



# Classification Method of Regional Differentiation Characteristics of Enterprise Management

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**Abstract.** In the face of the risks and challenges brought by the downward pressure and regional differentiation, it is necessary to improve the enterprise management system, promote the reform of the financial system, create institutional conditions, and enhance the endurance of local finance and economy in order to prevent and resolve major risks. This paper puts forward the classification method of regional differentiation characteristics of enterprise management. Starting from the industrial and commercial management system, this paper further analyzes the characteristics of the rising trend of regional differentiation and the deep-seated causes of risk classification, and puts forward the general idea of preventing and resolving risks. This paper puts forward the corresponding countermeasures and suggestions from the aspects of improving the industrial and commercial management system, promoting the integration of fairness and efficiency, adjusting the direction of industrial and commercial management, and accelerating the reform of financial system.

**Keywords:** Social information background · Business administration · Regional differentiation · Feature classification

## 1 Introduction

Enterprise management is the process of obtaining and using resources in order to achieve the goal of market economy organization and development. Its purpose is to ensure that the enterprise economy and industrial structure can effectively adapt to the changes of the external environment, and measure the employees' work behavior according to a series of business objectives, so as to coordinate and correct the differences between the two, so as to accurately analyze and guide the regional differentiation of business administration, and understand and grasp the behavior characteristics of the controlled objects [1]. Differentiating different objects for management is a fundamental issue related to the effectiveness of management control.

Based on the background of the information society, explore the determinants and consequences of the regional differentiation of enterprise management. Firstly, the differentiation of different regions in enterprise management is investigated. On this basis,

the evaluation algorithm of regional differentiation situation characteristics of enterprise management is optimized to realize the classification of regional differentiation characteristics. By investigating the characteristics of the current regional differentiation of enterprise management, using values, attitudes, and motivations as the behavioral characteristics of the division variables, empirical research on the behavioral characteristics of different groups of enterprise management in enterprise enterprise management control [2]. Through cluster analysis, the business administration situation characteristics are divided into collectivism tendency type, rule compliance type, self value realization type and environmental cognition type. The research shows that each category presents the statistical characteristics of differentiation. Furthermore, the relationship between different types of management performance and the control links such as the moderation of target difficulty, the timeliness of information feedback and the fairness of performance appraisal is investigated.

## **2 Classification of Regional Differentiation of Business Administration**

### **2.1 Investigation on Regional Differentiation of Business Administration**

Enterprise management has played an important role in promoting the equalization of regional basic public services. A survey of the changes in the regional differentiation of enterprise management in recent years found that China's enterprise management regional differentiation has new characteristics: From the level of economic development, economic growth and other quantitative indicators, the differentiation of business administration among different regions converges, but the differentiation characteristics within different regions are significant, and the differentiation characteristics are prominent [3]. From the perspective of investment efficiency of business administration, number of patents, R & D investment of industrial enterprises and other quality indicators, the regional differentiation trend has obvious characteristics of development quality differentiation, and the advantages of development quality indicators in developed regions are obvious. From the perspective of regional differentiation situation indicators of business administration, the regional differentiation of socialization indicators is obvious. Regional differentiation will eventually be passed on to financial indicators. The regional differentiation of business administration has brought income changes, and the differentiation has affected the differentiation of some key areas of business administration. The difference of financial self-sufficiency rate is significant, and the contradiction between revenue and expenditure at the grass-roots level is prominent [4]. In order to cope with the imbalance of regional development, business administration has achieved certain results in reducing the financial differences between regions and promoting the equalization of basic public services. The combination of economic downturn and tax reduction and fee reduction leads to the decline of local fiscal revenue growth, which makes the local dependence on business administration continue to rise. The overall economic downturn makes the developed regions, as the main source of business administration, also face the trend of growth decline. Therefore, the sustainability of business administration growth will face certain challenges [5]. Based on this, this

paper investigates the variation trend of regional increment of business administration. The specific results are as Fig. 1:

