

Research and analysis of marketing personnel misconduct based on FISM-MICMAC model

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Abstract. Marketing behavior is one of the critical factors for operators' success. Operators may conduct improper operations while using marketing methods to attract consumers and obtain certain economic benefits. This paper analyzes the influence factors of marketing personnel misconduct. Based on Fuzzy-ISM-MICMAC (Interpretive Structure Modeling-Matrice 'Impacts Croises Appliquee au Classement) model calculation. Considering marketing personnel's misconduct in commercial activities as the research starting point, it is divided into four aspects: human quality, environmental constraints, institutional defects, and management problems, including 14 indicators. This paper aims to analyze the misconduct of marketing personnel, promote marketing personnel to use proper marketing methods for business activities, improve consumer recognition, create a harmonious business atmosphere, and promote the market's healthy development.

Keywords: marketing behavior; competition; FISM-MICMAC.

1. Introduction

Commercial activities are of great significance for economic and social prosperity and development, and marketing activities are the key link of commercial activities. Marketing personnel conduct market prediction and decision-making through product innovation, distribution, promotion, pricing, and service activities to meet consumer demand, avoid waste of resources, meet the contradiction between production and consumption, and improve people's quality of life. With the gradual development of commercial activities and increasing competition, marketing concepts have certain limitations. Under the guidance of interests, some marketing personnel violate national laws, regulations, and social morality and adopt improper profit forms to carry out marketing activities for high profits. The misconduct of marketing personnel seriously damages the interests of consumers and the sustainable development of enterprises. There are fruitful research results on marketing activities, including market pricing, product design, promotion, sales channel construction, and promotion affecting consumer behavior. However, few studies have studied corporate marketing risks and improper marketing behaviors. It includes improper marketing behaviors such as exaggerating promotional products' effect and application scope, purchasing and selling inferior products, improper storage and transportation of maintenance products, illegal promotion, and price competition. The improper behavior of marketing personnel is affected by many factors, and it is difficult to determine the category of influencing factors. Guo Xiajuan believes that the marketing behavior of enterprises is the logical starting point of market morality. Enterprises should grasp the relationship between themselves and competitors and consumers to realize the moral value of marketing behavior[1]. There is little analysis of marketing personnel's misconduct in the index system. Based on the above research background, this paper firstly constructs a model of factors influencing marketers' misconduct using the FISM model, and analyses the hierarchical relationship between the factors based on the hierarchical topology diagram. Subsequently, the MICMAC method is used to analyse each factor from two perspectives of driving force and dependency, and the results are verified against each other with the FISM in order to provide valuable reference for reducing the phenomenon of marketers' misconduct and promoting the healthy development of the market.

2. The construction of a misconduct index system

This paper focuses on the misconduct of Chinese marketing personnel, establishes a set of index systems after considering the characteristics of influencing factors, and further analyzes the indicators. This article will affect the marketing personnel misconduct factors, including human quality, environmental constraints, institutional defects, management issues in four areas, including 14 specific indicators [2][3].

2.1 Human resource quality

Human quality includes three specific indicators. Insufficient marketing capability (S0) refers to the lack of the ability of enterprises to utilize and integrate existing tangible and intangible resources to create customer value by understanding and meeting customer needs. Not forming a good corporate culture (S1) refers to the lack of reasonable corporate culture, that is, the cultural quality and cultural behavior of all personnel in the enterprise, the system, norms, facilities, and other factors in the construction of corporate culture are not up to the standard; enterprises do not establish common values and codes of conduct of employees. Talent fault (S2) refers to the problem of unreasonable talent structure, younger senior intellectuals, insufficient talents, and waste of talents[4].

2.2 Environmental constraint

Environmental constraints include four specific indicators. Market overall risk (S3) refers to market factors or economic factors caused by changes in all companies that will have an impact on investors through a diversified portfolio that cannot be dispersed risk. Demand uncertainty (S4) refers to overcapacity that may occur under market conditions, affecting enterprise output, product price, and enterprise interests[5]. Competition (S5) means that under the transformation of China's social economy, the capital structure of enterprises, the cost of decision-making funds, corporate debt, and governance structure have a significant impact on the competitive behavior of the product market. Customer quality difference (S6) refers to the lack of proper empathy, the reason for customer behavior, and disrespect for others, resulting in inequality and damage to employees and customers.

