), when operating in their own region, but the situation differs in the regional market of Middle East. ICCs from European countries show the differential local content implementations in various host regional markets (see Fig.2 (2)). North American market shows a big divergence of local content implementations from other host regional markets, especially with the market of Caribbean Islands. It is because that European ICCs implement local content very well in North American market, especially

in the aspects of biodiversity (EN4), supplier human rights assessment (HR5) and employment (LA1). For example, a UK ICC, Carillion, requires 100% of contracts will have a biodiversity action plan in place to manage restoration when acting in Canada. While in the market of Caribbean Islands, European ICCs seem not to concentrate on local content implementation. For ICCs from Asian/Australian countries (Fig.2 (3)), they have a relatively high differential local content initiatives in Caribbean Islands evident by the relatively light colour blocks in Fig.2(3), but this may be caused as ICCs from Asia/Australian do limited projects there.

Fig.2 presents high degree of similarity for each ICC implementing local content in regional markets. This may be caused by the data which are extracted from CSR reports. CSR reporting is under the pressure provided by the increasingly uniformed guidelines. For example, the global reporting initiative (GRI) sets out minimum requirements in key areas of CSR and companies sign up to report in accordance with the requirements (Lu *et al.*, 2015). The ISO 26000 also defines good practice and establishes standards (ISO 2010). Another explanation appears that differences may be reduced when considering the region level instead of the country level. Moreover, it must be taken into account that whether home region has larger impacts on local content implementations than host regional markets.

### **Specific Indicator Analysis**

As mentioned above, extracted CSR initiatives are the ones specifically implemented in the host countries, which are regarded as local content initiatives. Based on the results of Step 4 in text mining, semantic similarity weighted vectors with 28 dimensions for each year could be calculated by making an average ignoring the host regional markets. The score for each dimension shows the relevance of local content initiatives to each sub-category. Fig.3 presents the local content initiatives for the years 2011-2015. It can be shown in the figure that Materials (EN1) and Product and service labelling (PR2) are the most reported local content initiatives according to the keywords identified. Based on the keywords analysis, specific materials, such as cement, steel, and concrete, are mentioned most. Renewable materials, raw materials, recycled materials and materials reused are frequently mentioned as the local content initiatives. Besides, product information, service information and safe use of service are included as the key words which attract remarkable considerations. ICCs also pay much attention to implement local content on other indicators, such as diversity and equal opportunity (LA4), local communities (SO1), and public policy (SO3). In the case of key words of these indicators, gender equality and age group attract much attention. Besides, local content related to local communities is always implemented by ICCs, such as welfare, young and children, work councils, and community healthcare projects.

## **CONCLUSION AND LIMITATIONS**

This study reviewed the concept of local content, and tried to further enrich the concept by putting it into the context of international construction. Local content in this study refers to those CSR activities tailor-made in different host countries while conducting international construction business. 270 CSR/sustainability reports of ICCs over the past five years (2011-2015) are collected as the data source for analysing ICC's local content patterns. CSR initiatives are extracted from the CSR/sustainability reports in line with their host country names. It is assumed that only those countries where ICCs implement specific CSR initiatives would be mentioned or stressed in the reports. Therefore, extracted CSR initiatives are the ones specifically implemented in the host countries, which are regarded as local content initiatives.

By triangulating the results from computer-aided text mining and human analyses, it is found that local content implemented in various host regions is similar. This may be caused by the joint, yet dilemmatic isomorphic forces of CSR (reporting) standardization on the one hand while CSR localisation on the other. However, their local content implementations may be affected by both home regions and host regions. As for the indicators, Materials (EN1) and Product and service labelling (PR2) are the most reported local content initiatives. Besides, Diversity and equal opportunity (LA4), Local communities (SO1), and public policy (SO3) also attract much attention of ICCs.

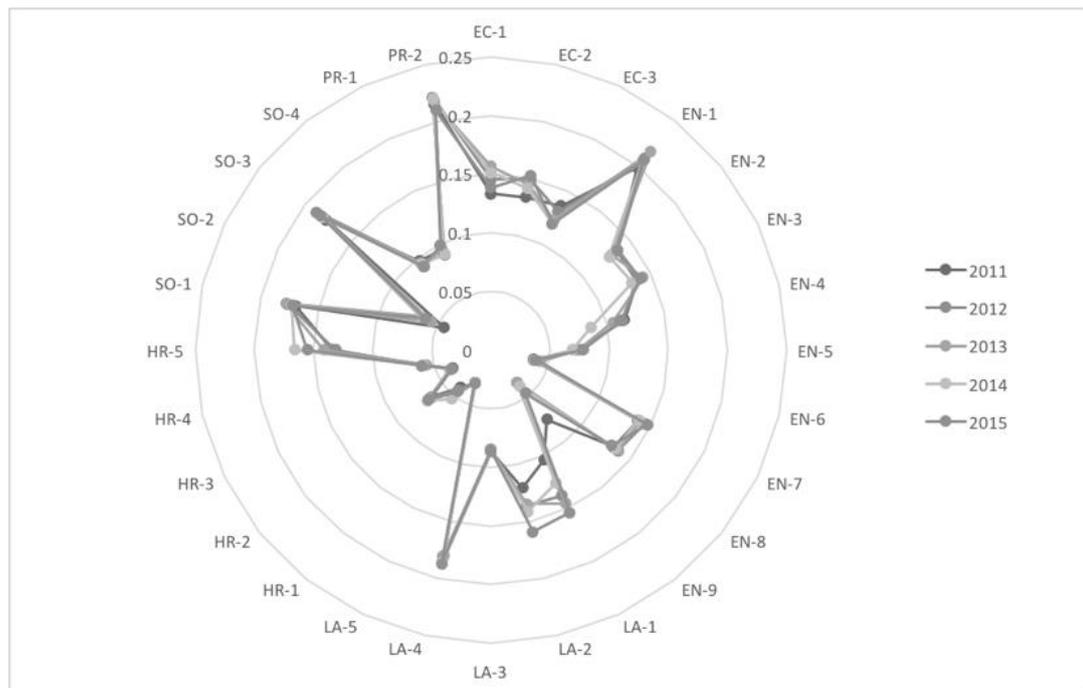


Fig. 3: Local content initiatives implemented from 2011 to 2015

Further investigations on different levels are needed especially when they are placed in the context of institutional theory. Furthermore, the method of text mining is largely depended on the selection of key words, which would directly affect the results, therefore, the process of text mining including the selection of key words needs to be deeply considered.

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