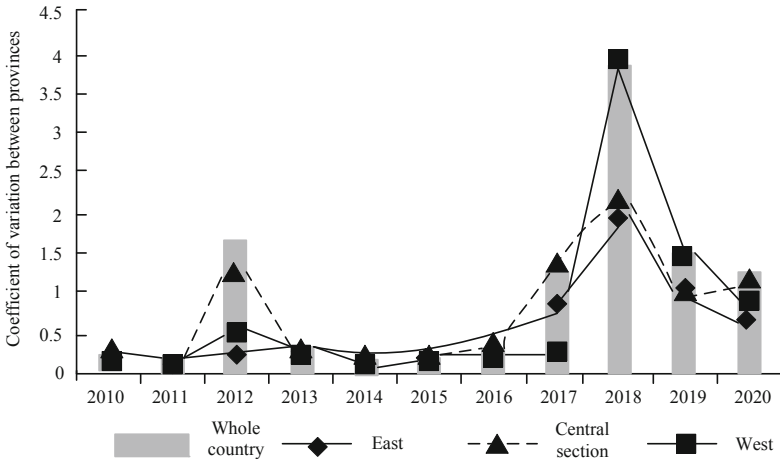


Fig. 1. Variation trend of regional increment of business administration

In the business administration industry, good financial operation is the basis of the orderly and healthy operation of business administration, and the differentiation of business administration will be reflected through financial differentiation to a certain extent. It is found that there are great differences in the standardization of the use and management of business administration funds in different places, which reflects the regional financial differentiation and tight balance pressure. It is found that the gap of per capita general public budget expenditure among provinces within the region shows different trends. In recent years, the gap of business administration situation has expanded, while

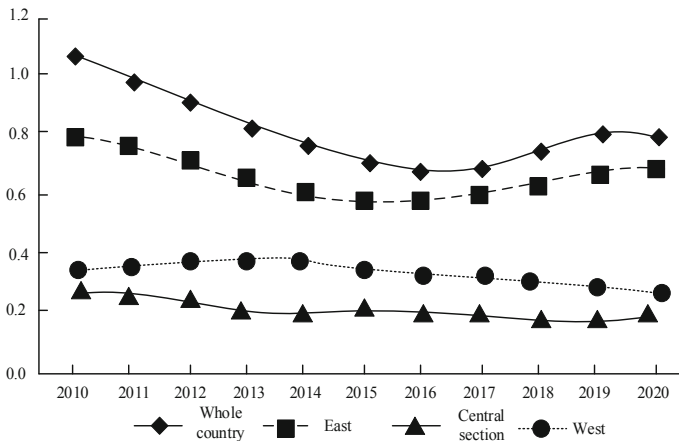


Fig. 2. Changes of business administration situation characteristics

the gap in the central region has decreased steadily. Based on this, this paper further draws the changes of business administration situation characteristics, as shown in the Fig. 2:

As shown in the figure, the regional differentiation in operation has expanded from the traditional gap between the East, the West and the east to the gap between enterprises, and the differentiation characteristics have changed from quantity to quality, reflecting that China’s economic development is still in the period of climbing over the threshold and needs to cope with many unpredictable new challenges. From the perspective of development process, local governments are actively working hard to change the mode and adjust the structure, and strive to maintain the stable operation of the economy. The resilience of economic development is enhanced, and the risks are generally controllable.

**2.2 Optimization of Evaluation Algorithm for Regional Differentiation Situation Characteristics of Business Administration**

In order to measure the performance of enterprise management, it is a sub-item of the overall evaluation that combines the eight-dimensional evaluation method to perform evaluation calculation. The correlation coefficient between the first 8 sub-items and the last comprehensive evaluation sub-item is 0.714. Therefore, the total average of the first eight sub items is used to express the performance of Business Administration [6]. Klirst scale was used to measure the suitability of target difficulty and the timeliness of information feedback. The fairness of performance appraisal is measured by Hofstede’s scale. This paper uses multiple linear regression to analyze the management performance of different types of business administration in management control. Set “management performance” as the dependent variable  $y$ , and set the three control links as explanatory variables  $X_1, X_2, X_3$ , which represent “target difficulty suitability”, “timeliness of information feedback” and “fairness of performance appraisal”. The multivariate linear model is:

$$Y = a_1X_1 + a_2X_2 + a_3X_3 + b \tag{1}$$

Where  $a_1, a_2$  and  $a_3$  are coefficients and  $b$  is constant. The utility function is assumed to be Coriolis function and CES function:

$$U = C_m^\mu C_A^{1-\mu}, \quad C_M = \left[ \int_i^{n+n^*} c_i^p d_i \right]^{1/\rho}; \quad 0 < \mu < 1, 0 < p < 1 \tag{2}$$

