The game model analysis of the influence of each link of financial information ecological chain on the quality of accounting information

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Abstract: In the process of the formation of financial information involves many links and groups, including enterprise management and governance layer, certified public accountants, financial information users, regulatory agencies, etc. Each link plays an irreplaceable important role in the quality of financial information and audit quality. According to the assumption of rational man, groups with different positions will affect the generation of financial information in different ways and directions, which in fact constitutes a game. Therefore, the financial information provided by the audited entity is, to a large extent, the result of the game of interests of all parties.

Key words: accounting information quality; Management; Game model

I. Analysis of factors affecting the quality of accounting information in each link of financial information ecological chain

In the benefit ecological chain, it involves management and governance, investment banks, accounting firms, law firms, financial information users, regulators and so on. In the process of CPA audit, according to the interest chain and role relationship, the financial information ecological chain can be divided into the responsible party, the supervisor, the witness and the expected user of financial information.

As certified public accountants and accounting firms are the authenticators of the quality of accounting information, the anticipated users of financial information may place all their expectations on the authenticators. However, according to the audit risk model: audit risk = material misstatement risk × inspection risk = inherent risk × control risk × inspection risk, audit risk comes from at least three aspects. The first is the inherent risk, the second is the control risk, and the third is the inspection risk of the authenticator.

For inherent risks, such as the nature, scale of the industry and the business itself, which involve industry regulators, competitors, partners and the government and are transmitted to the audited entity through policies and markets, thus affecting the quality of financial information (risk of material misstatement), CPA cannot change inherent risks, but can only fully understand and identify them. And then take overall countermeasures from the overall audit strategy, so as to further reduce the inspection risk as far as possible.

As for the control risk, it is closely related to the internal control of the audited entity, including five aspects: internal control environment, risk assessment, control activities, information and communication, and monitoring. Among them, the internal control environment is the foundation and starting point, while the core of the control environment is people, including the governance layer (such as the board of directors) and the management layer (such as the CEO). The relationship between the two and the management's experience philosophy, moral values and management style determine the quality of the internal control environment, which the CPA can only evaluate, but cannot reduce the existing control risks.

Due to the above characteristics of inherent risk and control risk, the factors affecting the quality of accounting information are not on the part of the CPA. As an authenticator, the CPA is not the generator of accounting information. The management, as the generator and provider of accounting information, is the fundamental influence on the quality of accounting information. However, from the perspective of inspection risk, the audit supervision of certified public accountants is the last line of defense and plays a non-negligible role at a critical moment.

II. The game model analysis of the influence of each link of the financial information ecological chain on the quality of accounting information

In the financial information ecological chain, the management is the final responsible party of the accounting information. According to the needs of the financial information users, the management processes and provides the financial information useful to the expected users of the financial information. In this process, the interests of the management who provides financial information and the expected users of financial information are inconsistent, so there is a game between them. In the absence of effective supervision and authentication, the game matrix is shown in Table 1:

Table 1 Game matrix without effective supervision and authentication

Therefore, management	Expected user trust	Expected users do not trust
Management integrity	(R1, R2)	(0, 0)
Management dishonesty	(R3, -R4)	(0, 0)

In the case of the integrity of the management, that is, the information of the financial statements is true and reliable. At this time, if the expected users trust, the management and the expected users cooperate closely, thus achieving a win-win situation. The management gets revenue R1, and the expected users get revenue R2; In the case of bad faith of the management, that is, there are false records, material omissions or misleading statements in the financial information, if the trust of the expected users is obtained, the management will gain excess revenue R3 due to deception, while the expected users will lose R4 (revenue -R4) due to being deceived; In addition, it is assumed that as long as the expected user does not trust the financial information, there will be no substantial cooperation between the two parties, so that the revenue of both parties is 0.

In the case of opaque information, since both sides of the game do not know each other's behavior, especially the expected users do not know whether the information provided by the management is true, they cannot predict the behavior of the management, so they cannot make rational choices. Therefore, the game matrix above does not have absolute possession equilibrium.

In the case of transparent information but lack of effective supervision, the dominant equilibrium strategy of the game matrix above is that the management is dishonest, and the expected users do not trust the management, so that the revenue of both of them is 0 (0, 0), then the market is invalid.

Under normal circumstances, the revenue R3 obtained by the dishonest management is always larger than the normal revenue R1 obtained by the honest management, otherwise the management will not take risks, that is, R>3R; 1For the expected users, in the case of transparent information, the expected users predict the dishonesty of the management, and the rational expected users will choose not to trust the management, so as to avoid the loss (-R), an4d the two sides can not reach an agreement, so they will not get any benefits (0,0).

If the regulatory layer (including the internal governance layer and the external regulatory body) implements effective supervision, once the management is found to be dishonest, that is, false financial information (false records, material omissions or misleading statements), the regulatory body will punish the management (marked as F1), and judge the management to compensate the loss (-R4) caused by the expected user (marked as F2). However, due to the inherent limitations of governance, auditors and regulators, as well as management's deliberate concealment, the probability P of management's false financial information (false records, material omissions or misleading statements) being disclosed is always less than 100%. In this case, the expected return of management dishonesty U1=R3-(F1+F2)×P, and the expected return of users choosing to trust the other party in the case of management dishonesty U2=F2× p-r4.

