

Study on the System for Checking and Evaluating
Military and Political Officers

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Introduction:

Since the Third Plenary Session of the 11th Party Central Committee ended, reform, as one of the significant strategic decisions for the socialistic modernization, has been the main work of the Party. Quickening and deepening reformation was also the central topic of the 13th National Congress of the Party. The reformation of politic system will surely include and push forward the reformation in officer system.

The reformation in officer system consists in many aspects, and it is of various hierarchies. One of its important task is to gradually complete a whole set of scientific and realistic system for administering officers, and the key link in the reformation of administrative system is to reform the checking methods for officers.

We used to check officers in a traditional qualitative checking method, that is, talking with the checked officer and the comrades around him; calling together some people to have informal discussions; checking his records and getting information of the checked one of his past, present working attitude, and moral and vocational level, etc. We then qualitatively analyzed all of these information and gave evaluation and recommendation. The traditional checking method has played an active role in constructing the officer system in the army, and it has significant and realistic value even now. But, generally speaking, it is only a qualitative analysis for the individual officers being checked, so the method is to some degree limited. The shortcomings are: First, lack of quantitative analysis; second, emphasis on experimental impression and lack of scientific evaluation; third, emphasis on one's past and present working attitude but paying little attention to developing potentiality; and fourth, emphasis for group.

In order to make up for the deficiency of the traditional checking system for military and political officers, we must begin quantitative study, so that we may judge and use an officer more suitably and urge officers to study hard, work actively and do their duty carefully. We can also raise the level of revolutionization and specialization of the officers and get more young officers with higher education, so as to meet the need of constructing a regularized revolution army.

Our main tasks of study are: how to use the theories in natural science and social science comprehensively to set up a relatively

scientific quantitative model. how to fix a target system for the general quality the important military and political officers in the army, and how to use a new scientific method to determine the mutual restricting weighting of each hierarchy constructure.

I. The Target System for Checking and Evaluating the General Quality of the Military and Political Officers

The general quality of the officers is an organic combination of many factors relating to and restricting each other. It's very complicated. Here we introduce the conception of hierarchy constructure, i.e. dividing the different targets, and the relations controlled by or subordinated to them, of the general quality of officers into different hierarchies and showing the relations between the controlled targets to the main ones. After that, we can decompose and synthetize the target into an ordered hierarchy constructure according to the property of the relations among them.

Drawing a relatively reasonable system of targets is the presupposition and chief ground for checking and evaluating officers. As a part from reflecting the outline of the general quality of officers, the system must also be able to reflect the officer policy of the Party's and the fundamental principle of constructing the army in the new period.

Comrade Deng Xiaoping have given a series of important statements about constructing the officer system in the new period, the Central Military Committee and General Political Department have given some policies and instructions about constructing revolutionized and specialized younger officer groups with higher level of knowledge, and the General Political Department have also given the Checking System for Officers in the People's Liberation Army (For soliciting opinions) and the criterion for checking officers. According to all of these and also the present condition in the army, we make the targets. We tried our best to combine the traditional system with the requirement in the new period and carry out the principle of considering both moral and vocational quality, so as to reflect the characteristics of checking system in the army.

We divided the general quality of officers into three levels:

First, aim level: the general quality of the military and political officers (Z).

Second, principle level: it consists of five evaluating factors: morality (G), capability (G), industry (G) achievement (G) and health (G).

1
2
3

4
5

Third, target level: it consists of 30 targets.

The principle of morality controls 8 targets. and they reflect

mainly the officers' condition in ideological morality and political character, etc.

The principle of capability controls 9 targets, and they chiefly check the basic quality of officers and their ability in doing their own vocational work and finishing certain tasks.

The principle of industry controls 5 targets, and they check mainly the officers' working attitude and how much effort they put in study.

The 6 targets controlled by the principle of achievement mainly check how the plans for constructing the unit led by a checked officer have finished, how much he has carried out his duty and fulfilled the tasks of military training and political, vocational and cultural study.

The principle of health controls 2 targets, and they are used mainly for getting information of the physical condition of officers because the army is different from the locality, the former is strict to the age and physical condition of officers in service.

The system of checking and evaluating targets for the military and political officers is shown in Fig 1.