2.3 System defect

System defects include two specific indicators. Personnel environmental stress (S7) refers to the psychological stress caused by the low level of staff matching within the company and the company's position requirements and human ability and career orientation beyond tolerance. An unreasonable tax system (S8) refers to the government's unreasonable pillow fee policy, mainly manifested in excessive tax burden, unfair tax burden, and excessive extra-tax charges. It has a very negative impact on enterprises' strategic formulation, price formation, and product quality[6][7].

2.4 Handling problem

Management issues include five specific indicators. An unreasonable sales market (S9) means that product exchange places and product circulation areas cannot meet consumer demand in exchange relations. Low efficiency (S10) means that enterprises' economic and social benefits are restricted by their external environment, such as insufficient financing channels and poor anti-risk ability. The sales channel problem (S11) indicates that the marketing channel planning is unreasonable, divided explicitly into modern channels, traditional channels, wholesale channels, group purchase, e-commerce, and other channels. Commodity supply (S12) refers to the commodity supply to a certain extent reflects the degree of market prosperity, affected by industrial and agricultural production, commercial work, consumption level, and other factors. Management risk (S13) includes internal human resource management recruitment and employment risk, human resource management training risk, human resource management allocation risk, human resource management performance evaluation risk, and human resource management compensation risk.

Table.1 Factor affecting misconduct by marketing personnel

Human resource quality	Environmental constraint	System defect	Handling problem
Lack of marketing capacity S0; Failure to form a good corporate culture S1; Talent fault S2;	Market overall risk S3; Demand uncertainty S4; Competition S5; Customer quality difference S6;	Personnel environment pressure S7; Unreasonable tax SyStem S8;	UnreaSonable Sale market S9; Low benefit S10; Sale channel S11; Commodity supply S12; Management risk S13;

3. Fism Construction

Professor Warfield proposes ISM in the United States, which is used to analyze the problems related to the structure of the complex economic system. It can visually present the relationship between many variables and fuzzy factors in a hierarchical structure model[8]. However, the ISM model is subjective in judging the relationship between complex elements, and the analysis results are not accurate enough. FISM is a fuzzy interpretative structure model which is improved based on ISM. Fuzzy mathematics is applied to the ISM model, and the simple 0-1 relationship between factors is transformed into a binary fuzzy relationship, which can reflect the strength of the interaction between factors and more in line with the actual situation [9]. The steps are as follows:

Step1 The ISM group established the fuzzy adjacency matrix $M = (m_{ij})_{n \times n}$ to score the degree of correlation among various factors.

Step2 Select fuzzy membership function, calculation of correlation strength matrix $B = (b_{ij})_{n \times n}$ by formula (1). In the formula, b_{ij} Is the fuzzy correlation strength of factor i to factor j , m_i is the sum of rows i of fuzzy adjacency matrix M and m_j is the sum of columns j of fuzzy adjacency matrix M , $i = 1, 2, \dots, n$.

$$b_{ij} = \begin{cases} m_{ij} / (m_i + m_j - m_{ij}), i \neq j \\ 0, i = j \end{cases} \quad (1)$$

Step3 On the basis of selecting threshold λ , determination of adjacency matrix $A = (a_{ij})_{n \times n}$ by formula (2)

$$a_{ij} = \begin{cases} 1, b_{ij} \geq \lambda \\ 0, b_{ij} < \lambda \end{cases} \quad (2)$$

Step4 Calculation of reachable matrix R . Using Boolean matrix operation rules to calculate adjacent matrix. R as the reachability matrix of A must satisfy (3). In the formula, $r \leq n-1$, n is matrix order A , $A_{r-1} = (A + I)^{r-1} = R$, I is the unit matrix.

