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The Grey Relation Comparison of Brand Value and Business Ranking for L'Oréal and Dior

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Abstract: As the only luxury company in the Fortune Global 500 list, Dior is far behind the FMCG company L'Oréal in the world's most famous brand value appraisal agency Interbrand. However, Dior is far superior to L'Oréal in the Fortune Global 500 ranking. The difference between which is due to the calculation basis. This paper analyzes the calculation basis of Interbrand and Fortune Global 500 ranking by Gray Relation Analysis, and finds that the impact of profits, assets, shareholders' equity and number of employees on the ranking of Fortune Global 500 and Interbrand models is significantly different. The analysis shows that both Dior and L'Oréal have the strongest correlation between shareholders' equity and its ranking results in both Fortune Global 500 results. This is true for L'Oréal in the Interbrand valuation model. For Dior, however, profits has the strongest impact on its ranking in the Interbrand valuation model. The two companies need to start from the two factors of shareholders' equity and profits respectively if they want to improve their corporate rankings and brand value.

1. Introduction

Brands have become a new engine for enterprise growth, and acquiring brand value has become an important direction for enterprises to pursue (Wang & Wang, 2020). Brand value is the economic value of a brand expressed in transferable monetary units, and its amount can not only indicate the degree of recognition of the company's products and services in the market, but also reflect the work performance of the business operator (Chen, 2014). Brand value appraisal has become a hot area of concern in the brand management and asset appraisal industry, which has bred a huge market, and many institutions at home and abroad have participated. Recognized as the world's most famous brand value appraisal agency, Interbrand was founded in 1974, since the release of the first "World's Best Brand Ranking" in 1999. It has continuously improved the evaluation methods, and its evaluation results have gradually been widely recognized by professional institutions such as law and securities trading (Liu, 2011).

The so-called "Fortune Global 500" refers to a corporate ranking list conducted by Fortune magazine since the 1950s. It ranks global companies according to operating income as the only indicator after considering various indicators, which also causes some companies with large operating income but net profits difference or low net assets. Petromex, for example, which has been insolvent for 10 consecutive years can still be on the list; Philip Morris International, one of the largest tobacco companies in the United States, has also been insolvent for five consecutive years (Shao, 2018). Of course, there are still numerous superior companies in the Fortune Global 500, especially the century-old stores in Europe and the United States.

Operating revenue is income from the main business or other business, and is the monetary income earned by a commercial enterprise from the sale of goods or services over a certain period (Du & Jin, 2010). Operating income is divided into main business income and other business income, such as the sales income of commodities of enterprises, the sales income of products in the production and processing industry, the sales income of catering industry, the service income of service industry, the warehousing income of warehousing

enterprises, the freight income of transportation enterprises and the transportation income of agency transportation. Profits is the form of transformation or phenomenon of surplus value, which is manifested as the balance of the value of the commodity exceeding the cost price (Yu, 2016). Assets refer to resources formed by past transactions or events of the enterprise, owned or controlled by the enterprise, and expected to bring economic benefits to the enterprise. Resources that cannot bring economic benefits cannot be used as assets and are the rights of enterprises (Chen, 2019). Assets can be divided into current assets, long-term investments, fixed assets, intangible assets and other assets according to liquidity. Shareholders' equity refers to the owner's equity or corporate capital of a joint-stock company, including paid-up share capital and retained earnings (Li, 2016).

In the official data of Dior and L'Oréal, it is possible to obtain data on the company's profits, assets, shareholders' equity and the number of employees over the years. The Fortune Global 500 companies are ranked by operating income as the only indicator of the company, and the Interbrand evaluation model is ranked by the final calculated brand value. Dior, as the only luxury company listed in the Fortune Global 500, is far behind the FMCG company L'Oréal in the list of Interbrand, which is recognized as the world's most famous brand value evaluation agency, and Dior is far behind L'Oréal in the Fortune Global 500 ranking. In this paper, the calculation basis of Fortune Global 500 and Interbrand are analyzed by using Gray Relation to explore the influence of corporate financial indicators on the ranking of Fortune Global 500 and Interbrand and to propose strategies for enterprises to improve the ranking.