Through the budget constraint, we can get the following conclusions:

$$P_A C_A + \int_{i=0}^{n+n^*} P_i c_i d_i = E \tag{3}$$

The optimal constraint conditions are further derived:

$$C_A = (1 - \mu)E/P_A; \quad C_j = \mu E P_j^{-\sigma} / P_M^{1-\sigma} E P_j^{-\sigma} \tag{4}$$

If the profit function of the product manufacturer is:

$$\pi = px - (r + a_M w L_x) \tag{5}$$

From this, we can get the share of regional expenditure:

$$S_E = (1 - b)S_L + bS_k \tag{6}$$

$$S_L = \frac{L}{r, w} \tag{7}$$

$$S_k = \frac{K}{K^w} \tag{8}$$

Furthermore, the important long-term equilibrium inter regional factor flow equation is obtained as follows:

$$s_n = (r - r^*)S_n(1 - S_n) \tag{9}$$

Based on the research results of regional differences in business administration, the Gini coefficient formula reflecting the development history and current situation of regional business administration is as follows:

$$GiNi = \frac{2}{n^2 u_y} \sum_i i y_i - \frac{n + 1}{n} \tag{10}$$

The results of multiple linear regression analysis of this data are shown in the Table 1.

**Table 1.** Regression results of target difficulty, information feedback and fairness of performance appraisal on management performance

Independent variable	Category 1 (environmental cognitive)	Category 2 (collectivist tendency)	Category 3 (rule compliant)	Category 4 (self value realization)
Constant	1.485** (2.168)	2.774*** (5.357)	1.119 (1.595)	2.417*** (4.331)
X <sub>1</sub>	-0.201 (-0.183)	0.039 (0.147)	-0.079 (-0.549)	0.051 (0.481)
X <sub>2</sub>	0.302** (2.000)	0.147 (1.337)	0.273* (1.951)	0.202** (2.018)
X <sub>3</sub>	0.550*** (3.403)	0.183 (1.493)	0.518*** (3.678)	0.233* (1.722)
R <sup>2</sup>	0.425	0.115	0.334	0.191
F test	8.114***	3.611**	6.675***	4.013***

Business administration includes people’s social perception, personality, attitude, values, needs, motivation and other issues. Human behavior is determined by the interaction between internal needs and surrounding environment. Behavior is a function and result of environmental interaction. From the perspective of management, the purpose

of psychology is to induce the behavior needed by the organization through the study of psychology [7]. At present, there are great differences in the management status, management level and management performance of Chinese enterprises, and the needs, psychology and behavior of employees are also very different. To grasp the behavior characteristics, we must consider the variables closely related to the control activities.

**2.3 The Realization of the Classification of the Characteristics of Regional Differentiation in Business Administration**

The classification of regional differentiation situation characteristics of business administration can compare the nature of individual things, and classify Business Administration with similar nature or greater similarity into one category, with great differences among different categories of Business Administration [8]. After defining the factor composition and connotation of management behavior characteristics, this paper classifies business administration by cluster analysis, taking behavior characteristics factors as classification variables. There are many clustering methods, the most commonly used is hierarchical clustering method, which can be used to complete the system clustering analysis. The hierarchical clustering method is used to determine the optimal number of groups. The extracted factors are taken as hierarchical variables, and the most similar objects are combined. The samples are grouped by successive aggregation. Finally, the K-means clustering method is used to merge the sample values into various types [9–11]. The specific enterprise management regional differentiation situation motivation factor component matrix is shown in the following Table 2:

**Table 2.** Motivation factor matrix of regional differentiation of Business Administration

	Factor 1	Factor 2
Completed the targets to avoid being criticized or fined	0.899	
Finish all the targets in order to get a reward	0.812	
Complete the indicators in order to show my ability		0.809
Complete the indicators in order to work in the future		0.864

In hierarchical clustering method, the optimal number of clusters is generally determined according to the variation characteristics of clustering coefficient. If the increment of clustering coefficient rises suddenly, the optimal number of clusters can be obtained. Hierarchical clustering is carried out by the inter group method, and the change of agglomeration coefficient is shown in table [10]. According to the table, when the samples are clustered into 4 groups, the increment of distance is the largest, so it is more appropriate to divide the samples into 4 groups. The changes of hierarchical clustering coefficients are shown in the following Table 3:

**Table 3.** Change table of clustering coefficient

Number of clusters	Coefficient	Variation of coefficient	Change increment of coefficient
1	234.010	0	0
2	293.352	59.352	20.23%
3	299.616	6.264	9.87%
4	332.433	32.817	49.7%
5	354.464	22.031	6.22%
6	383.592	29.128	7.59%
7	399.742	16.15	4.04%

Through the classification and analysis of the characteristics of regional differentiation of business administration, the characteristics of business administration can be divided into five categories, and the basic statistical characteristics of different types of business administration are compared. For “target difficulty” and “information feedback”, the scale is used to measure; For “fairness of performance appraisal”, the scale is used to measure. Using multiple linear regression to analyze the management performance of different groups in the management control, the reform under the current industrial and commercial management structure can only adjust the regional industrial and commercial management on the basis of the stock. The establishment of classified and graded Business Administration of common financial powers can be based on the division of central and local common financial powers and expenditure responsibilities in the field of basic public services, as well as the actual situation of the cost and implementation of basic public services. The incremental adjustment will help to break the current interest pattern of various regions in business administration, better solve the problems existing in the current business administration, and further promote the fairness of business administration and the equalization of basic public services among regions. Taking full account of the unbalanced development of business administration and the great differences in the cost and financial resources of basic public services in different parts of China, the central government should bear different expenditure responsibilities, reflecting the preference to difficult areas. At the same time, the national basic standards for classification and classification are also set. In the future, combined with the practice of the reform of the division of central and local common financial power and expenditure responsibility in the field of basic public services, it is necessary to further standardize the sharing mode of common financial power and expenditure responsibility in the field of basic public services, and reasonably formulate the national basic standards for the guarantee of basic public services.

### 3 Analysis of Experimental Results

Take the Cronbach $\alpha$  coefficient as the reliability test index. According to data analysis, the reliability test results show that the Cronbach $\alpha$  coefficient of each variable is above 0.78. The mature scale 1 in psychology and management control research is used to set the measurement items of each indicator. Therefore, the questionnaire used has considerable content validity. SPSS statistical analysis software was used to analyze the behavior characteristic variables, and the factors of cluster analysis were determined by maximum variance orthogonal rotation. The kmo values of all factors are greater than 0.6 except that some factors are slightly less than 0.6, which indicates that the choice of variables is more in line with the requirements. The extracted factors are highly consistent with the contents of the corresponding questionnaire items, indicating that the questionnaire has high structural validity (Table 4).

After analysis, three factors with eigenvalues greater than 1 were extracted, and the cumulative degree of interpretation reached 83.157%. Factor 1 is composed of two elements, which involve the priority of collective goals over individual goals and the tendency of cooperation, which is called collectivism. Factor 2 is composed of two parts,

**Table 4.** Factor analysis results of business administration behavior characteristics

Variable	Subvariable	Survey items	Factor 1	Reliability /%	Cumulative Explanation /%
Cultural values	Collectivism	Members of the work team should be aware that sometimes they have to sacrifice for the overall interests of the work team	0.925	0.531	42.494
	Individualism	If I have a choice, I will choose to finish the work independently, not those who have to cooperate with colleagues			62.610
	Power distance	The best way to avoid mistakes is to follow your boss's instructions			83.157

(continued)

**Table 4.** (continued)

Variable	Subvariable	Survey items	Factor 1	Reliability /%	Cumulative Explanation /%
		I am not interested in the work can immediately do			
Attitude	Sense of organizational justice	Compared with colleagues in the same job or position, my salary is reasonable and fair	0.848	0.803	24.345

which involve the promotion of independent work and the pursuit of personal work efficiency, which is called individualism. Factor 3 consists of two terms, involving right distance, which is called right distance. A total of 22 measurement items were designed, involving cognitive factors, emotional factors and intention factors of management control. After factor analysis, three factors with eigenvalues greater than 1 were extracted, and the cumulative degree of explanation reached 69.027%. Factor 1 is composed of four items, mainly involving distributive justice and procedural justice, which is called organizational justice; Factor 2 is composed of one item, mainly involving the response to control measures, which is called compliance. Factor 3 is composed of four items, which involves the cognitive factor of management control, namely environmental cognition. Measured from two perspectives: Utilitarian needs and expressive needs. Through the analysis, all four items are reserved. Two factors with eigenvalues greater than 1 are extracted, and the cumulative interpretation rate is 75.729%. In accordance with the theoretical analysis, these two factors are called utilitarianism demand and expressionism demand respectively. By cluster analysis, the samples were divided into four categories: 73 cases (18.5%) in the first category, 127 cases (32%) in the second category, 87 cases (22%) in the third category and 109 cases (27.5%) in the fourth category. The results are shown in the Table 5.