$$A_1 \neq A_2 \neq \dots \neq A_{r-1} \neq A_r \quad (3)$$

Step5 Hierarchical factorization to determine reduced reachability matrix R_0 . According to formula (4)(5), a set of reachable elements S is defined as a reachable set of elements, expressed as $R(S_i)$; the set of elements arriving at the element S_i is defined as the element antecedent set, expressed as $A(S_i)$. Where $R(S_i)$ is a set of elements corresponding to a column of all matrix elements of 1 in the S_i a row of a reachable matrix, and $A(S_i)$ is composed of elements corresponding to a row of all matrix elements of 1 in the S_i column of a matrix; N is the set of all nodes; r_{ij} represents the correlation (reachable) value from node i to node j . Determine the

highest-level elements according to formula (6), find each level's highest level element set, divide the elements into different levels, and construct the relationship between the factors.

$$R(S_i) = \{S_j | S_j \in N, r_{ij} = 1\} \quad (4)$$

$$A(S_i) = \{S_j | S_j \in N, r_{ij} = 1\} \quad (5)$$

$$T = \{S_j | S_j \in N, R(S_i) \cap A(S_i) = A(S_i)\} \quad (6)$$

Step6 Draw a multi-level hierarchical directed graph.

4. Micmac Model

DUPPERRIN and GODET proposed MICMAC in 1973 to identify highly dynamic and highly dependent variables[10]. Based on the reachability matrix constructed by ISM, each influencing factor's driving force and dependence are calculated, and the driving force-dependence matrix is established, which is presented through the coordinate axis, as shown in Fig. 1. According to the MICMAC analysis results, the influencing factors were divided into the quadrants corresponding to I spontaneous, II-dependent, III dependent, and IV independent. Using MICMAC to analyze the driving force and dependence of various influencing factors of marketing personnel misconduct is convenient to understand the essential role of factors in the system, providing new solutions for personnel management problems in market development and product sales.

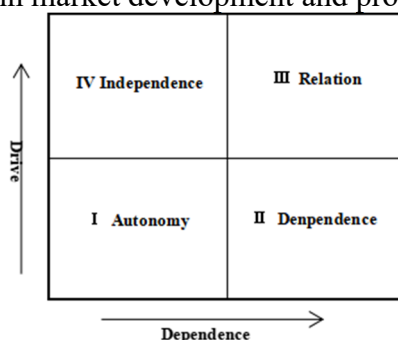


Figure.1 MICMAC analysis principle

The specific steps of MICMAC are as follows:

Step1 The driving forces $D(S_i)$ and dependence $R(S_j)$ of each factor were calculated, and their average values were calculated as quadrant boundaries.

$$D(S_{ij}) = \sum_{j=1}^n S_{ij} (i=1,2,\dots) \quad (7)$$

$$R(S_{ij}) = \sum_{j=1}^n S_{ij} (i=1,2,\dots) \quad (8)$$

Step2 Divide all factors into four quadrants of the driving-dependence space.

5. FISM model construction for marketer misconduct

FISM mainly obtains the reachability matrix through the logical operation of the adjacency matrix representing the directed graph, then decomposes the reachability matrix, finally decomposing the complex system into a multi-level recursive form with a clear hierarchy. FISM can be used to understand and accurately grasp complex problems systematically and is the basis for establishing mathematical models and quantitative analysis of problems.

5.1 Fuzzy adjacency matrix creation

To clarify and define the purpose and scope of the study, this paper invites 15 experts in the field of marketing to rate the influence degree between the above 14 factors with a rating interval $[0, 1]$. Finally, the arithmetic mean of the 15 experts' ratings is taken as the influence degree between the two factors to obtain the fuzzy adjacency matrix FA .