In order to make the target system more generally used, we check the military officers and political officers using one system. Although they have different work, and the emphasis on checking them varies from one to the other, the requirements in checking are all the same. For example, when we evaluate an officer's morality, we must check his political consciousness, line of thought, ideological morality and the enthusiasm in revolutionary cause, etc. The differences and emphases can be distinguished by coefficient of weighting.

II. Setting up the Function of the General Quality of Officers by Linear Weighted Sum Method

The targets for checking officers comprehensively form a complicated system. We set up a generalized objective function using linear weighted sum method in multiple target decision and combine all the factors in the function organically, so the function can be used to quantify the general quality of officers. We then use it to compare and evaluate officers quantitatively from the angle of general quality. We call this generalized objective function as the function of officers' general quality, i.e.

$$Z = \sum_{j=1}^{D1} (G \cdot W \cdot W)_{Dji \quad Di \quad O1} + \sum_{i=1}^{D2} (G \cdot W \cdot W)_{Lji \quad Li \quad O2} + \sum_{i=1}^{D3} (G \cdot W \cdot W)_{Qji \quad Qi \quad O3} \\ + \sum_{i=1}^{D4} (G \cdot W \cdot W)_{jji \quad ji \quad O4} + \sum_{i=1}^{D5} (G \cdot W \cdot W)_{Tji \quad Ti \quad O5}$$

- Z --- The general checking and evaluating value of the number i officer being checked.
- G --- The mark of the number I target subordinated to the morality factor of the number j officer being checked.
- D_{ji} --- The relative single ordering weighting of the number I target, subordinated to the morality factor, to the morality.
- W --- The single ordering weighting of morality factor relative to general Z.
- O1 --- The mark of the number I target subordinated to the capability factor of the number i officer being checked.
- G --- The relative single ordering weighting of the number I target, subordinated to the capacity factor, to the capacity.
- L_{ji} --- The single ordering weighting of capacity factor relative to general Z.
- W --- The mark of the number I target subordinated to the industry factor of the number j officer being checked.
- O_{ji} --- The relative single ordering weighting of the number I target, subordinated to the industry factor, to the industry.
- W --- The single ordering weighting of industry factor to general Z.
- O3 --- The mark of the number I target subordinated to the achievement factor of the number i officer being checked.
- G --- The relative single ordering weighting of the number I target, subordinated to the achievement factor to the achievement.
- j_i --- The single ordering weighting of achievement factor relative to general Z.
- W --- The mark of the number I target subordinated to the health factor of the number i officer being checked.
- T_{ji} --- The relative single ordering weighting of the number I target, subordinated to the health factor, to the health.
- W --- The single ordering weighting of health factor relative to general Z.
- O5 --- The number of subordinated targets.
- D . D . D . D . D
- 1 2 3 4 5

III. Relative Weighting of Each Target Defined by The Analytic Hierarchy Process

After the check and reevaluation of cadres is set up with the hierarchy constructure, the main point is defining the relative weighting of each element. The correctness and science of weighting will affect the result of the check. There are a lot of methods defining the weighting. But through comparison, the Analytic Hierarchy Process is more suitable for human being's thinking intuition, and it has high localitv flexibility, system and simplicity.

1 Military and Political Officers Judgment Matrix and the

Calculation of Weighting

When we make the judgment matrix, we try to give the rationality, exactness and credibility. According to the requirements of different qualities of military and political officers, we'll construct each of the military and political officers' judgment matrixes.

We'd like to ask the comrades of cadre department and military leaders to compare and judge the relative importance of each element of the two kinds of cadres and the following judgment matrix and calculating value.

1). The Judgment Matrix in the Weighting of the Military Cadre

The Total Ordering Result of the Whole Constructure is:

Z	G1	G2	G3	G4	G5	W
G1	1	3	4	2	6	0.4201
G2	1/3	1	2	1/2	4	0.1638
G3	1/4	1/2	1	1/3	3	0.1026
G4	1/2	2	3	1	5	0.2652
G5	1/6	1/4	1/3	1/5	1	0.0484

