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The Theory of Risk Assessment and its Domestic Practice in Financial Audit

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Ph.D. dissertation

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Budapest
2013

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„Essentially, all models are wrong, but some are useful."

Box és Draper (1987)[1]

[1] Quotes: Kovács (2011), p. 349.

Introduction

External audit or similar activities have been performed for many thousands of years. The roots of modern auditing, typical of our days, go back to the middle of the 19th century, when the British Companies Act of 1855–56 allowed the owners of joint stock companies to commission independent auditors to review their accounts (King *et al.*, 2003)[2]. It also happened sometimes that the clients were creditors who paid directly to the auditor[3] (Flesher *et al.*, 2005).

The profession of audit made a large journey since its formation in a methodical sense too both in Europe and in the US: instead of the entry-by-entry (arithmetical) checking of bookkeeping and the investigation of frauds the evaluation of the elements of financial reports took the central position – in the beginning the inspection of the balance sheet, and later with an ever increasing importance that of the income statement (Lee *et al*., 2008).

One of the first 'long' audit reports were drawn up in 1903 for United States Steel, when Price Waterhouse "certified" regarding the consolidated financial statements (!) of the company that *"the Balance Sheet is properly drawn up so as to show the true financial position of the Corporation and its Subsidiary Companies, and that the relative Income Account is a fair and correct statement of the net earnings for the fiscal year ending at that date"* (King *et al.,* 2003, p. 6.).

It has thus been recognised at an early stage that a well devised and operated accounting system plays an important – though mostly indirect – role in the efficient allocation of resources. However, this mission may only be accomplished if the credibility of the accounting data is demonstrated (Bell *et al.,* 1997). The legislator does not fail to recognise this when it states: *"The purpose of an audit is to ascertain that the annual report, simplified annual report, or consolidated annual report of an undertaking has been drawn up in accordance with the provisions of this Act and accordingly, provides a true and fair view of the financial position and liquidity and*

[2] The institution of independent auditing reached the US "by train", when European capital was needed for the construction of the big North-American railway lines, and remote creditors and owners had to be informed concerning the expected return on their credits and investments (King T. A., 2006). Characteristically, both of the eponyms of the first American audit company, Haskins&Sells, worked on the railway constructions in the decades preceding the foundation of their company.

[3] This form of commission is somewhat closer to a present due diligence procedure preceding, for instance, an acquisition.

profitability of the operations of the undertaking (and those of the undertakings included in consolidation)" (Hungarian Act on Accounting, Section 155(1)). Today, auditing is supposed to primarily aim at strengthening the stakeholders' confidence in financial statements (ISA 200). In the broader sense, we are facing the classic opposition between client and agent, where *"as a result of information asymmetry and mutual distrust, clients try to measure the performance of their agents against some objectively quantifiable indicator"* (Kaliczka *et al.*, 2010). Projecting these on modern enterprises and auditing, the clients will be the owners, the agents are the members of the management, and the 'instruments' of the measurement are the auditors who certify the object of the measurement, i.e. the financial statements.

According to Barkman (1977) *credibility* takes on two forms in the process of auditing: on the hand through the audit procedures performed, the auditor himself tries to gain confidence about the credibility of the assertions in the statements. On the other hand the report issued certifies the financial statements to the outside parties.

The auditor ensures credibility and assurance through his/her opinion formulated in the issued report by stating that the financial statements have been prepared, in all material respects, in accordance with the applicable financial reporting framework (ISA 200(3)). **At the same time the management is responsible for the drawing up of the annual report, and as a result of this the management also bears the ultimate responsibility for its content.**

In theory therefore, auditing may also be conceived as a test of hypothesis, where the null hypothesis states that the annual report is conform to the relevant requirements, and the alternative hypothesis represents that it is not. Accordingly, the auditor has two choices: either he/she accepts the report (appends an unmodified opinion to his/her report) or rejects it[4]. As either decision may later prove to be erroneous, and a mistake could be quite 'expensive',[5] the auditor needs to justify his/her opinion (Kinney, 1975).

[4] For sake of simplicity the case of a qualified audit opinion is included here as well.
[5] This may include actual financial losses as well as loss of goodwill, not to mention more serious instances. It is true, however, that according to certain empirical research (see e.g. Francis, 2004), the rate of effective failures is rather low (<1%), although the quality of auditing suffered a certain decline in the 1990s and at the beginning of the new millennium.

In order to issue a well-founded report, the auditor has to gain ***reasonable assurance*** on the fact that the financial statements as a whole are free from material misstatements, whether due to fraud or unintended error. The emphasis is on reasonable assurance: this means a high (but not absolute!) level of assurance which may be obtained when the auditor has managed to obtain sufficient appropriate audit evidence to reduce ***audit risk*** to an acceptably low level (ISA 200(5)). 'Sufficient', 'high', 'acceptably', 'low: all of them are qualitative characteristics difficult to define and all are related to audit risk.

In nowadays' financial audit risk assessment plays a central role: all the relevant international (and national) audit standards demand the performance of a risk based audit, though at the very same the categories associated with this issue are quite softly defined, the methods of risk measurement (and assessment) are mostly neither elaborated nor quantified. Here we may arrive at a contradiction, as this wide ranging riskiness is part of a profession, in which the most objective measurement and the highest level of accessible precision is the goal. As even the international standards on auditing admit: *"The assessment of risks is based on audit procedures to obtain information necessary for that purpose and evidence obtained throughout the audit.* ***The assessment of risks is a matter of professional judgment, rather than a matter capable of precise measurement."*** (ISA 200/A32.; bold letters added by me G.M.) We may not forget that modern auditing is also a business activity, so one cannot be neutral about the risks of it from this aspect either.

So given is a from society's point of view extraordinarily important but at the same time risky profession, in which the assessment and controlling of risks plays a central role. I studied this topic in my dissertation.

1 Delimitation of the subject matter and targeted objectives

It would be impossible to fully discuss all the academic literature on audit risk within the limits of a single dissertation. In the next graph I gathered the most frequently occurring subject matters of the articles published in scientific journals in the field of audit risk.

Figure 1: Topics associated with audit risk

In this dissertation I wish to discuss, how the concept of audit risk has evolved, where are its roots in the literature of economics, in what directions is one researching to improve it, including the different methodical approaches and critics of content. My empirical research was primarily dedicated to answer the question, to what extent does this model bear relevance and explanative force in nowadays' Hungarian auditing practice.

In the first, theoretical part I will examine two possible interpretations of audit risk. The first of these will discuss the accounting/auditing considerations corresponding to those applied in general measurement theory; the second will approach the phenomenon of audit risk through microeconomic concepts. The conclusion of both outlined interpretations will be that the auditor works in circumstances of uncertainty, while his/her job is to provide the clients with assurance. Subsequently, I will introduce the literature of uncertainty and risk in economics to a depth that seems adequate for the needs of the dissertation.

Subsequently, I will describe how the audit profession copes with the management of this uncertainty and risk. I will briefly review the history of the audit risk concept still in use at present, and describe the current rules and regulations pertaining to the profession (including the most important provisions of the relevant auditing standards). Although this latter subject is not strictly of a scientific nature, it would be inappropriate even for a dissertation like the present one to conclude without a short introduction of the main package of standards regulating the practical dimension of the subject. As auditing is primarily a practical activity, the related phenomena may not always be observed ‘in vitro’. As a direct result, also academic literature is inclined to draw on practical sources, seeking solutions to problems identified in everyday life. It is during this process that new theories are devised, to be or not to be subsequently applied in practice, depending on their feasibility. To use a common expression, in the case of auditing it is easy to answer the question whether the hen or the egg existed first: here it is always practice which is followed and drawn upon by literature, forming a feedback cycle. Therefore, in my view, accounting literature is typically the result of a reactive activity. The scientific results will then make their appearance in the practical regulations, provided they prove to be feasible. In the framework of the present dissertation, I shall consider accounting standards to be the result of the above described process.

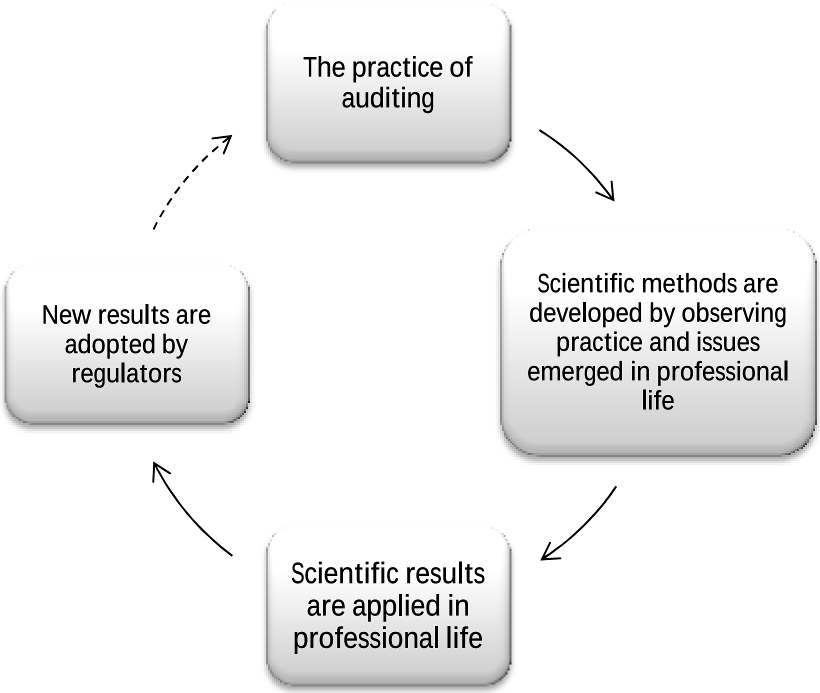

Figure 2: The relationship between the practice and theory of financial audit

Subsequently, I will introduce how academic literature seeks to improve this model. First, I will discuss the methodological trends aiming to improve the assessment of audit risk, within the given conceptual framework. Second, I will examine what kind of criticism is formulated regarding this conceptual framework, and what directions the expansion of the content of audit risk is likely to take place.

In addition, I will give an overview of the somewhat isolated world of Hungarian specialised literature. The reason for doing so is that no clear thematic or research orientation may be identified in Hungarian language publications, and as a result, these works could not be easily integrated into the overview of international literature. I will only make an exception when a Hungarian work properly fits into the topic being discussed.

Finally, I will outline the existing empirical research related to audit risk, also providing a synthesis of the theoretical literature previously introduced.

A comprehensive dissertation is certainly expected to cover all of the related subtopics. As however, in the present dissertation I wish to concentrate mainly on the theory of audit risk in the strict sense of the term, I shall not discuss in detail the category of ‘engagement’ (or ‘business’) risks[6] that also the audit standards consider to fall outside the scope of audit risk. Although in the everyday sense of the word ‘risk’, these are undoubtedly just as important as the elements of audit risk, they represent a very different dimension of the auditing activity. Actually, it would entail an analysis of auditing primarily as a business activity, as opposed to auditing as a professional activity. For the same reasons, I shall not elaborate on the relations between audit risk and the auditors’ remuneration.

Fraud, although actually constituting an inherent part of the topic of audit risk, is such an extended field of study that it would not be a responsible initiative to endeavour to fully discuss that matter within the limits of the present dissertation. As a result, I will only discuss the issue of fraud to the minimal extent necessary[7], and shall only endeavour to analyse to what extent the risk of fraud is addressed in the audit risk model, and particularly in risk assessment. I shall not examine the types and forms of fraud, nor the methods applied by auditors to detect and treat these, including stages from the planning of the audit through the collection of evidence to the impact on the auditor’s report.

Neither shall I discuss the issue of materiality, closely related with audit risk; the reason is, once more, the extremely diversified nature of the topic. It is true that in professional practice, it is an essential task to determine materiality (as risk lies primarily in errors qualified as material. Naturally where the discussed topic requires I visit the issue of materiality to an extent necessary.

Similarly, as I wish to concentrate expressed on the risks connected with external audit activity, I do not intend to deal with the operation and risk management of internal controls. For the same reason, I shall not discuss the corporate governance dimensions of the topic either.

I will conclude my dissertation by describing my empirical research and its results.

[6] This latter designation is rather misleading, as a substantial part of literature – including the international standard (ISA 315(4)b) – interprets this term as the business risk borne by the client, and not by the auditor. Therefore authors concerned about clarity prefer to refer to it in a comprehensive form, as “auditor’s business risk”. See e.g. Eilifsen ***et al.*** (2010) p.76, or ISA 200(A33).

[7] As it seems to be inevitable particularly in relation to Hungarian literature.

2 Two possible interpretations of auditing

2.1 An interpretation of auditing from the viewpoint of measurement theory

People always wanted to measure things, to compare the sensed phenomena of the surrounding world with one another or with a certain benchmark (Kata, 2007). In his milestone publication of 1946 (Stevens, 1946), formulating his theory of scales of measurement also widely used in our days, Stevens defined ‘measurement’ as *„...the assignment of numerals to objects or events according to rules”* (Stevens 1946, p. 670).