Table.2 Fuzzy adjacency matrix

	S0	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
S0	0.000	0.160	0.398	0.309	0.777	0.713	0.325	0.162	0.078	0.518	0.339	0.109	0.729	0.205
S1	0.468	0.000	0.350	0.380	0.324	0.448	0.494	0.792	0.020	0.094	0.717	0.208	0.425	0.101
S2	0.716	0.315	0.000	0.341	0.025	0.183	0.020	0.384	0.083	0.041	0.253	0.272	0.390	0.805
S3	0.380	0.177	0.493	0.000	0.220	0.235	0.246	0.402	0.479	0.412	0.067	0.153	0.352	0.460
S4	0.057	0.343	0.447	0.595	0.000	0.145	0.081	0.143	0.268	0.378	0.274	0.410	0.455	0.166
S5	0.130	0.234	0.298	0.683	0.546	0.000	0.225	0.500	0.051	0.030	0.481	0.805	0.769	0.457
S6	0.045	0.427	0.199	0.343	0.213	0.214	0.000	0.006	0.200	0.463	0.371	0.319	0.972	0.428
S7	0.377	0.177	0.719	0.233	0.163	0.153	0.322	0.000	0.419	0.109	0.666	0.329	0.143	0.709
S8	0.215	0.488	0.021	0.499	0.461	0.483	0.150	0.186	0.000	0.266	0.342	0.468	0.022	0.561
S9	0.084	0.077	0.458	0.318	0.974	0.131	0.208	0.316	0.126	0.000	0.832	0.527	0.413	0.118
S10	0.872	0.166	0.002	0.302	0.381	0.177	0.133	0.482	0.492	0.437	0.000	0.276	0.294	0.015
S11	0.987	0.049	0.498	0.115	0.922	0.259	0.461	0.027	0.030	0.077	0.048	0.000	0.790	0.315
S12	0.452	0.013	0.346	0.453	0.588	0.491	0.094	0.220	0.325	0.748	0.259	0.044	0.000	0.451
S13	0.870	0.635	0.208	0.027	0.117	0.361	0.141	0.449	0.357	0.295	0.373	0.116	0.078	0.000

5.2 Adjacency matrix creation

After clarifying the fuzzy adjacency matrix FA, the elements are processed to obtain the correlation strength matrix FB, and then the elements are compared with the threshold size λ to determine the adjacency matrix A. It is given that the smaller the threshold λ value is taken, the fewer the levels of factors are divided. The weaker the role between factors will be ignored, and it is not easy to reflect the deep relationship between factors. When the value is taken large, the more the levels of factors are divided, which will consume the energy of managers for data processing and increase the factor. The higher the value, the more levels of factors are divided, which will consume managers' efforts in data processing and increase the cost of factor control. To avoid obstacles to understanding the results, the threshold λ value is 0.5 according to the fuzzy evaluation standard and the stability principle of expert evaluation.

Table.3 Adjacency matrix

	S0	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
S0	0	0	0	0	1	1	0	0	0	1	0	0	1	0
S1	0	0	0	0	0	0	0	1	0	0	1	0	0	0
S2	1	0	0	0	0	0	0	0	0	0	0	0	0	1
S3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S4	0	0	0	1	0	0	0	0	0	0	0	0	0	0
S5	0	0	0	1	1	0	0	0	0	0	0	1	1	0
S6	0	0	0	0	0	0	0	0	0	0	0	0	1	0
S7	0	0	1	0	0	0	0	0	0	0	1	0	0	1
S8	0	0	0	0	0	0	0	0	0	0	0	0	0	1
S9	0	0	0	0	1	0	0	0	0	0	1	1	0	0
S10	1	0	0	0	0	0	0	0	0	0	0	0	0	0
S11	1	0	0	0	1	0	0	0	0	0	0	0	1	0
S12	0	0	0	0	1	0	0	0	0	1	0	0	0	0
S13	1	1	0	0	0	0	0	0	0	0	0	0	0	0

5.3 Reachable matrix creation

By adding the adjacency matrix A to the unit matrix, I, and using the maximum-minimum fuzzy operator, the reachable matrix M of the influencing factors of marketers' misbehavior can be calculated.

Table.4 Reachable matrix

	S0	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
S0	1	0	0	1	1	1	0	0	0	1	1	1	1	0
S1	1	1	1	1	1	1	0	1	0	1	1	1	1	1
S2	1	1	1	1	1	1	0	1	0	1	1	1	1	1
S3	0	0	0	1	0	0	0	0	0	0	0	0	0	0
S4	0	0	0	1	1	0	0	0	0	0	0	0	0	0
S5	1	0	0	1	1	1	0	0	0	1	1	1	1	0
S6	1	0	0	1	1	1	1	0	0	1	1	1	1	0
S7	1	1	1	1	1	1	0	1	0	1	1	1	1	1
S8	1	1	1	1	1	1	0	1	1	1	1	1	1	1
S9	1	0	0	1	1	1	0	0	0	1	1	1	1	0
S10	1	0	0	1	1	1	0	0	0	1	1	1	1	0
S11	1	0	0	1	1	1	0	0	0	1	1	1	1	0
S12	1	0	0	1	1	1	0	0	0	1	1	1	1	0
S13	1	1	1	1	1	1	0	1	0	1	1	1	1	1