$$\lambda_{\max} = 5.0988$$

$$CI = 0.0247$$

$$RI = 1.12$$

$$CR = 0.0220$$

2). G1 - G1i Judgment Matrix

G1	G11	G12	G13	G14	G15	G16	G17	G18	W
G11	1	1	3	3	5	6	7	7	0.2847
G12	1	1	3	3	5	6	7	7	0.2847
G13	1/3	1/3	1	1	3	4	5	6	0.1339
G14	1/3	1/3	1	1	3	4	5	6	0.1339
G15	1/5	1/5	1/3	1/3	1	2	3	3	0.0634
G16	1/6	1/6	1/4	1/4	1/2	1	2	2	0.0425
G17	1/7	1/7	1/5	1/5	1/3	1/2	1	1	0.0284
G18	1/7	1/7	1/5	1/5	1/3	1/2	1	1	0.0284

$$\lambda_{\max} = 8.2320$$

$$CI = 0.0331$$

$$RI = 1.41$$

CR = 0.0235

3) G2 - G2i

G2	G21	G22	G23	G24	G25	G26	G27	G28	G29	W
G21	1	1/2	1/3	1/5	1/6	1/4	1/5	1/3	1/5	0.0266
G22	2	1	1/2	1/4	1/5	1/3	1/4	1/2	2	0.0462
G23	3	2	1	1/3	1/4	1/2	1/3	1	3	0.0726
G24	5	4	3	1	1/2	2	1	3	5	0.1781
G25	6	5	4	2	1	3	2	4	6	0.2697
G26	4	3	2	1/2	1/3	1	1/2	2	4	0.1148
G27	5	4	3	1	1/2	2	1	3	5	0.1781
G28	3	2	1	1/3	1/4	1/2	1/3	1	3	0.0716
G29	5	1/2	1/3	1/5	1/6	1/4	1/5	1/3	1	0.0414

$\lambda_{\max} = 9.4399$

CI = 0.0550
 RI = 1.45
 CR = 0.0379

4) G3 - G3i

G3	G31	G32	G33	G34	G35	W
G31	1	4	3	4	5	0.4795
G32	1/4	1	1/2	1	2	0.1199
G33	1/3	2	1	2	3	0.2101
G34	1/4	2	1/2	1	2	0.1199
G35	1/5	1/2	1/3	1/2	1	0.7060

$\lambda_{\max} = 5.0517$

CI = 0.0129
 RI = 1.12
 CR = 0.0115

51. G4 - G4i

G4	G 41	G42	G43	G44	G45	G46	W
G41	1	4	3	2	3	5	0.3657
G42	1/4	1	1/2	1/3	1/2	2	0.0803
G43	1/3	2	1	1/2	1	3	0.1357
G44	1/2	3	2	1	2	4	0.2311
G45	1/3	2	1	1/2	1	3	0.1357
G46	1/5	1/2	1/3	1/4	1/3	1	0.0515

$$\lambda_{\max} = 6.0733$$

$$CI = 0.0147$$

$$RI = 1.24$$

$$CR = 0.0118$$

61. G5 - G5i

G5	G51	G52	W	λ_{\max}
G51	1	2	0.6667	2.0000
G52	1/2	1	0.3333	CI = 6.0000
				RI = 0.0000
				CR = 0.0000

The Total Ordering Result of the Whole Constructure:

W1 = 1.1196 W2 = 0.1196 W23 = 0.0970 W26 = 0.0613
 W3 = 0.0563 W4 = 0.0563 W18 = 0.0492 W13 = 0.0442
 W25 = 0.0360 W27 = 0.0360 W29 = 0.0322 W10 = 0.0292
 W15 = 0.0292 W5 = 0.0267 W20 = 0.0215 W24 = 0.0213
 W14 = 0.0188 W0 = 0.0179 W30 = 0.0161 W28 = 0.0137
 W19 = 0.0123 W21 = 0.0123 W7 = 0.0120 W10 = 0.0076
 W3 = 0.0120 W11 = 0.0119 W16 = 0.0119
 W22 = 0.0072 W17 = 0.0068 W9W9 = 0.000044

The Consistent Target of the total Ordering in the Constructure:

$$CI = 0.0281 \quad RI = 1.2735 \quad CR = 0.0221$$

To the qualities of a military and political cadre, revolution is kept on the first position in the five aspects. The other four are morality, capability, industriousness and system. Because the importance of morality is paid much more attention, its weighting is the highest (0.4201). Next to the importance of the morality is the practical achievements of the cadre (0.26652). The check of cadres and the practical achievements are important so that cadres can be encouraged to do more practical things, and make more contributions. The third is capability The fourth is industriousness. The fifth is system.