Based on this the process of financial reporting may also be conceived as an issue of measurement theory (Baricz, 1994). According to this approach, accounting actually translates the experienced economic reality (the individual business events) into the language of numerals, and subsequently discloses them in the financial statements. In developed economies, the rules pertaining to measurement and recognition are determined by third parties (the state or a professional organisation). Within the framework of the given set of rules, it is possible to determine a theoretical value corresponding to a given economic phenomenon which needs to be assigned to that phenomenon (transaction). In classical measurement theory, this is called a ‘systematic component’ (Füstös *et al.*, 2004), which may be considered as an effective, theoretical value.

Considering however that different individuals may deduce different values from the observation of the same phenomenon, and that, in addition, certain economic events always carry an immanent element of uncertainty (ISA 540), the values of a transaction recognised in the financial statements may ultimately be conceived as variables, where the variable ‘x’ observed will be the sum of the systematic component ‘t’ and an error component ‘e’:

1) $x = t + e$.

Classical measurement theory assumes that:

2) $E(e) = 0$, i.e. the expected value of the error is zero,

3) $\rho(e_1,t_1) = 0$, i.e. the error and the systematic component do not correlate,

4) $\rho(e_1,e_2) = 0$, i.e. the error components of the different measurements are not correlated (Füstös *et al.*, 2004).

The applicability of the model in accounting theory is largely determined by the actual validity of these assumptions. Hypothesis 2)) seems to be rather difficult to demonstrate. We should actually need to prove in an empirical way that accounting professionals are not expected to make an error while recording a given accounting transaction, and the values describing the transaction appear in the financial statements perfectly in line with the regulations. This assumption may only be partly accepted (Lukács, 2011), with special regard to the following considerations:

- the complexity of transactions differs substantially,
- uncertainty is an inherent feature of transactions, therefore they do not possess one single value that could be determined in an objective way – not even within the given set of rules.

At the same time, however, this assumption may be accepted for transactions lacking the above unpleasant characteristics (e.g. account payable).

In case of hypothesis 3)) it should be proved that the value deduced from the set of rules and the size of the corresponding error made are not correlated. Certain research proves that this assumption may be correct (Lolbert, 2008), as regarding the whole of the financial statements, no pattern is recognisable between the size of errors and the size and value (rate) of the correct values.[8]

Hypothesis 4)) claims that the sizes of two errors made during two different measurements do not correlate, that is, the amounts of error made by the accountant and that by the auditor, respectively, do not covariate. Evidently, this hypothesis would need to be proven. In order to solve the problem, we need to decompose the error value into two factors: a systematic error ‘s’[9] and a random error ‘e’.

[8] It suffices to consider the fact that liabilities tend to be undervalued while receivables are generally overvalued. On the other hand, both kinds of deviations frequently occur in case of inventories.
[9] Its standard deviation is zero, and it is uncorrelated with the effective value.

Then it follows from the acceptance of the three previous assumptions that the expected value of variable ‘x’ will be identical with the expected value of the systematic component and the systematic error component:

$$(1)\ E(x) = E(t) + E(s).$$

We wish to obtain information about two features of our measurement: its ***reliability*** (to what extent will the results be the same, if we repeat the measurement, if all other parameters are unchanged) and its *validity* (to what extent do we manage to measure the subject we actually wish to measure – to judge this we must know the theoretical value).

By reliability, we mean the rate of variance of the non-random components:

$$(2)\ \rho^2{}_{xt} = \frac{\sigma_t^2+\sigma_s^2+2\sigma_{ts}}{\sigma_x^2} = \frac{\sigma_x^2-\sigma_e^2}{\sigma_x^2}$$

The value will be between 0 and 1: 0 if the measurement contains only errors and 1 if it contains no error.

The validity of the measurement shall be the correlation of the theoretical and the observed values:

$$(3)\ \rho_{xt} = \frac{\sigma_t^2}{\sigma_x^2}.\ \textit{(Füstös et al., 2004)}$$

How does this all relate to auditing? What the auditor does is, in essence, to compare the financial statements to the given set of accounting rules; in other words, the auditor performs his/her own measurement concerning the subject of the financial statements. It follows logically that if the auditor’s results are substantially different from the entity’s results, this means that the reliability of the measurements according to formula (2)3) decreases. The same holds for validity: if the observed values substantially deviate from the theoretical values, validity decreases. The situation is further complicated by the fact that in many cases, the “true” values of the assertions in the financial statements are not known: as a consequence of this also the measurement of reliability and validity itself becomes uncertain, and may only be estimated (Kovács, 2011). Another problem is that in most cases, only two measurements are performed: one by the person compiling the financial statements, and one by the auditor[10].

This necessarily brings up another question: why do measurements substantially differ from each other? According to the auditing standards[11], certain items are, by their sheer nature, more exposed to risks: in other words, they bear so-called ***significant risks***. Such items are those with significant subjectivity (estimates) involved or complex transactions.

It is always a problem when measurement results produced by two persons differ, considering that reliability is a fundamental requirement concerning reports (IASCF, 2007), and that the primary aim of the institution of auditing is precisely to increase confidence towards reports. This means that in many cases, the auditor needs to deliver a high level of assurance under the circumstances of low reliability and substantial uncertainty.

2.2 An interpretation of auditing from the viewpoint of decision theory

Auditing – more precisely, the issuing of the audit report – may be conveniently modelled in a decision theory framework. The decision model proposed by Kinney (1975) for this purpose is $\{A, S, P, W|\epsilon\}$, where A represents the set of possible choices, S is the set of all possible mutually exclusive positions, P is the set of the probability of these positions occurring, W is the set of the auditor's utilities regarding the possible outcomes, and ϵ is the auditor's existing experience and knowledge which determines the characteristics of the four other sets. Further elements of the model are μ, $\overline{X_r}$, E és $\bar{x}$. μ represents the average of the correct (but unknown) values of the client's asset elements, $\overline{X_r}$ is the average of the effective values included in the financial statements, E is the amount of the material misstatements in the annual report, and $\bar{x}$ is the average value of the audited samples. It is assumed furthermore that the population is finite and has a known number of elements N. Set S consists of cases s_1 ($\mu = \overline{X_r}$) and s_2 ($\mu = \overline{X_r} \pm E$), where the statements do not, or do, contain material misstatements respectively. Set A also consists of two elements: a_1 – the auditor accepts the numbers produced by the client;

[10] Although it is true that the minimal number of measurements happens to be two. In this respect, it would be worthwhile to make a study of the 'four eyes principle', the principle of joint auditing, as practised in France (Fekete, 2011).

[11] Cf: ISA 315, Sections 27–28 and A119–121.

a_2 – the auditor does not accept the client's balances, i.e. rejects $\overline{X_r}$. Let us assume, in addition that based on his/her general professional skills and previous knowledge and experience concerning the client, the auditor is able to assign probabilities to cases s_1 ($P(s_1)$) and s_2 ($1-P(s_1)$)[12]. So the auditor is faced with two correct decision options ($s_1;a_1$ and $s_2;a_2$) and two incorrect ones ($s_1;a_2$ and $s_2;a_1$), with entirely different consequences.

Kinney assumes that the auditor assigns zero cost to correct decisions:

$$(4)\ W(s_1,a_1)=W(s_2,a_2)=0.$$

Incorrect decisions evidently entail costs, and consequently have negative utility:

$$(5)\ W(s_1,a_2)=C_1,\ and\ W(s_2,a_1)=C_2.$$

It should be noted at this point that according to the currently accepted definition, audit risk is identical with the probability of $W(s_2,a_1)$. This means that this issue is (at least) of a double nature[13]: it is quite difficult to determine both the value and the probability of C_2; however the essence of audit risk may, for all practical purposes, be summarised in these two factors.

If the auditor considers that a_2 is justified, then there are three possibilities: performing further audit procedures, adjustment of the accounting records by the client, or issuing a qualified/adverse auditor's opinion. Elliott and Rogers (1972) find that in most cases, additional audit procedures are performed, which allows for a relatively good control of the value of C_1, as opposed to C_2, which contains the costs of the negative consequences mentioned before (financial and goodwill losses etc.). Supposing that the auditor intends to make a decision (a^*) that maximises his/her utility, we finally obtain the following equation:

$$(6)\ E(W|a^*) = min_{a\in A} \sum_{s\in S} W(s,a)\cdot P(s) = min\ \{0\cdot P(s_1) + C_2\cdot P(s_2);\ C_1\cdot P(s_1) + 0\cdot P(s_2)\}$$

[12] This is a very strong assumption of Kinney's model. Whether it is true or not will decide whether the whole model is applicable or not.
[13] As the next chapter shows, at least one additional aspect of this problem is to be considered: namely, the issue of sorting out the obtained results.

Although in his work, Kinney makes statements concerning the size of the sample to be taken for the purposes of auditing, **I reckon that his results could be generalised**. I**f the costs of auditing activity are broken down into fixed** ***(FC_{aud})*** **and variable** ***(VC_{aud})*** **costs, then the auditor actually needs to examine the kind of relationship existing between** ***$FC_{aud}+VC_{aud}(n)$ – n*** **being the number of audit objects generating variable costs—and $E(W|a^{*})$-vel.**[14]

It is apparent that also this model operates with probabilities; therefore we inevitably need to briefly review the issue of uncertainty and probability to get closer to understanding the problem of audit risk. For this reason, in the next chapter I will give an outline of the economic concepts of risk, uncertainty and probability.

[14] Kinney used the same break down of costs in his work related the audit sampling.

3 Probability, risk and uncertainty

3.1 Some economic theories of probability

The concepts of risk and uncertainty are closely related to the interpretations of probability. Regarding the latter, we distinguish two fundamental approaches: the objective and the subjective approach. The former defines probability as the limit value of occurrences, while the latter reflects individuals' feelings concerning the events (assertions)[15]. The objective approach is frequently contested because its supporters conceive of probability as a phenomenon of a "knowledge-like" nature rather than a measurable one; on the other hand, an evident weakness of the subjective approach is that it is impossible to express mathematically (Bélyácz, 2010).

Economist Irving Fisher was a representative of the subjective approach. In the work on interest theory he wrote in 1906[16], he interpreted probability as an expression of the lack of knowledge, which entails that in his view, risk is a sign of ignorance, for if sufficient knowledge was granted, only certainties (assurance) would exist. Therefore, risk may not in any case be objective; it is only a subjective estimation of future (cited by Bélyácz, 2010).

In my opinion, based on the above it seems to be evident that also audit standards build on the subjectivity of probabilities when they declare risk assessment to be a subject to professional judgment (that is, the auditor's personal opinion).

The reading of one of the first cornerstone studies published in the field of risk and uncertainty, a work by Knight (1921), provides us with an even more interesting conclusion. Knight defined three types of probabilities:

1. *A priori probability* is an absolutely homogeneous classification of entirely identical outcomes (except for the uncertain factors). Knight identified this with mathematical probability. These probabilities may be deduced logically. An example is the odds of rolling any number on a dice.

[15] Kinney's model, presented previously, operates with this type of probabilities.
[16] Irving Fisher: The Theory of Interest.

2. On the other hand, *statistical probability* is based on the empirical classification of outcomes. In this case, so many possible outcome scenarios exist that it is impossible to determine probability by way of *ex ante* calculations; however, *ex post* calculations may be relied on in the future. Probabilities may be obtained here through the posterior empirical assessment of relative frequencies. Insurance companies, for instance, use this kind of probability.

3. Finally, in case of *estimates*, no valid basis whatever exists for the classification of outcomes, for the event in question is eminently unique.

Based on Knight's definitions, in case of the first two types of probabilities we deal with *risk*, probabilities that may be computed beforehand or posteriorly; while in the third case, we speak of *uncertainty*, where the probability of possible outcomes cannot be determined.

Knight also made it clear that in his view, individuals always possess a certain amount of subjective probabilities, even in circumstances of uncertainty. This coincides with the currently accepted view that individuals who are capable of making consistent choices between unknown outcomes may be considered as individuals possessing subjective probabilities. It also follows that the calculation of probability is feasible in all circumstances.

The difference between risk and uncertainty is supposed to be in the field of objective probabilities. In Knight's view, objective probability characterises events that may easily be verified by anybody. Following this train of thought, he concludes that in business life, the consequences of bad luck and bad choices are not separable (LeRoy *et al.*, 1987).[17]

We may risk saying that following Knight's classification, in case of auditing we actually do not deal with *risks*, but rather with *uncertainties*. Every audit is unique: even two subsequent audits of a same company may be very different, and we only have very limited knowledge about the possible outcomes.

[17] Knight demonstrates this in relation to insurance.