When U1<R1, the rational management will choose the honest behavior, so as to obtain greater revenue R1; When U2>0, rational expectant users will naturally choose to trust the financial information of the management, thus promoting win-win cooperation between the two parties. By introducing U1 and U2 into the inequality, we get the following inequality set:

R3-(F1+F2)×P<R1　　①

F2×P-R4≥0　　　　②

Reduce ① to: (F1+F2)>(r-r) /P, and reduce ② to: F≥R4/P.312

Because the game between management and the intended user exists in a closed loop, the following relationship exists:

R3≤R1+R2+R4　　③

The ①, ②, ③ formula can be further simplified to:

F1>R2/P　　　④

F2≥R4/P　　　⑤

Where the ④ indicates that the penalty amount for the false financial information of the management should be based on the expected user's income if the management issues the true financial information, and the □ indicates that the compensation given by the management to the expected user for the false financial information should be determined on the basis of the loss caused by the expected user.

To sum up, when formula 4 and 5 are met at the same time, that is, the penalty amount for the false financial information of the management is greater than R2/P (R2 is the expected revenue of the expected users under the real situation of the financial information, P is the probability of the disclosure of the false financial information of the management), and the compensation for the expected users is greater than or equal to R/P (R is the loss caused by the false financial information to the expected users, and the compensation for the expected users is greater than or equal to R44/P (R is the loss caused by the false financial information to the expected users, P is the probability of false financial information of management being disclosed), only rational management will choose honest behavior, and rational expected users will choose to trust the financial information of management, so as to promote the two to reach an agreement to form an effective market. Therefore, the penalty amount for false financial information of the management should not be based on the false amount as the standard, but should be determined on the basis of the expected user's expected revenue under normal circumstances. Under normal circumstances, the greater the expected revenue of the expected user, the penalty amount for false financial information of the management should also increase.

In reality, because many penalties are always based on the dishonest behavior of the management and the amount of false financial information, they do not take into account the expected user's expected revenue R2, and even in most cases it is a fixed penalty. For those expected users of financial information with high expected returns (such as excessive performance targets and excessive performance incentives), these penalties for management may be less than R4/P, thus inducing rational management to make false financial information. This also explains that too high performance targets and excessive performance incentives often lead management to take risks and whitewash financial information.

In addition, from the (4) and (5) formula analysis, no matter the penalty amount for false financial information of the management, or the compensation amount for the expected users, they are inversely proportional to the probability P of the disclosure of false financial information of the management. And P here is related to many factors, first of all, there is always audit risk in CPA audit, which is determined by the inherent limitations of audit; Secondly, whether the governance level has effective supervision over the management level is crucial to the probability of disclosure of false financial information, which is an important aspect of the internal control environment, which determines the overall level of material misstatement risk. In addition, the degree of concealment of management's non-implementation also profoundly affects the probability of disclosure of false financial information from all walks of life, which is also a key factor for CPA audit to focus on.

III. The research conclusion

Based on the above analysis, we can draw the following conclusions:

1. The lower the penalty for non-implementation of the management, the higher the expected revenue of the expected users, and the more inclined the management is to whitewash the financial information. When the regulatory body formulates punishment measures, the penalty for the false financial information of the management should be proportional to the expected user's expected revenue under normal circumstances, and inversely proportional to the probability P of the disclosure of false financial information of the management.

2. The compensation amount for the loss of the expected users is directly proportional to the loss caused by the false financial information to the expected users, and inversely proportional to the probability P of the disclosure of the false financial information of the management. The probability P of the disclosure of the false financial information of the management is closely related to the supervision of the governance layer, the behavior of the management and the independent audit risk. Finally, these factors will undoubtedly affect the quality of accounting information;

3. The probability P of the disclosure of false financial information of the management is inversely proportional to the audit risk. According to the audit risk model, the audit risk consists of material misstatement risk and inspection risk, among which the material misstatement risk includes inherent risk and control risk. In other words, the probability P of disclosure of false financial information of the management is closely related to the inherent nature of the industry of the audited entity and the strength of the internal control of the organization, and audit inspection is not the only determining factor. Generally speaking, the fiercer the industry competition, the more complex the business and the weaker the internal control, the higher the inherent risk and control risk, the higher the corresponding audit risk, and the probability P of the disclosure of false financial information of the management should be increased, and the penalty for the behavior of false financial information of the management and the compensation amount for the loss of the expected users should be increased.

IV. Improvement measures to improve the quality of accounting information

1. Increase penalties for non-implementation of management, strengthen supervision of industries with high gross profit margin, conduct social supervision of daily behaviors of the company's main principals, establish a social supervision mailbox, mailbox key is held by a third party (the chief audit CPA and regulatory agencies), widely collect social clues and evidence, once there is solid evidence to prove that there is no implementation of behavior, Immediately start the third party investigation and audit procedures.

2. Strengthen the protection of the intended users of financial information, and provide accounting information to units and individuals with historical dishonesty without strict audit, and must provide property pledge.

3. Establish a risk assessment mechanism, assess and classify enterprises' risk levels through the scoring mechanism, and implement double audit for enterprises with higher risk levels, that is, two independent accounting firms conduct independent audits, and the accounting information can be released to the public only when the conclusions are consistent.

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