2. Application of Grey Relation Analysis

There are often many variables in the actual model analysis process, and whether there is a relationship between these variables is quite uncertain. If the relationship between the variables can be clarified, it will be more accurate to depict the system analysis. Grey Relation analysis is one of the most used mathematical analysis methods that is of great significance for describing variable relationships (Huang, 2016). The analysis steps are: (1)Dimensionless processing (averaging, preliminary value) for the data; (2)Solve the Gray Relation value between the parent sequence (contrast sequence) and the feature sequence; (3)Solve the Gray Relation degree value; (4)Sort the Gray Relation values to draw conclusions. The following is an analysis and comparison of the Grey Relation between Dior and L'Oréal in the Fortune Global 500 and Interbrand, respectively.

2.1. Grey Relation Analysis for Fortune Global 500

Dior's official website can find four series of data from 2009 to 2021 for a total of 13 years, namely operating income, profits, assets, shareholders' equity and number of employees (Table 1).

Table 1. Data of Dior from 2009 to 2021 (million US dollars; person).

Year	Operating income	Profits	Assets	Shareholders' equity	Number of employees
2009	26,248.3	1,165.1	49,467.3	8,244.1	80,343
2010	24,664.7	996.0	51,732.5	8,988.2	80,510
2011	27,976.6	1,670.1	55,274.0	10,335.1	100,000
2012	34,244.1	1,778.4	66,482.0	12,506.5	84,497
2013	37,655.5	1,783.8	68,783.6	13,323.0	93,146
2014	38,431.9	1,840.5	73,232.6	14,452.7	98,299
2015	42,031.0	1,933.1	83,724.8	16,386.0	107,012
2016	41,900.5	2,840.3	66,879.4	11,445.1	113,208
2017	42,112.8	1,740.3	69,870.0	12,292.6	120,479
2018	49,221.0	2,525.0	87,370.3	15,348.2	131,310
2019	55,262.6	3,037.8	88,320.8	16,276.3	141,914
2020	60,070.5	3,288.4	105,314.8	12,211.7	149,685
2021	50,877.6	2,202.6	129,743.6	13,792.2	139,409

Data sources: official website of Dior.

After putting the year into the index item [Class] variable, the operating income (million US dollars) into the parent series [Quantitative] variable, and the profits (million US dollars), assets (million US dollars),

shareholders' equity (million US dollars), and the number of employees into the characteristic sequence [Quantitative] variables, the following correlation coefficient results were obtained by using the SPSSPRO analysis system (Table 2 and Table 3):

Table 2. The Gray Relation coefficient for Dior in the Fortune Global 500.

Year	Profits	Assets	Shareholders' equity	Number of employees
2009	0.8654	0.8891	0.9629	0.6115
2010	0.8832	0.8415	1	0.6009
2011	0.8505	0.8388	0.9685	0.5177
2012	0.7827	0.7850	0.9089	0.6362
2013	0.7496	0.7965	0.8748	0.6030
2014	0.7430	0.7597	0.8792	0.5778
2015	0.7123	0.6992	0.8585	0.5509
2016	0.7211	0.8667	0.8036	0.5208
2017	0.7100	0.8335	0.8104	0.4910
2018	0.6610	0.7291	0.7687	0.4766
2019	0.6233	0.7767	0.7218	0.4600
2020	0.5953	0.6716	0.6527	0.4499
2021	0.6470	0.4890	0.7385	0.4536

Table 3. The Gray Relation results for Dior in the Fortune Global 500.

Variables	Gray Relation	Ranking
Shareholders' equity	0.842	1
Assets	0.767	2
Profits	0.734	3
Number of employees	0.535	4

The above correlation coefficient results show that among the ranking of Dior in Fortune Global 500, shareholders' equity has the strongest correlation with its ranking results, as high as 0.842; The second most correlated is the asset, with a whopping 0.767; This is followed by profits, with a correlation of 0.734; The weakest ranking relevance is the number of employees, with a correlation of 0.535.

Table 4. Data of L'Oréal from 2009 to 2021 (million US dollars; person).

Year	Operating income	Profits	Assets	Shareholders' equity	Number of employees
2009	25,675.7	2,851.7	31,910.1	16,437.7	67,662
2010	24,286.0	2,491.1	33,421.0	19,507.8	64,643
2011	25,821.4	2,966.4	32,260.5	19,941.5	10,000
2012	28,286.1	3,390.5	34,869.2	22,894.7	68,886
2013	28,867.4	3,685.4	38,920.0	27,592.0	72,637
2014	30,502.9	3,927.2	43,122.8	31,189.3	77,452
2015	29,889.4	6,513.5	38,793.7	24,422.4	78,611
2016	28,017.4	3,657.7	36,617.2	25,649.4	82,881
2017	28,571.8	3,434.5	37,576.7	25,840.4	89,331
2018	29,925.8	4,037.0	42,434.1	29,797.9	82,606
2019	31,790.7	4,597.2	43,956.9	30,779.2	86,030
2020	33,436.2	4,197.2	49,172.1	33,020.2	87,974
2021	31,895.6	4,060.3	53,366.1	35,481.6	85,392

Data sources: official website of L'Oréal.