Keynes (1921), who declared himself to be a supporter of the theory of subjective probability, used the concepts of ***certain*** and ***probable*** as descriptors of the extent of rational expectations[18] concerning an assertion. Therefore, as an assertion is necessarily either true or false, the attributes of 'certain' and 'probable' only characterise the knowledge concerning the assertion, and not the assertion itself. In this sense probability is subjective. At the same time, ***"A proposition is not probable because we think it so"*** (Keynes, 1921, p. 3). Probability theory is logical because it operates with expectations that are rational within the given circumstances, and not with the individuals' actual expectations, which might not be rational. Keynes considers that in case of the relationship of probability existing between the set of premises and the set of assertions of the conclusions, we are wrong to say that a conclusion is probable or doubtful. We should actually speak about our rational belief in the conclusion, or about the relationship between the two sets, the knowledge of which substantiates our rational expectations. He underlines that when we speak of probability, we never think of probability in itself, but of probability as compared to something, similarly to the fact that nothing may in itself be 'distant'[19]. The extent of this probability is determined by our knowledge (a 'certain rational belief' we have) and our hypotheses. As soon as these change, probability also changes. New logical relationships (between the assertion and our new assumptions) will become important; however, the old relationship between the assertion and our earlier assumptions will continue to exist, and will be just as real as the new one.

Furthermore, Keynes differentiates between primary and secondary propositions. Primary propositions do not contain assertions about probability-relations, while secondary propositions do. So, if based on evidence ***b***, we suppose with probability α that proposition ***p***[20] is true, then we actually possess knowledge concerning a proposition ***q***[21] which describes this probability relationship.

Keynes distinguishes between three interpretations of probability. In the first – and most fundamental – sense, it denotes a logical relationship between two sets of assertions. In the second sense, it represents the extent of rational expectations

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[18] The difference between rational and non rational expectations is not identical with the difference between correct and erroneous expectations.

[19] ***"No proposition is in itself either probable or improbable, just as no place can be intrinsically distant"*** (Keynes, 1921, p. 6).

[20] Primary proposition.

[21] Secondary proposition.

derived from secondary propositions. Finally, we may also say that the assertion being the subject of the probable rational expectation (in the previous example, assertion ***p***) is probable.

This reasoning may easily be applied to auditing as well: on the basis of the evidence at his/her disposition, the auditor asserts in his/her opinion with a discretionary probability α (which may never reach 1 but shall be a nearby value) that the assertions in the financial statements[22] **are free from material misstatements. In this case what the auditor *actually* knows is that on the basis of the evidence available, there is a probability of extent α that the financial statements are free from material misstatements, and this knowledge of his/hers certifies his/her rational expectations (after the audit has been carried out) of extent α concerning the lack of misstatements.**

In the field of probability, we should also mention Savage's (1972)[23] typology of probability, particularly because of the effect it later exerted on audit literature[24]. In Savage's view, the approaches to probability may be of an *objectivistic*, *subjectivistic* or *necessary* nature. His objectivistic theory corresponds to Knight's definition. According to his subjectivistic approach, probability is the extent of individuals' belief in assertions[25]. According to the necessity models, probability represents the extent to which the truthfulness of a set of assertions follows from another set of assertions only as a matter of logical necessity (not considering individual opinions).[26]

In line with Knight's classification, Medvegyev (2011) considers that the difference between risk and uncertainty results mainly from the fact that social processes are

[22] That is, the management's assertions about the company they direct; about its assets, its profitability and financial situation, as well as any changes therein.
[23] First published in 1954.
[24] His work served as a starting point for the elaboration of the constructive probability theory, used as a basis for belief functions.
[25] In the assertion, for instance, that "tomorrow it will rain". This definition does not preclude that two (otherwise rational) individuals, based on the same set of evidence, may have different opinions about this same assertion.
[26] As the representatives of this model interpret probability as a kind of extension of logic, in their case it is impossible that two individuals starting from the same point should arrive at different conclusions – provided that their logic is correct.

unrepeatable[27]. He writes: *"In order to be able to use the tools of statistics in a meaningful way, we need to have a very large number of independent observations of identical distributions"* (Medvegyev, 2011; p. 318). Consequently, uncertainty exists when these conditions are not fulfilled; therefore statistic tools are not appropriate for establishing the parameters of the circumstances of decision. We may state with assurance that economic (business) decisions (including the auditors' decisions) are virtually always made in circumstances of uncertainty. This also means that no unequivocally correct decision exists, as we lack the criterion that would allow us to find it. Hence the judgment of appropriateness and incorrectness will necessarily become subjective: *"when a decision needs to be made in circumstances of uncertainty, the only possible solution appears to be the method of 'two heads are better than one'."* (Medvegyev, 2011; p. 324).

On the other hand, if the above criteria are met and if we possess the sufficient number of observations, then we have the possibility to use statistical tools. In this case however, we already talk about risks.

Száz (2011) formulates essentially the same idea when he proposes that probability should be interpreted exclusively in a mathematical sense, as the limit value of relative frequency (in fact, he more or less equates it with Knight's *a priori* probability), while he encourages the use of the term 'chance' instead of 'subjective probability'. He summarises his opinion concerning the examined set of concepts as follows: *"Talking of uncertainty, we only consider chances rather than probabilities; in case of risk however; the use of the term 'probability' might be more adequate."* (Száz, 2011; p. 338)

We should ask ourselves the question, then, whether the concept generally known as 'audit risk' actually covers chances (uncertainty) or risks (probability). Based on what the professional standards (ISA 200) say about this concept, we should vote for the latter solution. **However, if we consider the views explained above, it is easy to recognise that 'uncertainty' would actually better describe this phenomenon**[28].

[27] This assertion is extremely important in relation to my subject matter, as no identical audits exist either. This is a reiteration of the idea that even the audit of a same company in a subsequent year may not be considered as a simple repetition of the audit of the previous year.
[28] This is underpinned by the expression of 'risk *assessment*', which—also according to Knight's classification—corresponds to uncertainty rather than to probability.

3.2 Risk

Since Knight, the concept of 'risk' has been applied to situations where the outcomes are not certain, but their probability is known (Bélyácz, 2011). However, in the statistical sense, risk is not directly measurable. It is because of this characteristic that Kovács (2011) considers it to be a 'latent' concept. Its measurement is made difficult by two factors: it contains many subjective elements, and it cannot be measured in a direct way.

If we consider the lack of univocality (i.e. uncertainty) present in auditing as a risk[29], then it becomes necessary to find a way to determine the probability of the possible outcomes. What happens, in fact, is that we make a step forward from the level of uncertainties to the level of risks.

Risk is a two-dimensional concept, usually interpreted as the product of probabilities of occurrence and consequences[30]. Primarily due to the need to estimate occurrence probabilities, its measurement is subjective and cannot be precise; in most cases only a positioning on a rough (imprecise) scale is possible (Lolbert, 2008)[31].

The literature on risk also calls attention to the fact that even if we were able to exactly measure probabilities and their effects that would not solve all our problems: we would then be faced with the issue of classifying the quantified risks (Lolbert, 2008; Wágner, 2010). For what would we consider as *higher* risk? Events which are less probable to occur but have a significant impact or events which are probable to occur but only have minor effects? Regulations of the auditing profession refer this issue to the judgment of the auditor, making it a subject to the auditor's subjective value judgment.[32] The picture is only slightly illuminated by the fact that in auditing, events with a high probability of occurrence and with substantial effects are to have absolute priority, and (not surprisingly) less probable events with minor consequences do not deserve special attention. The problem does not lay in these 'clear' cases, but rather in the mixed situations outlined above. In case of the combination of small effect and high probability, we need to examine just how low

[29] Undoubtedly, this would be a rather arbitrary stance; yet it is conform to the fact that *at present* the profession *would like* uncertainty in auditing to be seen as risk.
[30] Here again I need to refer back to the discussion of Kinney's model above: this problem of a double nature also made its appearance thereabove.
[31] See, for example the widely applied "low–medium–high" classification of risks in auditing.
[32] See the detailed provisions in Chapter 6.3.

the effect shall be. Naturally this is closely related with the materiality determined by the auditor, but that is also, ultimately, a matter of professional judgment[33]. The combination of low probability and high effect may be considered as more critical, for we need to ask the question what happens if the event does actually occur. Even the ‘manipulation’ (in the good sense of the word, we simply determine it to be high) of materiality is of no help here.

Hereinafter I will examine the appearance and presence of risk in present-day auditing. First I will review the history of the concept of ‘audit risk’, as used nowadays. This will roughly cover the period from 1960 to the early 1980s.

Subsequently I will briefly outline the essence of risk-based audit approaches, imposed as a basis for auditing activity by the standards in force.

Finally I will shortly explain how audit risk and the risk-based approach are asserted in the auditing standards presently in force.

[33] In this case one may argue that although the probability is high, the error effect is unsubstantial, so the risk does not deserve special attention.

4 The evolution of the audit risk model

Accounting profession has long ‘struggled’ with the audit risk model. The concepts and the methodology, including the components of risk and the methods of its measurement, have taken a considerable time to gradually develop (Colbert, 1987). The conceptual framework currently applied appeared in the audit regulations in 1983 in the United States, in SAS 47[34]. Colbert (1987) considers that audit risk was discussed for the first time in 1962[35]. The subject matter initially arose in connection with the applicability of sampling in auditing. At the time, the term ‘risk’ was not yet used: confidence, reliability and probability were the used terms. In the fundamental work of Mautz and Sharaf[36] the concept of audit risk is used (without designating it) in the sense of the term of ‘inherent risk’ as currently understood. Elliot and Rogers (Elliot *et al.*, 1972) also discuss audit-related risks in connection with sampling. They define risks of type α and β as audit risks with a content identical (!) with present-day standards[37] , but they critically note that the auditor ***“is not able to explicitly control”***[38] either kind of risk and even after having performed the audit, shall not be in a position to be able to establish the actual extent of these risks. They also underline that from auditor’s point of view risk β is the more important factor – this again accords with the definition of audit risk as accepted today.

The first publications differentiating between assertion- and financial statements-level risks and the ones breaking down audit risk into the components still used today appeared in the 1970s.

SAP 54[39], published in 1972 suggested the following formula to determine the risk associated with the substantive audit procedures:

$$(7)\ S = 1 - \frac{(1-R)}{(1-C)},$$

[34] Statement on Auditing Standards No. 47 (SAS 47): Audit Risk and Materiality in Conducting an Audit.

[35] AICPA: Statistical Sampling and the Independent Auditor in: Journal of Accountancy (February 1962) pp. 60–62.

[36] Mautz, Sharaf (1961): The philosophy of auditing, AAA, Sarasota. Cited by Colbert, 1987.

[37] Hungarian statistical terminology also calls these concepts ‘errors of the first/second kind’ (*első fajú és másodfajú hiba*).

[38] Elliott *et al.*, 1972, p. 48.

[39] Statement on Auditing Procedure No. 54: The Auditor’s Study and Evaluation of Internal Control. AICPA, 1972.

where

S is the reliability of the substantive audit procedures,

R is the intended level of combined (substantive tests and internal controls) reliability,

C is the extent of reliance on internal controls and other relevant factors.

Stringer (1975) develops this formula when he breaks down the level of reliability of substantive audit procedures into the reliability of test of details on the one hand, and of analytical procedures on the other hand:

$$(8)\ S = 1 - (1 - D)(1 - A)$$

where

S is the reliability of the substantive audit procedures,

D is the reliability of test of details,

A is the reliability of analytical procedures[40] .

From the combination of (7) and (8) it follows that

$$(9)\ R = 1 - (1 - C)(1 - A)(1 - D),$$

which equals:

$$(10)\ (1 - C)(1 - A)(1 - D) = 1 - R.$$

This according to the current audit risk concept is nothing else but the combination of internal control risk and detection risk. It is also clear that inherent risk does not appear explicitly in this early model.

Similarly, Warren (1979) breaks down risk (defined in the nowadays accepted way) into two factors: risk derived from the accounting and the auditing process. He traces back the risk of occurrence of material errors to three factors. These are the integrity of the management[41], the adequacy of internal controls, and the financial situation of

[40] In this respect Stringer notes that the concept officially appears in SAS 1 issued in 1972, although this kind of audit procedure has been in use for at least the last 40 years, including his own firm. This is a good illustration of the somewhat unusual relationship between the theory, practice and regulation of auditing.

[41] Warren considers this to be the most important factor, citing as an example the famous McKesson Robbins case, an 1938 fraud of great notoriety. Then it was revealed after a series of fraud committed by the management that out of the $ 87 million worth assets of the company $ 20 million existed only

the company. He also divides detection risk into two components: sampling and non-sampling risk. He suggested that the formula used in SAP 54 should be extended by a further element, namely the *likelihood of material error (ME)*. According to this concept:

$$(11)\ (1-R) = (1-S)(1-C)(ME),$$

where *R*, *S* and *C* have the content exposed in the case of formula (7). Warren's ME is based on the auditor's subjective judgment, and is established in the planning phase of the audit process.