5.4 Analysis of multi-level directed progression diagrams

The hierarchy of influencing factors depends on the factor drivers. The higher the factor driver, the lower it is in the hierarchy, the more it drives the other factors and vice versa. Based on the reachable matrix and the factor hierarchy formula, the factors are graded to reveal the intrinsic correlation between factors. As shown in Figure1 is shown. The factors influencing marketer misbehavior form a top-down hierarchy with 6 levels and 3 directed progressive orders. The system is divided into 3 levels: the lower level (L0-L1) factors form the basic causal level, the middle level (L2-L3) factors form the excessive causal level, and the upper level (L4-L5) factors form the relative causal level. The lower layer represents the stronger cause attribute (affected attribute), and the upper layer represents the more vital effect attribute (influenced attribute).

A risky marketing market can lead to concerns about future career prospects and compensation, leading marketers to use illegal tactics or radical behavior to gain profits. Meanwhile, customer quality differences and unreasonable taxation systems represent the underlying causes of marketer misconduct at the customer and firm levels, indicating that poor or irrational customers and the taxation of marketers' compensation are the core causes of misconduct.

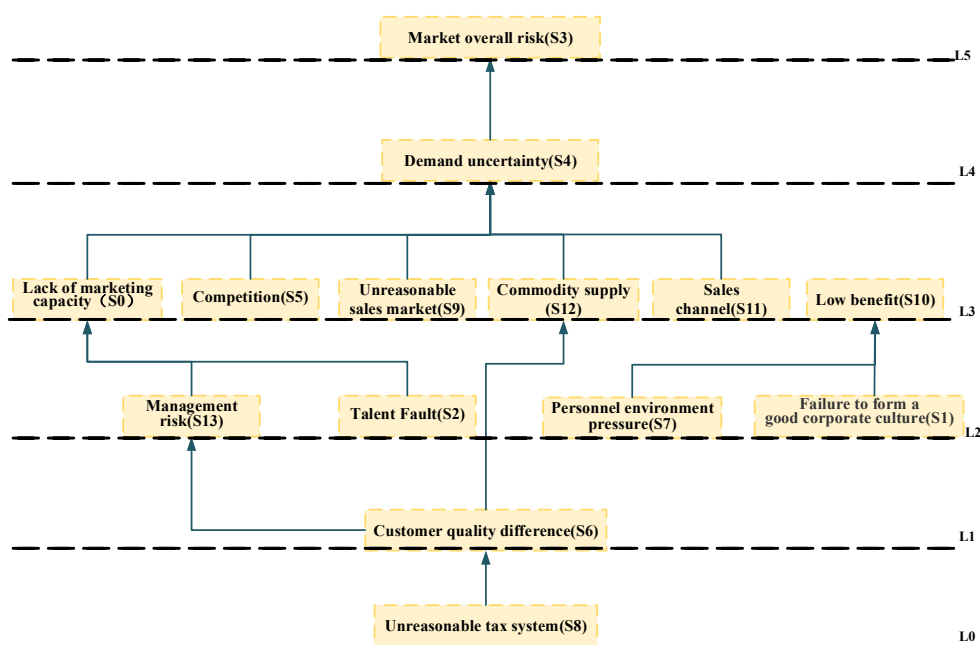


Figure.2 Multi-level directed progression diagram

5.5 MICMAC analysis of factors influencing misconduct of marketers

After forming the directed progression diagram, the MICMAC analysis of the influencing factors was conducted based on each factor's driving force and dependency, as shown in Fig. 3. The influencing factors are finally categorized into four categories: independent quadrant, dependent quadrant, spontaneous quadrant, and linkage quadrant. {S1, S2, S6, S7, S8, S13} belong to the independent quadrant, which has strong driving force but weak dependence, and similarly, {S3, S4} belong to the dependent quadrant, which has strong dependence but the weak driving force, and the rest of the factors belong to the linkage quadrant, which has both the strong driving force and dependence