Among the eight targets in the morality principle, political consciousness and the line of thought are more important. Because military cadres must have communist consciousness and keep consistent with the Central Committee in politics. The weighting of the two targets are both 0.2847. The other two targets next to the above are qualities of thought and revolutionary devotion. As a military cadre, he must be honest, be open and aboveboard, be upright, act in justice, consciously devote to the defence cause of our country, love the army, love his own work and can correctly deal with the relations between the revolutionary and personal benefit.

Among the 9 targets in the capability principle, the capability of organizing and commanding is much more important (0.2697). The military cadre must possess higher capability of organizing and commanding. We must have the sense of watching overall situation and planning and arranging.

He must arrange each work suitably and command the army freely. So that the soldiers can fulfill the tasks of drilling everyday and finish the tasks of fighting during the war. Next is the capability of judging the decision, and the judging capability of reforming. These two kinds of capabilities show not only the qualities that a military commander must have but also the requirements that he must fulfil the new tasks in new period of time.

Among the five targets of the principle of industriousness, the most important one is the sense of responsibility. It is very important for military cadres to carry out resolutely the instructions of their commanders, work whole-heartedly and has the courage to bear duties. Next is the sense of service. That is to say military cadres must care about the construction of the army, serve for the army at basic level and promptly solve the problems of the army at basic level.

Among the six targets in the principle of achievements, the most important is doing duty (0.3657). A military cadre must strictly do his duty of post, correctly use his right and creatively carry out his work.

Between the 2 targets in the principle of health, the more important one is the age (0.6667). An army is a group with military equipment. Its tasks and the quality requirements are about the appointment of younger cadres.

2) The Weighting Judgment Matrix of Political Cadres

(The weighting judgment matrix of political cadres is omitted)
The calculated result of the weighting is. (The Hierarchy Total Ordering) .

$w_1 = 0.1114$	$w_2 = 0.1114$	$w_{23} = 0.0970$	$w_3 = 0.0719$
$w_4 = 0.0499$	$w_{18} = 0.0429$	$w_{25} = 0.0360$	$w_{27} = 0.0369$
$w_{13} = 0.0339$	$w_{15} = 0.0339$	$w_{29} = 0.0322$	$w_{20} = 0.0269$
$w_{11} = 0.0207$	$w_{12} = 0.0207$	$w_{16} = 0.0207$	$w_6 = 0.0188$

W30 = 0.0161 W38 = 0.0137 W14 = 0.0124 W7 = 0.0114
 W21 = 0.0100 W17 = 0.0088 W10 = 0.0077 W22 = 0.0063
 W26 = 0.0613 W5 = 0.0341 W24 = 0.0213 W19 = 0.0164
 W8 = 0.0114 W9 = 0.0049

The Consistent Target of the Total Ordering:

CI = 0.0229 RI = 1.2735 CR = 0.0180

To the political officers, the relative proportions of morality, capability, industriousness, achievements and system at the second hierarchy are as same as those of military officers.

The relative weighting in each target of the morality principle should have the weighting of the morality of thought. If the political cadres are honest and just, don't abuse their rights and keep word, the political prestige of the Party will be high.

Compared with the weighting of military group, the relative weighting in the nine targets of the capability principle is high in the level of policy, the creative ability of reform and the capability of learning about talents and using talents. If the political officer has a high level in theory and is familiar with the policies of the party, they can only control the situation and lead the army forward to the reformation. Meanwhile they often contact with person, so it is important if they can use intelligent talents.

In the weighting of the industry principle of political group, the relative weighting of service is raised. Others are similar to those of military officers.

In the achievements and health principles, the relative weighting of each target is almost the same as that of military cadres.

IV. The Quantified Degree of Targets

The most important point in the quantity check of cadres is how to quantify the target system. We use numbers to express the evaluation to cadres. By the principle of obscure mathematics, we combine the scale method with the subordinated marking method to increase the practice of AHP in the evaluation to the check of cadres. In order to conform people's habit subordinated degree is used in the system of "hundred scores". It is divided by five levels: excellent, very good, good, mediocre, and bad. Every level is again divided into three parts: better than average, average and below average. Every level has a marking standard. According to this standard, a cadre can be evaluated and checked in quality right and objectively. The marking standard of the check is shown in table I -- table V.