Inherent audit risk appears in a monograph of the Canadian Institute of Chartered Accountants of 1980 (CICA, 1980) in an explicit manner. Here audit risk appears as the function of inherent risk, control risk, and the risks of the substantive and other procedures, in the following form:

$$(12)\ UR = \frac{IH \cdot IC \cdot AR \cdot TD}{(IH \cdot IC \cdot AR \cdot TD) + (1{,}00 - IH)},$$

where

UR *is the ultimate risk that the auditor will be unable to detect an error of an amount equal to the maximum acceptable error rate*[42] *,*

IH *is the inherent risk,*

IC *is the risk that such an error goes undetected by the internal control mechanism,*

AR *is the risk that these errors are not detected by the different analytical procedures and other substantive tests,*

TD *is the sampling risk derived from test of details.*

This model considers inherent risk as a preliminary risk, and ultimate risk as a posterior risk. The formula reflects the idea that the ultimate estimate of the risk always depends on the initial estimate of the inherent risk. Therefore, if the auditor initially makes a high estimate of inherent risk, but during his/her work fails to find

on paper. It was as a result of this case that SEC stipulated in the US that the auditor proposed by the management should also be approved by the owners. But also a substantial part of inventory-related audit procedures originate from this case, such as the obligatory physical presence at the stock-taking process.

[42] The amount of error which does not make the financial statements in which it occurs qualify as one containing a material misstatement.

any material misstatements, then the ultimate risk will still need to be high, because the results do not accord with the preliminary ideas[43] (Daniel, 1988).

SAS 39 issued in 1981 and related to sampling[44] only discusses audit risk at the level of individual disclosures, to which it refers to as 'ultimate risk' ***(UR)***[45]. Here, risk is identified as the aggregate probability of the individual components, and defined as a product-type relationship; audit risk is supposed to be the result of the internal control risk ***(IC)***, the analytical procedures risk ***(AR)*** and the risk of test of details ***(TD)***:

$$(13)\ UR = IC \cdot AR \cdot TD.$$

In this model, the ultimate risk, the internal control risk and the estimated risk of the analytical procedures are the given factors; consequently, the risk associated with the testing of details is deduced as the result of these (Grobstein *et al.*, 1985). The standard also incidentally mentions inherent risk, stating that it is difficult and probably costly to establish, therefore its value is conservatively assumed to be 1, although this does not accord with practical experience (Colbert, 1987; and Cushing *et al.*, 1983).

Cushing and Loebbecke (Cushing *et al.*, 1983) formulate a criticism of this early model drawn up by SAS 39 when they differentiate between two audit philosophies: the *risk analysis approach* and the so-called *audit modelling approach*. They recognise that of the two, the risk analysis approach – breaking down the risk into components – complies with the standards, but they also note that this approach includes a number of quite crude simplifications. At the same time, in the audit model they prefer, risk is only one component of a comprehensive theoretical framework. Other variables of this model are the amount of the errors found in the financial statements; materiality; the cost of the audit procedures; the losses incurred as a result of the auditor's erroneous decisions; and finally the auditor's preliminary expectations, represented in the form of a probability function.

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[43] That is almost to say, "there is something fishy about everything that is not suspicious".
[44] Statement on Auditing Standards No. 39 (SAS 39): Audit Sampling.
[45] After the publication of SAS 45 (Related Parties) in 1983, this was finally replaced by the term 'audit risk', still in use today.

SAS 47 of 1983 was the first official document which expressedly differentiated between comprehensive and individual audit risk. Its greatest contribution to the evolution of the subject is that it was the first document to formalise audit risk in the form still used today. Furthermore, it introduced the concept of inherent risk and set out the requirements with respect to its assessment (Colbert, 1987). By comprehensive risk we mean the risk that the auditor issues an incorrect opinion about the financial statements; contrarily, individual risk is a combination of inherent, internal control and detection risks (Robertson *et al.*, 1985). SAS 47 therefore considers audit risk as a function of inherent, control and detection risks, which means that it gives the term a content identical to the one used by the international standards today. It did not stipulate exactly how the above factors should yield the ultimate risk; however, as it referred to SAS 39, a product-type relationship is indicated:

$$(14)\ UR = IH \cdot IC \cdot AR \cdot TD$$

where the meanings of the individual factors are similar to those described under equation (13) (Daniel, 1988).

The next important step towards the management of audit risk was the entry into force of SAS 53 in 1989, which substantially increased the auditors' duties in relation with fraud, and stipulated that auditors should also estimate the risk of material misstatements associated with frauds (Loebbecke *et al.*, 1989; Shibano, 1990).

With this final step, the process of filling the concept of audit risk with substantive meaning has been completed, at least as far as the regulations are concerned. As we will see, the risk interpretation of the international standards is substantially identical with that of the American model described above.

5 Risk-based audit approaches

The auditor's work culminating in an auditor's report mainly consists of obtaining and assessing audit evidence. Bell *et al.* (2005) characterised the modern audit process as a recursive process of evidence-driven belief-based risk assessment, as a result of which the auditor obtains new evidence which will make it possible to decrease detection risk to an acceptably low level.

The driving principle (what about and how much?) and the specific method (what kind of procedures?) of the collection of evidence depends on the *audit approach* used.

Pine (2008) mentions four fundamentally different audit approaches:

1) the substantive procedures approach;
2) the balance sheet approach;
3) the systems-based approach; and
4) the risk-based approach.

The substantive procedures approach examines a large number of transactions without a specific determined focus. The balance sheet approach concentrates on the audit of the balance sheet, based on the view that if the balance sheet data are correct, the (net) income needs to be correct as well. In case of the systems-based approach, the focus is on the audit of the internal controls, and further substantive audit procedures are only performed in the fields where these prove to be unsatisfactory.

The risk-based approach is of special importance in consideration of the audit process. This approach has been actuated by the fact that the extreme increase in the size of audited businesses has made it impossible to verify each and every transaction, both in terms of workload and expenditure (Jones, 2009). In reality however, this approach may – and does – cover several different methods. I summarise the issue in the following graph.

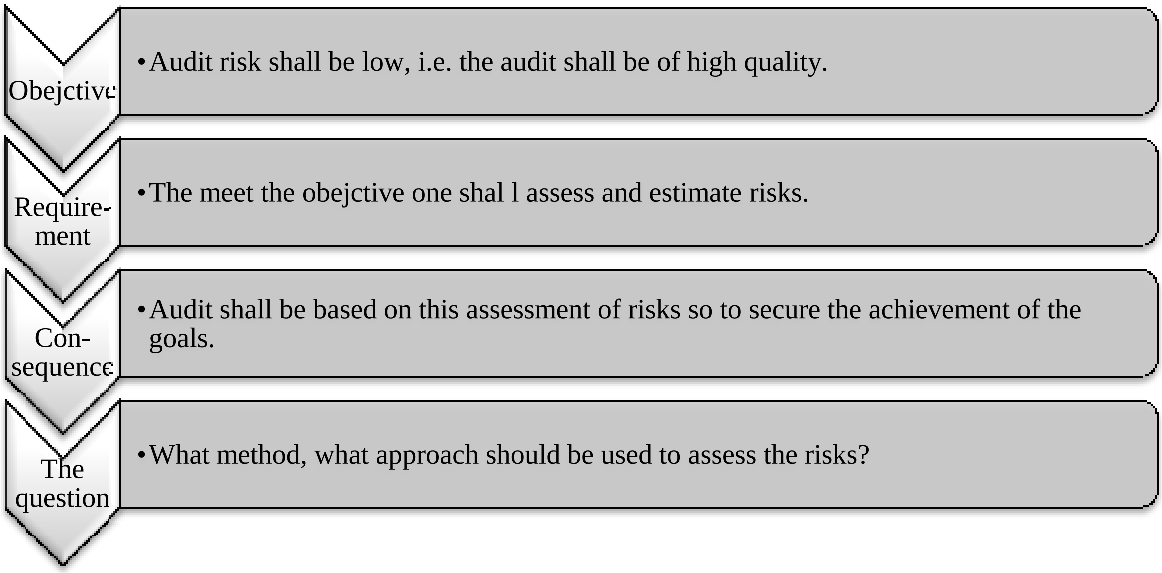

Figure 3: The simplified logical scheme of the risk based approach

The question is, therefore, what method and approach to use for the assessment of audit risk that will enable us to keep it as low as possible. As several methods are available, any approach using these may claim to be a risk-based approach.

Unfortunately even academic literature is divided in respect of the names and contents of the actually applied approaches, as pointed out by Peecher *et al.* (2007). Certain authors say that business risk based audit may be any kind of method which includes the assessment of the client's business strategy and/or business risk for the purpose of estimating the audit risk and planning the audit. Others consider that the audit approach applied only qualifies as a risk-based approach if the consideration of the client's business risks is part of the evidence collection process. This latter may comprise a holistic strategic approach just as well as, for instance, a transaction-based approach (Schultz *et al.*, 2010).

In my opinion, this contradiction may be resolved if we differentiate between two (otherwise closely related) concepts: the auditor's audit risk and the client's business risk. Undoubtedly, the client's business (strategic) risks are reflected in the financial statements and as such they become the auditor's risk as well. It is therefore true that every approach organising the audit around audit risk may be considered to be a risk-based approach (based on the auditor's risk, eventually). Furthermore, every method that bases risk detection on the knowledge of the client's business risks is *also* business risk-based.

The opinion described above is best corroborated by the fact that the concept of audit risk substantially acquired its present-day regulatory content – including the requirement of risk assessment – by the late 1970s and early 1980s. As opposed to this, strategic systems auditing (SSA), an approach based on the client's business and strategic risks, only appeared in the mid-90s (Peecher *et al.*, 2007)[46].

Currently effective standards ISA 200 and 315 stipulate that auditors should use an audit method based on a top-down business risk-based approach. To do so, auditors first need to revise and document their client's business processes then analyse the strategic (i.e. business[47]) risks. They have to consider how these risks may appear at the transaction level and in the financial statements as a whole (O'Donell *et al.*, 2005). Finally this has to be taken into account in the course of the planning and performance of the audit. The truth of this is confirmed by the fact that ISA 315 requires the understanding of the client's operation and the analysis of its strategy as audit evidence, and uses it as the interpretation framework for any further evidence (Peecher *et al.*, 2007). The standards also confirm that the ultimate aim of the method is to decrease audit risk to an acceptably low level. To reach this objective, resources should be focused on the areas most exposed to business risks.

Summarising the above, we may reiterate that business risk based approaches are generally considered to be the most effective way to minimise the level of audit risk and to maximise the quality of the audit. It should nevertheless be clear that the concept of audit risk describes a phenomenon with a wider scope than merely risk-based audit approach; in fact, it is an objective entity independent from the latter. Consequently, if an auditor chooses to use the balance sheet approach, audit risk would nevertheless be existent – regardless of the fact that the auditor does not choose to assess it and use it as an organising principle for his/her work[48].

[46] The conception and detailed elaboration of this method is attributed to KPMG (Peecher *et al.*, 2007). As a basic work in this field, see the study by Bell *et al.* (1997). I will come back to certain important elements of this method when discussing the criticisms of the audit risk model.
[47] That is why we may consider this approach to be a kind of business risk approach.
[48] Using the well-known proverb: the fact that we do not recognise or acknowledge something does not prevent it from being existent.

In the following chapter I will briefly explain how risk appears in the effective auditing standards. Subsequently, I will discuss the criticisms directed at this model, and the efforts to reform and/or to extend it.

6 Audit risk in the auditing standards system

The body responsible for the international regulation of auditing was founded in March 1978 under the name of International Auditing Practices Committee (IAPC), within IFAC (International Federation of Accountants). The organisation issued 29 international auditing guidelines until 1990. However, by the beginning of the 1990s it became clear that the continuing globalisation of the capital markets required detailed auditing standards. Between 1991 and 1994, the guidelines were transformed into standards: the International Standards on Auditing (ISAs) were born. In 2002, IAPC was reorganised under the name IAASB (International Auditing and Assurance Standards Board)[49]. To promote a better understanding and wider usage of the standards, in 2004 IAASB launched its so-called clarity project, in the frame of which the standards were restructured and partly reformulated, while preserving their substantive elements. This work was finished at the end of 2008, so the auditing standards in use today (2013) are the result of this effort[50]. In the following chapter, I will shortly introduce the risk model currently embraced by the international auditing standards issued by IAASB.

6.1 The requirement to perform risk-based auditing – risk in the standards' system

In the course of the planning and performance of the audit, the international auditing standards require the auditor to **identify and assess the risks of material misstatement, whether due to fraud or error**, based on an understanding of the entity and its environment, including the entity's internal control (ISA 200(7)). It is important however that risk assessment procedures by themselves do not provide sufficient appropriate audit evidence on which to base the audit opinion (ISA 315(5)).