L'Oréal's official website can find four series of data from 2009 to 2021 for a total of 13 years, namely operating income, profits, assets, shareholders' equity and number of employees (Table 4).

After putting the year into the index item [Class] variable, the operating income (million US dollars) into the parent series [Quantitative] variable, and the profits (million US dollars), assets (million US dollars), shareholders' equity (million US dollars), and the number of employees into the characteristic sequence [Quantitative] variables, the following correlation coefficient results were obtained by using the SPSSPRO analysis system (Table 5 and Table 6):

Table 5. The Gray Relation coefficient for L'Oréal in the Fortune Global 500.

Year	Profits	Assets	Shareholders' equity	Number of employees
2009	0.5734	0.8332	0.7700	0.4215
2010	0.5847	0.7720	0.8677	0.4312
2011	0.5730	0.8285	0.8413	0.6603
2012	0.5519	0.8253	0.8528	0.4298
2013	0.5490	0.7545	0.9637	0.4114
2014	0.5356	0.7094	0.9820	0.3945
2015	0.5675	0.7765	0.8510	0.3856
2016	0.5573	0.7826	0.9315	0.3578
2017	0.5495	0.7746	0.9213	0.3347
2018	0.5421	0.7113	1	0.3672
2019	0.5298	0.71704	0.9718	0.3605
2020	0.5117	0.6615	0.9906	0.3592
2021	0.5240	0.5883	0.8981	0.3637

Table 6. The Gray Relation results for L'Oréal in the Fortune Global 500.

Variables	Gray Relation	Ranking
Shareholders' equity	0.911	1
Assets	0.749	2
Profits	0.550	3
Number of employees	0.406	4

The above correlation coefficient results show that among the ranking of L'Oréal in Fortune Global 500, shareholders' equity has the strongest correlation with its ranking results, as high as 0.911; The second most correlated is the asset, with a whopping 0.749; This is followed by profits, with a correlation of 0.550; The weakest ranking relevance is the number of employees, with a correlation of 0.406.

2.2. Grey Relation Analysis for Interbrand

Since Dior only made the list from 2016 to 2021 in Interbrand's evaluation model, only the data related to brand value from 2016 to 2021 are intercepted, as shown in Table 7.

Table 7. Data of Dior from 2016 to 2021 in Interbrand.

Year	Brand value（hundred million RMB）	Profits（million US dollars）	Assets（million US dollars）	Shareholders' equity（million US dollars）	Number of employees（person）
2016	4,909.0	2,840.3	66,879.4	11,445.1	113,208
2017	4,587.0	1,740.3	69,870.0	12,292.6	120,479
2018	5,223.0	2,525.0	87,370.3	15,348.2	131,310
2019	6,045.0	3,037.8	88,320.8	16,276.3	141,914
2020	5,988.0	3,288.4	105,314.8	12,211.7	149,685
2021	7,024.0	2,202.6	129,743.6	13,792.2	139,409

After putting the year into the index item [Class] variable, the brand value (hundred million RMB) into the parent series [Quantitative] variable, and the profits (million US dollars), assets (million US dollars), shareholders' equity (million US dollars), and the number of employees into the characteristic sequence [Quantitative] variables, the following correlation coefficient results were obtained by using the SPSSPRO analysis system (Table 8 and Table 9):

Table 8. The Gray Relation coefficient for Dior in Interbrand.

Year	Profits	Assets	Shareholders' equity	Number of employees
2016	1	0.5523	0.9430	0.4103
2017	0.9895	0.5390	0.9291	0.3937
2018	0.9915	0.4799	0.9017	0.3734
2019	0.9874	0.4795	0.9005	0.3558
2020	0.9915	0.4318	0.9467	0.3429
2021	0.9640	0.3799	0.9402	0.3619

Table 9. The Gray Relation results for Dior in Interbrand.