The FISM-MICMAC model was used to analyze the factors influencing marketers' misconduct, which can be divided into six tiers. Based on the MICMAC, we can find that Failure to form a good corporate culture, Talent fault, customer quality difference, unreasonable, tax system, and managing risk is in the dependency quadrant, indicating that these factors are less dependent on other factors in the influence process and indirectly contribute to the generation of misconduct, and can be considered as the source of misconduct of marketers. Therefore, governments and enterprises should focus on

monitoring these influencing factors in controlling misconduct. Meanwhile, factors in the second quadrant, both more driven and more dependent, are distributed in the FISM progression of excessive factors and have more complex interactions, being influenced by upper and lower level factors and the interaction of factors at the same level. In the dependency quadrant are overall market risk demand uncertainty, indicating that these factors are dependent on other factors for resolution and are usually the cumulative result of the mishandling of other factors. If they occur, they will directly lead to more severe misbehavior.

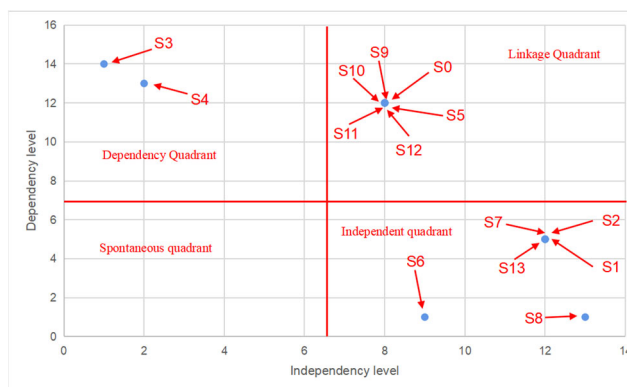


Figure.3 Analysis of MICMAC

6. Result analysis and recommendation

This paper first defines the influencing factors of marketer misconduct through literature research, then examines the hierarchical relationships and influence paths of the influencing factors using the FISM-MICMAC model, and analyses the factors themselves in terms of two dimensions: drivers and dependencies. From the hierarchical progression diagram of the FISM, it can be found that the unreasonable tax system is located at the bottom of the structure and belongs to the deeper factors of marketers' misconduct. While the overall market risk is the highest level and belongs to the direct factor causes of misconduct, A risky marketing market can lead to concerns about the future risky marketing market can lead to concerns about future career prospects and compensation, which in turn can lead marketers to use illegal tactics or radical behavior to gain profits. At the same time, unreasonable taxation systems represent the underlying causes of marketer misconduct at the firm level, indicating that the degree of taxation of marketers' compensation is the core cause of misconduct. Finally, this paper puts forward 3 suggestions based on the above research.

(1) Adjust the marketing department's tax and compensation incentive policy. From the topology diagram, it can be found that an unreasonable tax system is the underlying factor of marketing personnel's misbehavior. Some marketing personnel may produce misbehavior such as tax evasion to secure their salary commission, and higher taxes will also reduce the motivation of marketing personnel, as Stephen P. Robbins elaborated that employees need to see a close connection between their pay and reward, so companies should appropriately reduce the tax ratio of marketing departments and establish a multi-level compensation incentive structure to enhance the team spirit of marketers and improve their work performance.

(2) Strengthen the internal construction of enterprises. Individual marketing ability, personnel environment pressure, and corporate atmosphere are in the topological diagram of the transition factor layer. Therefore, companies should first adhere to the training of marketing personnel business skills, strengthen the professional ethics education of marketing personnel, secondly, to improve the internal management system, so that the division of labor between departments is reasonable and clear; finally, we should pay attention to the construction of corporate culture, combining people-oriented, caring for employees of the corporate image, a good corporate image is directly related to the overall revenue of the enterprise.

(3) Improve market stability. The misconduct of marketers is not only related to individuals and enterprises but also related to the macro market, so the government should not only act as a supervisor

but also as a participant. While strengthening market regulations, it should also use regulation and control to maintain the stability of the overall market and ensure that the market does not appear to be overheated or overcooled.

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