In the conceptual framework of the international auditing standards, audit risk is *"the risk that the auditor expresses an inappropriate audit opinion when the financial statements are materially misstated. Audit risk is a function of the risks of material misstatement and detection risk."* (ISA 200(13)c).

[49] http://web.ifac.org/download/IAASB_Brief_History.pdf.
[50] http://www.ifac.org/auditing-assurance/projects/clarity-iaasb-standards-completed.

The standard explicitly excludes from the scope of audit risk the so-called type II errors, i.e. the possibility that the auditor should issue a qualified opinion about a financial statement which is otherwise devoid of material misstatements and comply with the relevant reporting regulations. The reason is simple: the standard setting body considers that the probability of such an occurrence is very low.[51] Similarly excluded from the concept of audit risk is the engagement risk of the auditor (or audit company), comprising factors such as loss from litigation, adverse publicity, or other events arising in connection with the audit of financial statements (ISA 200(A33)).

6.1.1 **The risk of material misstatement**

The link between risk-based auditing and audit risk in its narrower sense, as described above is the risk of material misstatement (RMM).

The risk of material misstatement is *“the risk that the financial statements are materially misstated prior to audit. This consists of two components, described as follows at the assertion level:*

(i) ***Inherent risk*** *– The susceptibility of an assertion about a class of transaction, account balance or disclosure to a misstatement that could be material, either individually or when aggregated with other misstatements, before consideration of any related controls”* (ISA 200, section 13n, highlight mine).

Inherent risk shows the exposure of the individual assertions to error. This may be typically higher in case of certain assertions. Some examples are complicated calculations, or accounting estimates subject to substantial estimation uncertainty. However, inherent risks may not only result from financial reporting itself; various external circumstances giving rise to business risks may also influence them[52] (ISA 200(A38)).

[51] This is actually a valid consideration inasmuch as the auditor will be more cautious in issuing a qualified opinion than in case of an unmodified one. It is therefore to be expected that the chances of an auditor committing an error of the second kind is rather low. The analysis of the reasons for this phenomenon would exceed the frames of this dissertation, and would primarily necessitate an analysis of auditing as a business activity.

[52] The standard cites as an example products manufactured using new technology, because of which older products may be more susceptible to overstatement. The fact that the statements relate to a business active in a declining industry may also affect inherent risk.

(ii) *"**Control risk** – The risk that a misstatement that could occur in an assertion about a class of transaction, account balance or disclosure and that could be material, either individually or when aggregated with other misstatements, will not be prevented, or detected and corrected, on a timely basis by the entity's internal control"* (ISA 200, section 13n, highlight mine).

With respect to **control risk** we also need to mention the incorrect Hungarian practice that used to identify this risk component as the risk related to internal audit. However, it is more than that: the risk related to internal controls. The former is only part of the latter (Bordáné, 2008). In case of internal controls we need to reckon with some inherent limitations, with the fact that even internal controls are unable to perfectly detect every error. Therefore, the control risk – just like audit risk as a whole – may not be reduced to zero, i.e. absolute assurance is impossible to achieve (ISA 200(A39))[53].

The risks of material misstatement exist before and independently of the external audit, so the auditor is unable to influence them, at least on the short-term. The risks of material misstatement may exist at two levels: at the overall financial statement level, and at the assertion level for classes of transactions, account balances and disclosures (ISA 200(A34)). The risks of a comprehensive material misstatement may affect the whole of the financial statements, i.e. potentially a great number of assertions. The assessment of the risks of material misstatement at the assertion level serves as a basis to determine the nature, timing and extent of further audit procedures (ISA 200(A36)). In fact, this is the reason why audit *is* risk-based. However, the compiler of the standard leaves it to the auditor's judgment to determine the method of this assessment.

The standards do not stipulate an obligation to separately identify inherent and control risk: there is only a requirement to make a combined assessment of the risks of material misstatement. Nevertheless it is possible to opt for a separate assessment, and similarly, the auditor may make a professional choice of the assessment method (quantitative or only qualitative estimation) (ISA 200(A40)).

[53] These include, for example, the possibility of human errors or mistakes, or of controls being circumvented by collusion or inappropriate management override.

6.1.2 **Detection risk**

In addition to the risks described above, there is a further component of audit risk which does depend on the auditor: namely **detection risk**, i.e. *"the risk that the procedures performed by the auditor to reduce audit risk to an acceptably low level will not detect a misstatement that exists and that could be material, either individually or when aggregated with other misstatements"* (ISA 200, section 13e).

On the short-term, the auditor is only able to influence detection risk through the audit procedures he/she applies and through the conclusions he/she draws from the evidence obtained by way of those. Detection risk thus depends on the efficiency of the audit procedures and their use by the auditor. Therefore the detection risk comprises the possibility that an auditor might select an inappropriate audit procedure, misapply an appropriate audit procedure, or misinterpret the audit results (ISA 200(A43)).

Considering that the auditor is only willing to take a certain degree of audit risk, and the risk of material misstatements is a given factor, the acceptable level of detection risk bears an inverse relationship to the assessed risks of material misstatement at the assertion level. The greater the risks of material misstatement the auditor believes exists, the less the detection risk that can be accepted. This naturally also affects the quantity and quality of the audit evidence to be obtained (ISA 200(A42)).

6.1.3 **The role of evidence**

The evidence collected plays an essential role in the assessment of audit risk. The standards require *"sufficient"* and *"appropriate"* audit evidence as quantitative/qualitative criteria; however, they also refer this issue ultimately to the auditor's professional judgment (ISA 200(A31)), defining only a few broad guidelines, such as:

- the higher the assessed risks, the more audit evidence is likely to be required;
- the higher the quality of the evidence, the less of it may be required;
- there is no trade-off between the quantity and the quality of the evidence. This means that obtaining more audit evidence may not compensate for its poor quality (ISA 200(A29));

- audit evidence has to be relevant and reliable. These attributes are dependent on the source and nature of the evidence, and on the individual circumstances under which it is obtained (ISA 200(A30)).

Consequently, the quantity of audit evidence depends on the (estimated) risk of material misstatements and the quality of this same evidence; whereas for quality requirements, the source and nature of the evidence is decisive.

Detection risk, however, can only be reduced, not eliminated, because of the inherent limitations of an audit. Accordingly, some detection risk will always exist (ISA 200(A44)).

6.2 The inherent limitations of auditing

The auditor is not expected to, and cannot reduce audit risk to zero, and cannot therefore obtain absolute assurance that the financial statements are free from material misstatement due to fraud or error. The standards attribute this fact to the inherent limitations of auditing. The lack of absolute assurance also implies that most of the audit evidence should only be considered persuasive rather than conclusive.

According to the compiler of the standard, the inherent limitations of an audit arise from:

- the nature of financial reporting;
- the nature of audit procedures; and
- the need for the audit to be conducted within a reasonable period of time and at a reasonable cost (ISA 200(A45)).

To what extent and how does the above contribute to the inherent uncertainty of auditing?

The preparation of financial statements involves a great amount of judgment by the management of the entity. Many financial statement items involve subjective decisions or assessments and therefore a degree of uncertainty. The presence of the subjective element makes it inevitable that there may be a range of acceptable solutions instead of a single correct one[54]. This problem may not be solved through the use of additional audit procedures either (ISA 200(A46)).

The nature of audit procedures imposes both practical and legal limitations on the auditor's ability to obtain audit evidence. First, there is the possibility that the client may withhold information (uncertainty concerning completeness of information); second, sophisticated and carefully organized (documented) fraud also undermines the efficiency of evidence collection[55]. Third, the auditor is not an authority and may not act as such: he/she is not granted specific legal power, such as the power to conduct a search or other investigative actions, which could greatly increase assurance (ISA 200(A47)).

When analysing the inherent limitations of audit risk, we may not ignore the fact that auditing is basically not only a professional activity (or, in more lofty terms, a "vocation"), but also a business activity.[56] However, difficulties, lack of time, or expenses are not suitable excuses for the auditor to content himself with insufficiently persuasive audit evidence. On the other hand, it is also indisputable that the relevance of information, and thereby its value, tends to diminish over time, and also, in the case of audit, there is a balance to be struck between the reliability of information and its cost. Furthermore, both professional and business rooted reasons require the auditor to form an opinion on the audited financial statement within a reasonable period of time and at a reasonable cost. This makes extreme professional scepticism impracticable; the auditor may not be expected to *"address all information that may exist or to pursue every matter exhaustively on the assumption that information is in error or fraudulent until proved otherwise"* (ISA 200(A48)). This leads to the use of testing and other means of sampling, which again bear risks.

Because of the factors outlined above, there is an unavoidable risk that some material misstatements of the financial statements may not be detected, even though the audit

[54] See the considerations relating to risk and uncertainty as explained before. We should also remember that certain reporting systems (such as the IFRSs) even accentuate this trend. I will later discuss this aspect in detail.
[55] In this respect the standard notes: *"The auditor is neither trained as nor expected to be an expert in the authentication of documents"* (ISA 200(A47)). I think that the mere act of stressing this single sentence could greatly contribute to channelling the expectations concerning the audit profession into the correct direction. Similarly critical issues are the existence and completeness of related party relationships and transactions; the occurrence of non-compliance with laws and regulations; and conditions that may cause an entity to cease to continue as a going concern (ISA 200(A51)).
[56] To what extent accounting (and auditing) is still regarded as a vocation today is a controversial issue. See for example Bélyácz (2008).

is performed in accordance with the standards. Accordingly, the subsequent discovery of one or more material misstatements does not by itself indicate a failure to conduct an audit in accordance with the standards.

6.3 Significant risk factors in the standards system

The standards also require the auditor to determine, as part of the risk assessment activity, if any of the recognised risks is significant. A risk should be considered significant if the probability of the occurrence of an error is high, and if the impact of the error is significant (Eilifsen *et al.*, 2010).

In exercising this judgment, the auditor shall exclude the effects of identified controls related to the risk (ISA 315(27)). This makes it clear that significant risks are part of the inherent risk, and the standards provide that the judgment of significance should be independent from the risks of the related controls.

The term ‘judgment’ is used on purpose here, for – similarly to many other factors of the audit process – the significance of risks is subject to the auditor’s professional judgment[57]. Although the standards do not provide much assistance to this decision, they do identify a few factors to be considered.

Accordingly, the auditor should consider at least:

- whether the risk is a risk of fraud;
- whether the risk is related to recent significant developments;
- the complexity of transactions;
- whether the risk involves significant transactions with related parties;
- the degree of subjectivity, especially if this involves a wide range of measurement uncertainty; and
- whether the risk involves significant transactions that are outside the normal course of business for the entity, or that otherwise appear to be unusual (ISA 315, sections 28 and A119–A123).

[57] This is so true that even the definition of the concept of ‘significant risk’ in the standards builds on this fact. According to this definition, *“Significant risk is an identified and assessed risk of material misstatement that, in the auditor’s judgment, requires special audit consideration”* (ISA 315(4e)). In other words: significant is what seems significant to the auditor.

I would like to highlight two factors in this list: fraud and items with an element of subjectivity (emphatically so are estimates, for instance).

The standards observe that the risk of not detecting a material misstatement resulting from fraud is always higher than the risk of not detecting one resulting from error. This is because usually efforts are made to conceal fraud, which makes it more difficult to detect (ISA 240(6)). Therefore, the auditor should treat the assessed risks of material misstatement due to fraud as significant risks (ISA 240(27)).

In connection with estimates, the standards note that the auditor needs to evaluate the degree of uncertainty associated with an accounting estimate, and has to determine whether the accounting estimates with high estimation uncertainty give rise to significant risks (ISA 540(10–11)). **Prudence is certainly indicated, for the size of the amount recognized or disclosed in the financial statements for an accounting estimate may not be an indicator of its estimation uncertainty**. Actually, due to the estimation uncertainty, a seemingly immaterial accounting estimate may have the potential to result in a material error (ISA 540(A48)).

7 Belief versus probability – quantitative risk assessment approaches

International literature on audit risk distinguishes two basic quantitative approaches to audit risk and audit uncertainty: one based on *belief functions* and the other on the classical Bayesian probability concept.

Both of them are based on the concept of mathematical probability, and both operate with subjective judgments[58]. The main difference between the two approaches is that Bayesian formalism results in direct assertions on probability, whereas the theory building on belief functions only contains indirect assertions on probability. At the same time, the theory of belief functions may be considered as a generalisation of the Bayesian theory. Therefore managing a problem with the Bayesian method also implies the use of belief functions (Shafer and Srivastava, 1990a).