Variables	Gray Relation	Ranking
Profits	0.987	1
Shareholders' equity	0.927	2
Assets	0.477	3
Number of employees	0.373	4

The above correlation coefficient results show that among the ranking of Dior in Interbrand, profits has the strongest correlation with its ranking results, as high as 0.987; The second most correlated is the shareholders' equity, with a whopping 0.927; This is followed by asset, with a correlation of 0.477; The weakest ranking relevance is the number of employees, with a correlation of 0.373.

Since L'Oréal only made the list from 2009 to 2019 in Interbrand's evaluation model, only the data related to brand value from 2009 to 2019 are intercepted, as shown in Table 10:

Table 10. Data of L'Oréal from 2009 to 2019 in Interbrand.

Year	Brand value (hundred million RMB)	Profits (million US dollars)	Assets (million US dollars)	Shareholders' equity (million US dollars)	Number of employees (person)
2009	13,699.0	2,851.7	31,910.1	16,437.7	67,662
2010	14,881.0	2,491.1	33,421.0	19,507.8	64,643
2011	17,262.0	2,966.4	32,260.5	19,941.5	10,000
2012	22,126.0	3,390.5	34,869.2	22,894.7	68,886
2013	24,088.0	3,685.4	38,920.0	27,592.0	72,637
2014	25,980.0	3,927.2	43,122.8	31,189.3	77,452
2015	27,283.0	6,513.5	38,793.7	24,422.4	78,611
2016	26,552.0	3,657.7	36,617.2	25,649.4	82,881
2017	27,466.0	3,434.5	37,576.7	25,840.4	89,331
2018	26,133.0	4,037.0	42,434.1	29,797.9	82,606
2019	26,288.0	4,597.2	43,956.9	30,779.2	86,030

After putting the year into the index item [Class] variable, the brand value (hundred million RMB) into the parent series [Quantitative] variable, and the profits (million US dollars), assets (million US dollars), shareholders' equity (million US dollars), and the number of employees into the characteristic sequence [Quantitative] variables, the following correlation coefficient results were obtained by using the SPSSPRO analysis system (Table 11 and Table 12):

Table 11. The Gray Relation coefficient for L'Oréal in Interbrand.

Year	Profits	Assets	Shareholders' equity	Number of employees
2009	0.7587	0.6450	0.9414	0.3734
2010	0.7317	0.6407	0.8915	0.3928
2011	0.7009	0.6901	0.9431	0.8299
2012	0.6382	0.7258	1	0.4080
2013	0.6175	0.6927	0.9205	0.3988
2014	0.5983	0.6594	0.8771	0.3847
2015	0.6131	0.7469	0.9380	0.3853
2016	0.5889	0.7732	0.9957	0.3632
2017	0.5767	0.7723	0.9736	0.3416
2018	0.5978	0.6711	0.9162	0.3626
2019	0.6024	0.6522	0.8949	0.3496

Table 12. The Gray Relation results for L'Oréal in Interbrand.

Variables	Gray Relation	Ranking
Shareholders' equity	0.936	1
Assets	0.697	2
Profits	0.639	3
Number of employees	0.417	4

The above correlation coefficient results show that among the ranking of L'Oréal in Interbrand, shareholders' equity has the strongest correlation with its ranking results, as high as 0.936; The second most correlated is the assets, with a whopping 0.697; This is followed by profits, with a correlation of 0.639; The weakest ranking relevance is the number of employees, with a correlation of 0.417.

3. Comparison of the Results of the Grey Relation for Dior and L'Oréal

Whether it is for Dior or L'Oréal, the Grey Relation results in the Fortune Global 500 show that shareholders' equity has the strongest correlation with its ranking results, followed by assets, third by profits, and weakest by the number of employees. In the comparison of the correlation coefficients of the two in the Fortune Global 500, it can be found that L'Oréal's shareholders' equity has a higher correlation to the ranking than Dior, the profits and the number of employees are lower than Dior, and the impact of the two on the ranking of profits is more balanced. Taken together, Dior and L'Oréal have similar correlation coefficient results in the Fortune Global 500, which can also be inferred that the correlation between the ranking of the Fortune Global 500 and the financial variables is in order of shareholders' equity, assets, profits and number of employees.

However, in the Interbrand evaluation model, the correlation results of the two are not very consistent. L'Oréal's analysis in Interbrand valuation model is similar to that in the Fortune Global 500, with the following factors being related to shareholders' equity, assets, profits, and the number of employees. Dior's evaluation items in the Interbrand evaluation model have the strongest impact on the ranking is profits, the second strongest is shareholders' equity, followed by assets, and the weakest is the number of employees. It can be seen from the correlation results of Dior in the Interbrand evaluation model that profits has the greatest impact on its ranking.