**Table 5.** Cluster analysis results

Category	Frequency	Proportion /%	Effective ratio /%	Cumulative percentage /%
Category 1	73	18.5	18.5	18.0
Category 2	127	32.0	32.0	50.5

(continued)

**Table 5.** (continued)

Category	Frequency	Proportion /%	Effective ratio /%	Cumulative percentage /%
Category 3	87	22.0	22.0	72.5
Category 4	109	27.5	27.5	100.0
Total	396	100.0	100.0	

After confirming that the characteristics of business administration situation are divided into four categories, the following coefficient table is obtained. This table shows the coefficient relationship of each group of eight features. The smaller the coefficient,

**Table 6.** Nomenclature of business administration categories

Category	Category 1	Category 2	Category 3	Category 4
Collectivism	-0.848 68	-0.462 11	-0.135 46	0.198 48
Individualism	0.561 64	0.619 89	0.218 89	-0.449 19
Power distance	-0.768 32	-0.543 61	-0.386 74	0.137 63
Utilitarian demand	0.286 75	0.729 85	0.218 02	-0.867 76
Expressionism demand	-1.213 55	0.369 31	0.023 59	-0.367 77
Compliance	-1.139 37	-0.353 01	-0.192 53	0.209 74
Sense of organizational justice	-0.762 47	-0.129 36	0.677 69	0.121 31
Environmental cognition	-1.273 20	0.720 74	-0.282 80	0.428 65
Practical significance of category	The work attitude will be influenced by the environment and others, and has certain expressive needs and collectivism tendency	Collectivism tends to be strong, with a certain degree of conformity, a strong perception of the environment, and a weak utilitarian demand	They have a strong sense of obedience, strong compliance with rules, easy to be influenced by others, and low self orientation	Pursuit of utilitarianism, strong self-directed and performance
Category naming	Environmental cognitive	Collectivist tendency	Rule compliant	Self value realization

the higher the correlation. 0 means neutral. According to the actual meaning of each category, the category is named as Table 6:

The first type of enterprise management work attitude will be affected by the environment and others, with a certain performance needs and collectivism. Among the attitude options, the ones with high consistency were as follows: "Through continuous publicity, training and education, I gradually realize the importance of abiding by the rules and regulations", "I abide by the rules and regulations of the unit, because everyone can abide by them", "the serious behavior of leaders will affect my behavior", which is easily affected by the environment and others, so it is called environmental cognition. The second type of business administration has higher collectivism tendency, certain conformity, lower self orientation, stronger environmental perception and weaker utilitarian demand. This kind of business administration accounts for the largest proportion of the respondents, accounting for about 30% of the total number, which is called collectivism tendency type. The third kind of managers obey the leadership, organization or group, their own working environment and working principles. They are easily influenced by others and have a certain tendency of collectivism. They agreed that "the best way to avoid mistakes is to follow the boss's instructions" and "I can do the work I'm not interested in immediately". So they are called rule obedience. This may be related to the pursuit of the golden mean and the cultural consciousness of "face" and "relationship", which makes these groups show a high degree of obedience. The fourth type of business administration pursues utilitarianism, is self-directed and expressive, and is not easy to be influenced by others. Therefore, they are called self-worth actualization type. Compared with the other three groups, this group has the characteristics of younger age, higher education level and higher management level.