7.1 Objectivity, subjectivity, constructive interpretation

Certain authors also find it possible to apply classical objective probabilities in auditing (Cushing and Loebbecke, 1983; Kinney, 1984; Leslie, 1984). In their view, also the values of audit risk have a real value (called *'real risk'*), just like the known probability values of the possible outcomes of throwing a dice.

Several authors have challenged this view. For instance, Shafer and Srivastava (1990a) claim that objective probability concepts may primarily be applied in contexts where we have the possibility to observe repeated events in unchanged circumstances (such as, for example, the throwing of a coin)[59]. In the context of an audit, the problem is that it is even impossible to fix the circumstances in which the repetitions could eventually be observed; not to mention the fact that every case of auditing is different, so there is no repetition involved at all.

In lack of objective probabilities, we may try to operate with subjective probabilities. According to Shafer and Srivastava (1990a) cited above, the problem with the use of the subjectivist approach in auditing is that there is no predefined sample space, and in most cases there is no preliminary information concerning the appearance of

[58] That is both methods are in line with the concept of audit risk formulated in the standards, as discussed in the previous chapter.
[59] This coincides with what I wrote about probability before, in connection with Medvegyev (2011).

additional information[60]. Therefore they only consider a certain combination of the two approaches, the so-called *constructive interpretation*, to be acceptable.

This approach departs from the consideration that we need to decide, on the basis of a certain amount of evidence, if something is almost certain, very probable, hardly probable etc. To do so, we need to make a comparison and find known examples where these attributes are correct. Accordingly, if we formulate assertions on probabilities based on the Bayesian model, then we compare the problem in question to some ‘canonised’ examples (this gives the objective[61] aspect to the approach). At the same time, we have to decide (a subjective element) which example suits our case the best on the basis of the available audit evidence, and whether this congruence is of a satisfactory extent. The choice of the probability scale also results in different constructive probability theories (Shafer, 1982).

7.2 The elements of the belief function theory

The origins of belief function theory go back to the 17th century, to the work of George Hooper and James Bernoulli. The theory in its present form was elaborated by Arthur P. Dempster and Glenn Shafer[62].

In this chapter, I will give an overview of the elements of belief function theory, and subsequently illustrate its possible use in practice through a short example (cited from Shafer and Srivastava (1990a)).

The set of all possible answers to a question is called a ‘*frame*’ if we know that exactly one of these answers may be correct (hereinafter, frame as the subject of our analysis shall be denoted by the sign Θ). To denote the relationship between the possible answers to the two questions, we shall introduce the so-called compatibility relation (designated by *C*). Such a relation exists between the possible answers to the questions if there is no logical contradiction between them[63]. The function that

[60] These would be necessary for the calculation of conditional probabilities. It is clear that the authors’ claim is in line with my suggestion outlined earlier that in a Knightian sense, we are faced with uncertainty rather than with risk. This is actually what the cited authors claim when they say that we do not even have a well defined sample space.
[61] Objective because our scale is based on evidence.
[62] G. Shafer’s *A Mathematical Theory of Evidence* (1976) is still a work of essential importance today.
[63] An example of two incompatible answers is: 1) the manager has integrity and competence, and 2) the manager’s unit fails to comply with regulations.

transforms the probability of an answer to one of the questions into the degree of belief of the answer to the other question is called a belief function *(Bel)*. Formally:

$$(15)\ Bel[B] = Pr[\{s|if\ s \in S, t \in T\ and\ sCt, so\ t \in B,\ and\ B \subseteq T\}$$

The above formula may also be transformed to show that if the answer to the first question is s, then the answer to the second question shall be an element of subset ***B***. Therefore ***Bel[B]*** is the level of our belief concerning ***B***, i.e. the probability of all questions ***s*** on the basis of which the answer to the second question was classified as an element of subset ***B***. Some basic features of the belief function, using the designations introduced above:

$$(16)\ Bel[\emptyset] = 0$$

$$(17)\ Bel[T] = 1$$

$$(18)\ Bel[B] + Bel[\neg B] \leq 1$$ [64]

It is also clear that Bayesian probabilities shall constitute a specific subtype of belief functions[65].

Another element of the belief function theory is the so-called '***m-function***' (Srivastava et al., 1992), which assigns m-values to the individual ***subsets*** of the frame[66]. Formally:

(19)

$$\sum_{B \subseteq \Theta} m(B) = 1.$$

There are two ways to obtain such m-values: on the basis of the auditor's subjective judgment through direct allocation and through the compatibility relation mentioned above.

[64] So it is not merely a coincidence that Bel is called belief function instead of probability measure and Bel (B) is the degree of belief instead of probability. Obviously (18) is only true as an equation in case of probabilities.

[65] For a detailed demonstration, see: Shafer, Srivastava (1990a). Using the designations in formula (15): if it is true that the only correct assertion concerning possible answers t_1 and t_2 to question ***T*** and possible answers s_1 and s_2 to question ***S*** is s_1Ct_1 and s_2Ct_2, that is there is a one-to-one correspondence between the answers to ***T*** and ***S***, the belief function for ***T*** is at the same time also a probability measure.

[66] As opposed to probabilities which are assigned to individual ***elements*** of the frame.

The m-function is connected to the belief functions through the following equation ($B \subseteq \Theta$):

(20)

$$Bel(B) = \sum_{X \subseteq B} m(X).$$

In this case, the plausibility of ***B*** shall be defined as follows:

(21)

$$PL(B) = \sum_{B \cap X \neq \emptyset} m(X) = 1 - Bel(\sim B).$$

That is, the plausibility of an assertion is the complement of our belief in the opposite of that assertion. Assertion *B* is as plausible as the negation of assertion *B* is uncertain.

It follows that the complete lack of knowledge or of opinion may be formulated as Bel(B) = 0 and PL(B) = 1, respectively. PL(B) = 0 means that we are certain that *B* is not true, which is equivalent to the fact of allocating a probability value of 0 to it. On the other hand, zero belief only means that we have no reason to accept the assertion – which does not imply automatic rejection.

We also need to examine how believes change in the event of obtaining new evidence. This may be achieved with the help of the so-called Dempster’s rule of combination. Let us assume that we possess two ***independent*** pieces of evidence concerning assertion *T*; the corresponding frames and belief measures and the compatibility relation between ***T*** and the frames shall be designated by S_1, S_2, Pr_1, Pr_2, and C_1 and C_2, respectively. With the help of these objects, on the basis of equation (20), we obtain the values of Bel_1 and Bel_2 – both of them being belief functions for ***T***. Based on the assumption of independence, the aggregated probability of the two sets of evidence shall be the probability measure $Pr_1 \times Pr_2$ on the set product of the two frames ($S_1 \times S_2$). Furthermore, the evidence concerning C_1 is independent from the evidence concerning C_2, therefore compatibility relation *C* relating to the combination of the two pieces of evidence should be defined so that it shall be true that $(s_1,s_2)Ct$ if and only if s_1C_1t and s_2C_2t, where s_1 Î S_1, s_2 Î S_2, t Î T. This allows us to formulate the *Bel* function on *T*:

$$(22)\ Bel[B] = Pr_1 \times Pr_2[\{(s_1;s_2)|if\ (s_1;s_2) \in S_1 \times S_2, t \in T\ and\ (s_1;s_2)Ct,\ \ so\ t \in B, B \subseteq T\}$$

This method of constructing the *Bel* function using Bel_1 and Bel_2 is Dempster's rule of combination.

7.3 Some examples of practical application

In this chapter I will illustrate the theory described above with some examples taken from Shafer and Srivastava (1990a).

Let us first assume that the auditor wishes to ascertain whether a unit of the audited company follows the prescribed internal control procedures (question *T* with possible answers t_1 and t_2). To this question, the auditor expects to obtain evidence by asking another question, namely: 'is the manager honest and competent?' (question *S* with possible answers s_1 and s_2).

To know this, the auditor makes an interview with the manager of the given unit, and considers that there is a 90% probability that he is honest and well trained. This means that the auditor obtains 90% belief that the manager's unit follows the controls. What he/she does here is projecting the probability corresponding to an assertion onto another assertion to obtain a certain amount of belief concerning that latter assertion. Let us observe at the same time that the 10% probability that the interviewed manager is not honest and competent ***does not necessarily*** provide belief that the unit does not follow the controls. Not necessarily – however, the auditor is perfectly entitled to follow that reasoning. In belief function theory assigning zero belief to an assertion means that we possess no evidence concerning that assertion; on the other hand, the same act in the Bayesian model represents that we are convinced that the given assertion is incorrect.

Let us follow up on the previous example and examine how it affects the level of belief if new evidence comes to light. The auditor conducts the audit of the documentation generated during the control process at the given unit, and based on it considers that there is an 80% probability that the unit complies with the regulations.

Provided that the human qualities of the manager and the compliance of the documents observed by the auditor may be considered as independent pieces of evidence (and there is a good chance that it should be so), the following cases are possible on the basis of the combination of the pieces of evidence available[67]:

Case	Probability of the case
Both pieces of evidence are reliable	0.9 x 0.8 = 0.72
The manager is reliable, the documents are not	0.9 x 0.2 = 0.18
The manager is not reliable, the documents are	0.1 x 0.8 = 0.08
No evidence is reliable	0.1 x 0.2 = 0.02

Chart 1: The combination of evidence – confirmatory pieces of evidence

Based on the above, the probability that at least one of the pieces of evidence is reliable shall be 98% (0.72+0.18+0.08); consequently, the two confirmatory pieces of evidence provide a total of 98% aggregated belief that the unit complies with regulations. At the same time, the belief of the opposite case is still 0.

How does it affect the level of assurance if some pieces of evidence contradicting the former ones come to light? Let us assume that the auditor has the possibility to interview a former employee of the unit in question, who is not aware of any relevant procedure at the unit. After some consideration, the auditor thinks that there is 60% chance of the former employee's being reliable. This new evidence, in itself, will then provide a 60% belief that the procedures are not respected. Again assuming the independence of the evidence, we obtain the following probabilities:

[67] Due to our assumption concerning independence, the probability of the possible combinations (cases) will simply be equal to the product of the probabilities asserted earlier, in each of the cases. See Dempster's rule of combination. Shafer (Shafer, 1987) also proved that it is possible to combine the beliefs derived from the pieces of evidence even if these are not independent from each other.

Case	Probability of the case	Rescaled probability[68]
The probability that at least one of the preceding pieces of evidence was reliable, but the employee was not	0.98 x 0.4 = 0.392	0.95
The probability that none of the preceding pieces of evidence was reliable, but the employee was	0.02 x 0.6 = 0.012	0.03
The probability that none of the preceding pieces of evidence was reliable, nor the employee	0.02 x 0.4 = 0.008	0.02
The probability that at least one of the preceding pieces of evidence was reliable, and also the employee was	0.98 x 0.6 = 0.588	-

Chart 2: Combination of contradicting pieces of evidence

It immediately becomes evident that the last of the four cases asserts impossibilities. In this case, the corresponding probability shall be ignored, and the probabilities of the remaining three cases have to be rescaled so that their total probability should be 1. This is shown in column 3 of Chart 2. Based on this, we have 95% belief that at least one of the original two pieces of evidence is reliable, and the unit complies with the rules of procedure; and this applies in the light of the fact that we possess contradictory evidence as well[69].

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Let us take another example to demonstrate the functioning of the m-values[70]. Let us assume that the auditor collects evidence concerning the balance of the accounts receivable, and the objective of the audit is to decide whether the accounts receivable balance contains a material error *(~a)* or not *(a)*. In this case, the frame shall be Θ = *{a; ~a}*. Let us assume furthermore that the auditor feels that the evidence reviewed suggests that there is a 60% probability that the balance does not contain any material misstatements, yet there is no evidence to show that it definitely does. Therefore:

[68] This is the fraction of the possibility of the given case and the sum of the probabilities of the possible cases. E.g. in the first case 0.392/(0.392+0.012+0.008) = 0.95. The same has to be done by the next two cases.
[69] It is due to this fact, actually, that the level of belief decreased from the initial 98% to 95%.
[70] Based on Shafer, Srivastava (1992), pp. 257–259. Here, the subsets *X* in the equation only have one element each, and two elements for the whole of the frame. The two elements of set *B* are *a* and *~a*.

$$m(a)=0.6$$
$$m(\sim a) = 0$$
$$m(a;\sim a) = 0.4$$

$$m(a;\sim a) = 0.4$$

This means that the auditor's belief concerning the correctness of the accounts receivable is 60%, and the 40% allocated to the whole of the frame expresses the auditor's ignorance and uncertainty.