In general, the Gray Relation analysis of Dior and L'Oréal in the Interbrand evaluation model is not consistent with that in the Fortune Global 500, and in the Interbrand model, there is an inconsistency between the two companies. It can be inferred that enterprises need to strengthen their relevant financial indicators when pursuing different rankings.

4. Advice for Dior and L'Oréal to Improve Brand Value and Corporate Rankings

Judging from the Gray Relation results of Dior and L'Oréal, the approach to improve the corporate ranking and brand value of the two companies needs to start from the aspects of shareholders' equity and profits, respectively. For L'Oréal, whether it is to improve the ranking of the company or enhance the brand value, it is

necessary to start with the "shareholders' equity" with the strongest correlation in the Gray Relation result; Dior needs to start from the two aspects of "profits" and "shareholders' equity".

4.1. Improve Profits from the Perspective of Customer Loyalty

In the service industry, organizations with higher customer loyalty have higher profitability (Wang, 2020). As a classic luxury brand, Dior serves mostly high-level people, and such people tend to have higher loyalty to the brand by low-level people. The biggest embodiment of the lifetime value of customers is the active recommendation of existing customers to potential customers, which has a high perceived risk for potential customers. It is particularly important to get the advice of friends to mitigate the risk of service, which also reflects the impact of customer loyalty on brand profits.

After comprehensively examining customer satisfaction and loyalty issues, Dior should pay special attention to the promotion of the lifelong value of loyal customers when training employees in the core values of the enterprise when making development decisions, so that employees can actively and consciously form a customer-centric consciousness and strive to provide customers with quality services. It is necessary to give employees a deep understanding of the great benefits of preachers, emphasize the serious harm caused by saboteurs, establish reasonable mechanisms to promote employees to recognize customer dissatisfaction in a timely manner, and make special efforts to attract their attention, such as timely apologies, asking customers for desired solutions, resolving customer complaints as soon as possible, or convincing customers that the problem is being solved. In general, these actions will at least make customers admit that the business is working hard and thus remedy. If the cause of customer dissatisfaction is not a major matter of principle, and the company can remedy it properly to exceed customer expectations, it can even form a "secondary success" with higher customer satisfaction.

At present, on the counters of many luxury brands, many cabinet servants "take people by their appearance", judging whether they are potential customers by their clothing and talking, etc., which is not to form a customer-centered awareness. Therefore, improving profits in terms of enhancing customer loyalty is a feasible and urgent solution for Dior and even the entire luxury industry.

4.2. Expand Shareholders' Equity

Shareholders' equity refers to the equity of the owners of a joint-stock company (i.e. net asset value) or the capital of the company, which includes both paid-up share capital and retained earnings. Shareholders' equity is an important financial indicator that reflects the company's own capital. When the shareholders' equity is less than zero, the company falls into the situation of insolvency, then the company's shareholders' rights disappear. If the bankruptcy liquidation is implemented, the shareholders will have nothing. On the contrary, the larger the amount of shareholders' equity, the stronger the company's strength. It is therefore necessary to expand the amount of shareholders' equity to achieve the improvement of corporate ranking and brand value. Since shareholders' equity = total assets - total liabilities, so the way to improve shareholders' equity is to increase the total amount of assets and reduce the total amount of liabilities.

4.3. Optimize Product Sales Channels and Reduce Profits Loss in the Sales Process

At present, the product sales of Dior enterprises mainly include direct sales mode to customers and distribution mode of indirect sales through intermediaries. Modern economic theory believes that compared with the distribution model, the direct sales model can save part of the profits of the product from agents and distributors, effectively shorten the channel, be close to consumers, quickly deliver products to consumers, accelerate capital operation, and better achieve the goal of maximizing corporate profits (Li, 2019). At the same time, in the case of ensuring that the product price is moderate, the direct sales model can also better feedback the opinions and needs of consumers back to the enterprise, which is conducive to the adjustment of Dior's strategy and the transformation of tactics, forming a win-win situation for consumers and enterprises, and striving for more channel profits for Dior.

L'Oréal adopts different product strategies for market diversification, with popular products to enter the market. While responding to the trend of the rise of the Internet, L'Oréal can directly narrow the distance with customers by reducing brand management costs, focusing on website browsing experience, providing personalized services, store sales and network marketing interaction, and providing online advice services, etc.

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