At present, regional differentiation presents new characteristics. Economic growth in the north and West is not as strong as in the South and East. In fact, regional differentiation is the differentiation of regional efficiency, while business administration embodies regional equity. Although the industrial and commercial administration policy has been increasing to promote fairness, it has fallen into the "paradox" of regional fairness and efficiency. The deep-seated reason is that there is no virtuous circle between the industrial and commercial management funds and the aftereffect of local economic development. The relatively low performance of business administration funds reflects that the central and local financial systems have failed to achieve "incentive compatibility", which leads to the adverse selection of local governments and the increase of dependence on the central business administration. With the aggravation of regional differences, the aggravation of inequality between regions and the expansion of the gap, the demand for business administration will be increasing until it is unsustainable. This will eventually lead to the increase of the uncertainty of the development of the whole country, the decline of the overall efficiency, and then turn into a public risk or even crisis. Therefore, we need to change our way of thinking from certainty to uncertainty, inject risk rationality into the design of financial system and enterprise management system, break the "risk cauldron" under the "one body, two wings" reform framework, and design enterprise management system according to the principle of risk decision-making, risk sharing and risk matching. In essence, it is to realize the effective development of regional equity and efficiency.

## 4 Conclusion

Industrial and commercial management is an important way of economic management, but also on the new economic background of the market economy mode of operation of a supplement. With the continuous development of management control system, many researchers pay attention to the research of enterprise management behavior in the organization. There is less research on the characteristics of behavior, especially in the aspect of behavior classification. Behavior research in management control has become a prospective research direction in the field of management control. To understand and grasp the characteristics of human behavior in management control is the basis of effective behavior management. Taking values, attitude and motivation as behavioral variables, this paper makes an empirical study on the behavioral characteristics of business administration in enterprise management control. The research shows that the behavior of business administration in China's enterprise management control can be divided into different types, and each type of personnel shows different statistical characteristics and behavioral characteristics.

At present, the economic background has begun to develop into a new normal of the economy. How to effectively exercise the functions of business administration is also worth considering. This is also a very important issue in the current business administration. In the future, the research will focus on the functions of business administration in order to provide a positive reference for business administration.

## References

1. Cafer Şafak, E., İsmet Burçak, V.D.: The effect of emotional capital on individual innovativeness: a research on Bahcesehir University business administration undergraduate students. *Procedia Comput. Sci.* **158**(10), 680–687 (2019)
2. Salim, A., George, J.: General well being and vitamin D practices: a study among female management students in Saudi Arabia. *J. Dyn. Control Syst.* **11**(1), 3154–3163 (2019)
3. Ye, X., Zhang, Z., Xu, C.Y., et al.: Attribution analysis on regional differentiation of water resources variation in the Yangtze River basin under the context of global warming. *Water* **12**(6), 1809 (2020)
4. Philip, S.Y., Kew, S.F., Wiel, K.V.D., et al.: Regional differentiation in climate change induced drought trends in The Netherlands. *Environ. Res. Lett.* **15**(9), 094081 (2020)
5. Chen, F., Fu, B., Xia, J., et al.: Major advances in studies of the physical geography and living environment of China during the past 70 years and future prospects. *Sci. Chin. Earth Sci.* **62**(11), 1665–1701 (2019)
6. Schilling, K.E., Streeter, M.T., Seeman, A., et al.: Total phosphorus export from Iowa agricultural watersheds: quantifying the scope and scale of a regional condition. *J. Hydrol.* **581**(5), 124397 (2019)
7. Jiang, X., Zheng, P., Cao, L., et al.: Effects of long-term floodplain disconnection on multiple facets of lake fish biodiversity: decline of alpha diversity leads to a regional differentiation through time. *Sci. Total Environ.* **763**(10), 144177 (2020)
8. He, Y., Wang, Y., Chen, X.: Spatial patterns and regional differences of inequality in water resources exploitation in China. *J. Clean. Prod.* **227**(1), 835–848 (2019)
9. Liu, S., Bai, W., Zeng, N., et al.: A fast fractal based compression for MRI images. *IEEE Access* **7**, 62412–62420 (2019)

10. Jiang, X., Ding, C., Brosse, S., et al.: Local rise of phylogenetic diversity due to invasions and extirpations leads to a regional phylogenetic homogenization of fish fauna from Chinese isolated plateau lakes. *Ecol. Ind.* **101**(6), 388–398 (2019)
11. Villanueva-Rey, P., Vazquez-Rowe, I., Quinteiro, P., et al.: Regionalizing eco-toxicity characterization factors for copper soil emissions considering edaphic information for Northern Spain and Portuguese vineyards. *Sci. Total Environ.* **686**(10), 986–994 (2019)