Following our example:

$$Bel(a) = m(a) = 0.6$$
$$Bel(\sim a) = m(\sim a) = 0$$
$$Bel(\{a;\sim a\}) = m(a)+m(\sim a)+m(a,\sim a) = 0.6+0+0.4 = 1$$

The plausibility values according to (21) shall be:

$$PL(\sim a) = 1\text{-}Bel(a) = 1\text{-}0.6 = 0.4$$
$$PL(a) = 1\text{-}Bel(\sim a) = 1\text{-}0 = 1$$

The plausibility values should be interpreted as follows: as we have 60% belief concerning ***a*** but have no evidence that it is actually incorrect, its plausibility will be 1. Similarly, although we have no evidence that the opposite should be true, yet as we only have a level of belief of 60% for ***a***, the plausibility for ~***a*** will be 40%. This latter value may also have another interpretation not based on frequency, i.e. how risky the auditor considers it to discontinue the collection of evidence.

***

Using an example with values close to actual values occurring in auditing, the relationship between m-values and plausibility functions becomes even more apparent.

Let us assume that concerning the assertion that the financial statements do not contain material misstatements, the auditor possesses the following m-values on the basis of available evidence:

$$m(a) = 0.95 \text{ is the value showing that the financial statements are appropriate}$$

$$m(\sim a) = 0.02 \text{ that is the financial statements are inappropriate}$$

$$m(a, \sim a) = 0.03 \text{ is the degree of uncertainty}$$

Based on the above, belief values shall be:

$$Bel\,(a) = 0.95$$

$$Bel\,(\sim a) = 0.02$$

The resulting plausibilities are:

$$PL\,(a) = 0.98$$

$$PL\,(\sim a) = 0.05.$$

This represents that we have a 95% belief that there is no material misstatement, and only 2% belief that there is at least one material misstatement. But on the other hand the plausibility of the existence of a material misstatement is 5%, which means that in spite of the 2% belief of the occurrence of errors, we assume a 5% risk.

Therefore, **in belief function theory, the plausibility functions related to material misstatements determine the audit risk.**

It is also true in general that $Bel(B) \leq PL(B)$, for the fact that we are certain about something will make that something plausible at the same time, but the opposite of this statement is not necessarily true.

7.4 Belief functions and audit risk

As a result of the reasoning presented in the previous chapter, Srivastava and Shafer (1992) define financial statement level audit risk, using belief functions, as follows:

(23)

$$AR_F = IR_F \cdot APR_F \cdot \left[1 - \prod_A (1 - AR_A)\right],$$

where:

(24)

$$AR_A = IR_A \cdot APR_A \cdot \left[1 - \prod_O (1 - IR_{AO} \cdot APR_{AO} \cdot CR_{AO} \cdot DR_{AO})\right].$$

The designations are as follows:

AR_F	*is the financial statement level audit risk,*
IR_F *and* IR_A	*are the financial statement and account level inherent risk,*
APR_F	*is the statement level risk of the analytical procedures,*
AR_A	*is the account level audit risk, considering all available evidence,*
APR_A	*is the account level risk of the analytical procedures,*
IR_{AO}	*is the inherent risk for account* A *in view of audit objective* O*,*
APR_{AO}	*is the audit risk of the analytical procedures at the level of audit objective* O*,*
CR_{AO}	*is the control risk for account* A *in view of audit objective* O*,*
DR_{AO}	*is the risk of the test of details for account* A *in view of audit objective* O.

The heart and soul of the formulas presented above are the **m-values calculated at the annual report and account level,** which are based in this model on the evidence concerning the inherent risk factors and analytical procedures.

The authors underline that the risk elements of this model substantially differ in their content from those used in other models. For instance, the element denoted by DR_{AO} designates the plausibility of a material error in audit objective *O* of account *A* (such as the plausibility of the occurrence of a material error concerning the existence of accounts receivable). The same element in the model used by the standards is detection risk, but with an entirely different meaning: the probability that the auditor will be unable to detect the risk of material misstatement, provided that the internal control had previously been unable to identify and prevent the error.

What are the advantages and disadvantages of the belief function theory? Authors arguing in the favour of its use in risk assessment (such as Srivastava *et al.*, 1992; Dusenbury *et al.*, 1996; Fukukawa *et al.*, 2011) claim that belief functions better represent the auditors' vision of risk than probabilities. If, for instance, the auditor takes the Bayesian probability of inherent risk conservatively to be 1, because he/she does not want to assess inherent risk, then doing so, he/she *formally* states that it is certain that a material misstatement is present in the financial statements. However, this is not at all what he/she *really intends* to say. This is where belief function theory allows a far more exact expression: here, a plausibility of material error of value 1 only means that the auditor has no (positive) evidence concerning the inherent risk factors. Chart 3 presents further examples of cases and their possible interpretations in relation to the probability and plausibility of material misstatements.

Assessed risk component	Probability of RMM according to the Bayesian theory	Explanation of the Bayesian probabilities	Explanation of plausibility based on belief functions
Inherent risk	70%	70% is the chance for a material misstatement, the evidence available is negative. Using the designations of the previous chapter: P(a) = 0.3 P(~a) = 0.7.	30% belief is obtainable, the plausibility of the presence of a material misstatement (MM) is 70% and the plausibility of the lack of MM is 100%. Using the designations of the previous chapter: Bel (a) = 0.3 Bel (~a) = 0 Bel (a; ~a) = 0.7 PL (a) = 1 PL (~a) = 0.7
Inherent risk	50%	50% is the chance for a material misstatement, „yes-or-no" situation. Using the designations of the previous chapter: P(a) = 0.5 P(~a) = 0.5.	50% belief is obtainable, the plausibility of the presence of a MM is 50%, and the plausibility of the lack of MM is 100%. Using the designations of the previous chapter: Bel (a) = 0.5 Bel (~a) = 0 PL (a) = 1 PL (~a) = 0.5

Chart 3: Interpretation of Bayesian probabilities and plausibilities based on belief functions, source: Srivastava et. al. (1992)

What is more, belief function theory is also flexible inasmuch as beliefs concerning the individual pieces of evidence are at the same time also probabilities (Shafer and Srivastava, 1990a). Another favourable feature of this approach is that it always builds on the totality of the evidence obtained in the earlier stages when assessing the beliefs related to the next levels (Srivastava *et al.*, 1992). Allen *et al.* (2006) consider that the strongest point of this model is that as opposed to the traditional model, it manages not only two but three stages: the existence of positive evidence, the existence of negative evidence, and the lack of evidence. On the other hand, the model used by the standards confuses the position of lack of evidence with the cases of positive and negative evidence. Fukukawa and Mock (2011) take a similar stance when they highlight the explicit presentation of ***ambiguity*** as the greatest advantage of this concept[71]. They argue that this allows the model to be potentially more informative than probability-based models.

The other side of the coin is that the model has also been much criticised since the very start. Chesley's (1990) criticism is aimed at both the background and the key element of the theory. He considers that the constructive interpretation of probability is indeed identical with the practice of decision theory and probability assessment used before, only presented in a new conceptual framework. He claims that belief functions do not have any 'physical characteristics', in spite of the fact that the propagators of the theory, Shafer and Srivastava, make reference to canonical examples. He also represents that the belief values are chosen from the set of probabilities without any rules, stated preferences or physical phenomena. Making reference to earlier publications, Chesley also notes that transformation from one frame (probability) into another (belief) has more disadvantages than advantages. In fact, experience shows that those performing the transformation frequently fail to observe two requirements of rationality: consistency and coherence. He also criticises that the authors did not even try to establish a scale of belief measures, and he also mentions the lack of canonical reference points, of which even the existence has not been proved. Chesley also complains that the characteristics of the compatibility relation are only very roughly defined.

In their response, Shafer and Srivastava (1990b) explain that the constructive approach is indeed not a new formalism, but it certainly needs to be differentiated from the purely objective or subjective approaches to probability. They also agree that belief measures may not be attributed a meaning comparable to objective or subjective Bayesian probabilities, that is, they actually do not cover any physical

[71] This is essentially the part of belief allocated to the frame, i.e. $m(a, \sim a)$.

phenomena or stated preferences; yet they possess a constructive interpretation exactly similar to the Bayesian probabilities.

Gardner's (1990) criticism focuses on four areas. First, it is difficult to distinguish between evidence relating to inherent risk and control risk. Second, in professional practice it may be rather problematic to prove that the individual pieces of evidence are independent from each other[72]. Third, the allocation of belief values implies a great degree of subjectivity. Finally, the model becomes unmanageable when new pieces of evidence are involved, resulting in extreme complexity.

Ultimately, even the creators of the model themselves acknowledge that they have not found the perfect solution. They mention as a setback that the model only works with binary variables (material errors exist / material errors do not exist), and does not differentiate between over- and undervaluation. What is more, in their deductions they only used confirmatory evidence, which is rather an important simplification – and, despite this fact, the model remains quite complicated. Another problem is that the method does not reckon with errors which are, in themselves, not material, but if combined may result in a material error. A further deficiency is that the model fails to weigh the individual accounts and audit objectives.

[72] The authors noted in their response that independence is not a prerequisite in belief function theory.

8 Criticisms of the audit risk model

8.1 Comprehensive criticism by Cushing and Loebbecke

Since the beginning, many criticisms have been formulated concerning the audit risk model developed by the early 1980s. Cushing and Loebbecke (1983) observe that models of this type should always be considered as an abstraction of reality, and as such, will always contain simplifications. Although the standard setting body does not mean to provide the auditor with a precise mathematical tool (neither in the past, nor at present – G.M.), such use and the subsequently resulting errors may not be excluded. Furthermore, Cushing and Loebbecke direct their criticism towards three areas: aggregation, the independence of risk factors, and the relationship between assessed and real risk.

8.1.1 **The issue of aggregation**

The authors' criticism departs from the statement that the audit of a set of financial statements does not actually mean the audit of the set as a single unit, but an audit of the elements of it, the collection of evidence, then their aggregation, and based on these, the formulation of the opinion. The detected errors always refer to an individual error concerning an individual transaction and relating to an individual part of the financial statements. Accordingly, also risk assessment may typically be performed individually, at the level of the audited elements ('unique assessment of risk'). Therefore, in the course of aggregation, first all errors pointing into the same direction, then all errors occurring in the report should be aggregated. To do so, the acceptable error and the extent of the final audit risk need to be established in a way that the risk of a material misstatement remains at an acceptably low level throughout the aggregation process.

Clearly, the model used in the standard is not as detailed as all this, and also academic literature is rather ungenerous regarding the issue of aggregation. Graham (1985) and Colbert (1987) also formulate a coincident criticism about this problem. Furthermore, the latter thinks that it is rather difficult to combine the effects of the manifold sources of inherent risk, especially if these risk factors are not independent from each other.

In his criticism concerning the practical applicability of the model, Colbert (1987) approaches comprehensive risk from the opposite direction as Cushing and Loebbecke (1983). He focuses on the problem of disaggregation, i.e. the question how it is possible to break down comprehensive audit risk to the level of the individual assertions. There are opinions to the effect that individual risk is identical with comprehensive risk. Others consider that comprehensive risk needs to be divided in proportion with the individual account balances.

8.1.2 **The independence of risk factors**

The audit risk model assumes that the individual risk components are independent, meaning that there is no significant cause-and-effect relationship between the different error types. However, according to certain criticisms of the model, this condition is not fulfilled, because the inherent risk is not independent from the internal control risk. The weaker the control, the greater the incentive to commit fraud; furthermore, in an environment behaving 'liberally' in respect of audits, also the risk of mistakes increases as a result of the slack performance requirements. This may partly be set off by conservatively taking the value of the inherent risk to be 1[73]; however, this would logically allow a lower detection risk, which might easily make the audit inefficient at a company where inherent risk would, in fact, not be high. It should seem more reasonable to modify the equation mathematically (although that would surely make it more complicated at the same time – G.M.). This is also supported by the auditing practice which identifies 'particularly sensitive areas' during the planning of the audit, exactly in connection with the factors described above.

Colbert (1987) formulates a comparable criticism in relation to the model when he states, following Graham (1985), that in theory, it should be possible to delineate inherent and control risk, but it is not always feasible in practice. At the same time, she notes that the standards provide a means to assess them collectively. Colbert provides another example to illustrate the mutual dependence of the two risk factors: the case when there are overlaps between the persons concerned in the fields of accounting and control. This may affect both risk components either favourably or

[73] As we could see, this is what actually happened in the early form of the model. The value of the inherent risk was 1, therefore it did not figure in the equation.

unfavourably. She also asks whether in such a case, it is correct to modify (for instance, decrease) the values of both components because of a single factor. It is questionable whether this would not unjustifiably increase the detection risk.

Waller (1993) considers that distinguishing between inherent and internal risk only makes sense if the costs of the related extra work are set off by the financial advantages resulting from the increase in efficiency. He thinks that the differentiation does not make a sense if the two factors are not independent from each other.

Cushing and Loebbecke (1983) consider that we should not disregard the fact that detection risk is not independent from control risk either. To be exact, there are two assumptions behind the application of analytical procedures: 1) the basis data are correct; and 2) in case of significant deviations, it is possible that the data pertaining to the current period (could) have been manipulated. It should be seen, however, that both assumptions are correct only if the internal control risk is low. The assertion is based on the empirical fact that the analytical procedures prove to be less efficient for a system that functions improperly anyway. Similarly, the test of details is not independent from the controls. As a result of all the above mentioned factors, the auditor may easily underestimate the risks.