On the level of "excellent" the marking: (97-99), (94-96), (90-93).

On the level of "very good": (87-89), (84-86), (80-83).

On the level of "good": (77-79), (74-76), (79-73).

On the level of "mediocre": (67-69), (64-66) (60-63).

On the level of "bad" : the marks are below 60.

V. Adding Weightings for Two Times

In order to heed the opinions from every aspects. the checked officers will be all-around divided into higher level equal level, and business department. Because of different positions, different degrees of understanding the checked officers and different angles of viewing questions, the evaluation to them can not be treated in equal level, and it must be given different weightings, that is adding weightings for two times. The judgement matrix of weighting and calculating method is still expressed with AHP.

By adding weightings for two times, the function of the officer's whole qualitative is:

$$Z_j = Z_{js} \cdot W_s + Z_{jT} \cdot W_T + Z_{jx} \cdot W_x + Z_{jy} \cdot W_y$$

in the equation:

- Z_j --- the whole qualities of cadres by adding weightings for two times.
- Z_{js} --- the function of the whole qualities evaluated by higher level.
- W_s --- the relative weighting of leaders in higher level (the higher level of checked officers).
- Z_{jT} --- the function of the evaluation in the equal level.
- W_T --- the relative weighting of the equal level (of the checked officers).
- Z_{jx} --- the function of the whole qualitatives evaluated by lower level.
- W_x --- the relative weighting of lower level.
- Z_{jx} --- the function of the whole qualities evaluated by business department.
- W_y --- the relative weighting of business department.

Additionally, concerning the convenience of comparison. we still concern the standard marks of one person.

The method of adding weightings for two times is used in the check of one person, and the effect of AHP in groups' decision is improved. Also the reliability of the result in the check and evaluation is raised.

The Judgement Matrix of Adding Weightings for Two Times:

The Whole Qualities in the Check	higher	equal	lower	business dep	W
higher level	1	3	1/3	1	0.1998
equal level	1/3	1	1/5	1/3	0.0781

lower level	3	5	1	3	0.5222
business dep	1	3	1/3	1	0.1998
$\lambda_{\max} = 4.0435$					
		CI = 0.0145	RI = 0.9	CR = 0.0161	

VI. The Original Treatment to the first data

We concern that sometimes the checking officers reach error scores to their checked cadres. Meanwhile to avoid some checking officers' likeness and prejudice; we make the first data original by the theory of error in surveying. We'll get rid of the great error.

1). The expected utility of the calculated single target.

$$\bar{G} = \frac{1}{N} \sum_{j=1}^N G_{ji}$$

\bar{G} --- the arithmetic mean of target i (including)

G_{ji} --- the value of each point in target i (the value of marks in target)

j --- the lower target of the statistics of the checked officers

N --- the number of the checked officers

$$\sigma = \sqrt{\frac{1}{N-1} (G_{ji} - \bar{G}_i)^2}$$

2). The average square root difference calculated through the formula:

$$\sigma = \sqrt{\frac{1}{N-1} (G_{ji} - \bar{G}_i)^2}$$

3). The Chauvent Test of the reliability of datum

$$\frac{\sigma}{\bar{G}} = K(w) \delta \text{ --- residual error}$$

$K(w)$ --- Chauvent judged data

If $\delta > K(w)$, z, G should be get rid of, the above steps are repeated until the whole data are suitable for the Chauvent judged data.

VII. The Device of Perfect AHP Used in the Computer Soft-ware in the Checking and Evaluation of Officers

To make the case of the army and of officers department easy, we have designed multi-functioned computer soft-wares.

The following drawing of the computer soft-wares is shown in figure 2.

The soft-ware has powerful function of the conversation between person and machine. People who haven't got education in computer can also learn it quickly. Every step is marked by Chinese characters. The checking result may be shown in drawing, copy, and typewriting. The image is so audio-visual that it is easily analized, such as the showing of the rectangular drawing of the

printed branch target of cadres' hierarchy curve. the rectangular drawing of total scores. The soft-ware is popular and easily input. It may revise the target system. hierarchy constructure relative weighting and the contents of word storage. It may be used not only in the checking of leaders and also in the checking of ordinary cadres. It provides an assitant decision tool for the cadre department which chooses, deploys, appoints and dismisses cadres.

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