Peecher *et al.* (2007) consider that the risk of material misstatement is not really independent from the detection risk either. Even the fact that an audit takes place or the client's knowledge concerning the applied audit methodology may influence inherent and control risks.

In the Hungarian language literature, Lolbert (2008) also criticises the risk model used by the auditing standards with regard to the interdependence of the individual risk components. He argues that the risk of material misstatement may in reality be described in a formally correct way by the formula

(25)

$$Pr(\bigcup_{i}(IR_i \cap \bigcup_{j} CR_{ij})$$

where IR_i denotes the individual inherent risk factors, whereas CR_{ij} designates the controls concerning inherent risk factor *i*. The 'traditional' product-type relationship would only be appropriate for the description of probabilities if the equation

(26)

$$\bigcup_i (IR_i \cap \bigcup_j CR_{ij}) = \left(\bigcup_i IR_i\right) \cap \left(\bigcup_{i,j} CR_{ij}\right)$$

was true. However, such is not the case. Therefore Lolbert considers that the risk of the misstatement formulated as '*IR* x *CR*' is not suitable for the quantification of probabilities, or only with very strong restrictions. At the same time, he considers the formula to be useful in the respect that at least it shows the relationship between risk components and material misstatements. He suggests that in order to solve the problem, instead of a direct determination of inherent and control risk, the components of inherent risk should be examined separately, and their behaviours should be compared with the controls[74]. If the 'non-eliminated' parts of the individual inherent risk factors are independent, then the multiplication of the complementary events may be performed.

Lolbert also acknowledges the fact that the independence of the detection risk is easier to accept on an intuitive basis than the independence of the two other factors. Of course, a collaboration between the auditor and the auditee may not be excluded and if occurs, overrides the theory.

The author also criticises the established method of determining inherent risk by using a form. He considers that it only provides a summary of the risks pertaining to the given field *"with an* ad hoc *method, cloaked in a scientific disguise"* (Lolbert, 2008, p. 41). This methodology is not easy to defend, especially if it is complemented by a quantified application of the model. The author considers that the same problem exists with regard to the control risks as well.

[74] Although it is questionable whether this is conveniently feasible in practice (G.M.).

8.1.3 **Assessed and real risk**

Audit risk is based on the auditor's assessment. Nevertheless, Cushing and Loebbecke think that also a *real* value of the individual risk factors – and consequently of the entire audit risk – exists. The relationship between the desired audit risk, the assessed and the real risk components is formulated by them as follows:

$$(27)\ UR_R = (UR_D) \cdot (1 - TD_N) \cdot \frac{IR_R \cdot IC_R \cdot AR_R}{IR_A \cdot IC_A \cdot AR_A} + IR_R \cdot IC_R \cdot AR_R \cdot TD_N,$$

where

UR_R *is the real ultimate risk,*
UR_D *is the desired ultimate risk,*
TD *is the risk derived from the test of details,*
IR *is the inherent risk,*
IC *is the internal control risk,*
AR *is the risk related to the analytical procedures; lower index designation* R *shall be the value of the real risk, and lower index designation* A *shall be the value of the assessed risk.* TD_N *means the risk of erroneous acceptance not resulting from sampling.*

On the basis of the above formula, the authors make four observations. First, it is clear that the increase in the real risk values *ceteris paribus* increases the real risk compared to the desired level of risk. On the other hand, if $TD_N = 0$ then the formula is simplified to the form

$$(28)\ UR_R = UR_D \cdot \frac{IR_R \cdot IC_R \cdot AR_R}{IR_A \cdot IC_A \cdot AR_A}$$

which clearly shows that the difference between the real and assessed risk corresponds to the rate of erroneous estimates of risk components (e.g.: IR_R/IR_A). This way it may easily happen that a prudent overestimation of a factor may be set off by the eventual underestimation of the other factors.

Furthermore, even if $TD_N > 0$, the underestimation of UR_R is still not certain, as the overestimation of the remaining components (*IC*, *IR*, *AR*) may be comfortably sufficient to set off the non-sampling auditing error.

Finally, if the auditor's component estimates are correct (either because each estimate is correct or because the auditor's errors balance each other on the whole), the formula will be as follows:

$$(29)\ UR_R = UR_D + IR_A \cdot IC_A \cdot AR_A \cdot TD_N \cdot \left(1 - TD_\beta\right),$$

where

TD_β *designates the risk of erroneous acceptance due to a sampling error.*

This shows that the extent of non-sampling risk is directly proportional to the extent of audit risk and to the extent of reliance on the statistical testing of data.

A kind of "criticism of the criticism" was formulated by Shafer and Srivastava (1990a), who consider that no evidence whatever proves the existence of real probabilities; Cushing and Loebbecke do not provide such evidence, presumably because they would be unable to do so, claim the authors. To this they add the malicious remark that the mere fact that we are able to utter the words 'real risk' does not in itself imply that these words actually have a meaning. We may only add to this that even if we could do so, it would not be sure at all that we could quantify these "real risks".

Cushing and Loebbecke consider that the incorrect estimation of the individual risk parameters is due to two factors: the auditor's mistakes and the inherent complexity of the factors. In order to demonstrate this latter point, they break down inherent risk into 3 main components and a number of further subcomponents; internal control risk into 5, and detection risk into 7+6 risk components.

They also mention that this audit risk model does not take into consideration certain relevant economic factors, such as the costs of the audit and the effects of any eventual mistakes. Therefore, they recommend the elaboration of a comprehensive model (without going into details) which would only regard risk as one of many factors, and would be able to manage the relationships between these factors. Such a model should be ready to separate and appropriately weigh the objective and subjective elements, and also needs to manage the process of evidence aggregation and of the formation process of the auditor's opinion.

They consider that it is desirable to establish five rules in the course of the application of the model (even to the detriment of the standards).

1. If the auditor considers the risk of a material misstatement to be high, he/she should not use the model.

2. If the evidence collected by the use of the model shows that there is a high risk of material misstatement, the auditor should not use this model to plan his/her further work.

3. The model should not be used where the internal audit may not be assessed as good or excellent, at least[75].

4. The estimation of inherent risk should not be based on intuition but rather on observable evidence.

5. As the model is sensitive to non-sampling errors, also the performance and procedure errors need to be controlled throughout the whole audit process.

Also Colbert (1987) notes in connection with the individual risk factors that neither factor, with the exception of sampling risk, may be 'calculated', i.e. all the other elements are obtained as a result of subjective consideration. Consequently, the combination of objective and subjective values may create an impression of accuracy in the user of the model, even if that accuracy is nonexistent.

Still in relation with the issue of real and assessed risks Peecher *et al.* (2007) note that this is frequently a result of the erroneous assessment of non-sampling risks. At the same time, they criticise the different auditing regulations[76] for the fact that they 'traditionally' consider the risks related to such factors to be negligible, which further strengthens this negative phenomenon.

[75] It shall be noted here that even this requirement operates with quite soft categories. Based on what kind of *objective* rules may one classify an internal control good or excellent instead of poor or mediocre?
[76] They think that their statement also holds both with respect to the US and to international standards.

The ‘strategic systems audit’ (SSA) method they discuss focuses exactly on this area and manages to keep audit risk at a very low level. So the authors do *not* make fundamental changes to the risk model, only to the method and focus of evidence collection. The underlying idea behind this theory is that the management represents (*Management Business Representations; MBR*) the ‘*Entity Business States’ (EBS*) through the ‘*Management Information Intermediaries’ (MII*). EBS comprises business strategies, processes, economic activities, transactions, business relations etc. MII includes the financial reporting process, internal controls, information systems, documentation, risk management systems etc. MBR includes, among others, the financial statements. Accordingly the auditor’s task is to make sure that MBRs represent the EBSs correctly. For this to happen, the auditor using SSA needs to apply a method called ‘*evidentiary triangulation*’ in the course of evidence collection. The term ‘triangulation’ here refers to the fact that the evidence should not only originate from the MBRs, as in the case of a traditional audit, but also evidence based on EBS and on MII (normally not constituting a basis for reporting) are assigned a significant emphasis. The latter two groups are especially important because the management is much less likely to manipulate these pieces of evidence (precisely because they are independent from reporting) than the evidence ‘traditionally’ collected by the auditor.

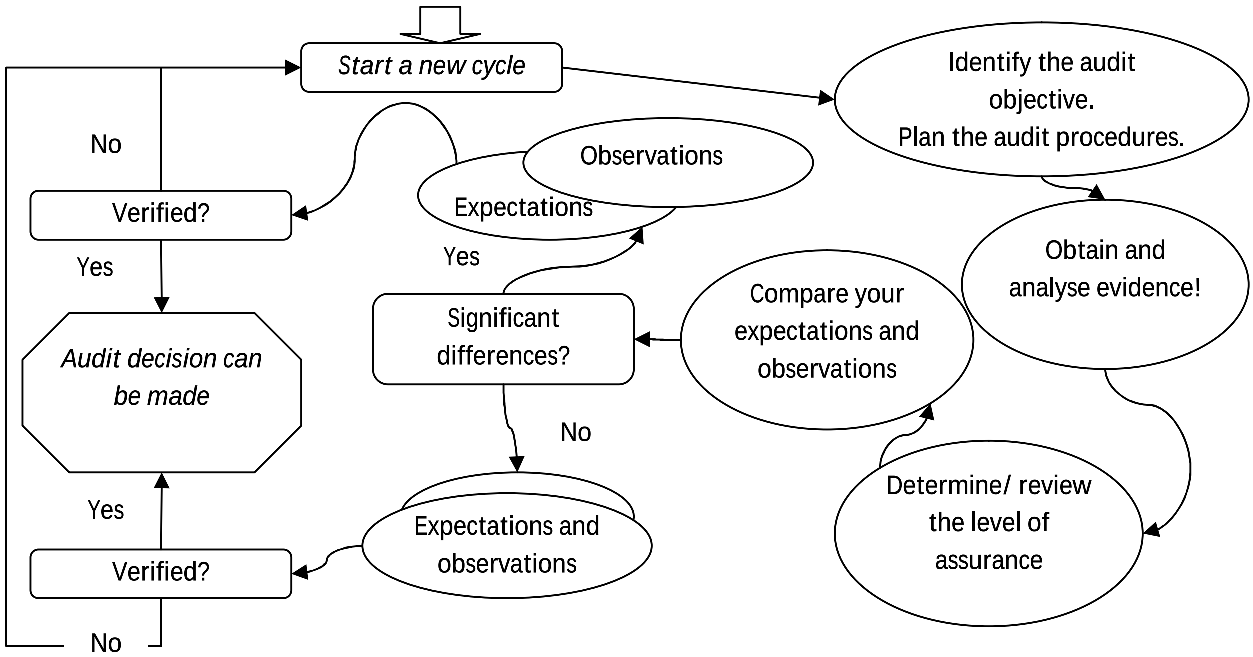

Figure 4: The process of auditing according to the SSA approach; Using Peecher et al. (2007) p. 473.

This means that as these pieces of evidence are more reliable, the auditor may rely on them to a much greater extent. Subsequently, the auditor may confront the evidence obtained from the three different sources.

In the case of evidence driven, recursive, assurance-based risk assessment (i.e. auditing) (see Figure 4), therefore, the risk of material misstatement constantly varies, which means that the auditor also needs to modify the detection risk – this is embodied in the changes in the nature, timing and extent of the procedures he/she performs. Consequently, risk assessment in SSA is an iterative process.

8.2 The lack of recognition of accounting risks

In 1974, Liggio characterised the gap between the expectations of the users of the financial statements and the performance of the accounting professionals (the '*expectation gap'*) as the 'Waterloo' of the accounting profession (Liggio, 1974). The US-based Cohen Commission pointed out in 1978 that there are differences between the general public's views and expectations concerning audit activity and the actual performance of the profession (Koh *et al.*, 1998)[77]. The same Commission also mentioned that this gap in the expectations is in great part due to the uncertain items which have to be included in the financial statements. In this respect, the auditor's most important task would have been to ensure that the disclosures relating to uncertainties should appear in the annual report.[78]

Brenda Porter (1993) analysed the structure of this expectation gap. As a result of her empirical research, she found that the expectation-performance gap may be broken down to further elements. These are:

- *reasonableness gap*, laying between public's effective expectations and the performance that may be reasonably expected from auditors, and
- *performance gap*, laying between the effective and the reasonably expectable performance of auditors.

Porter divided the performance gap into two further parts, due to insufficient auditor activity on the one hand, and unsatisfactory professional standards on the other hand.

[77] Also Bélyácz's (2008) views take an essentially similar line.

[78] They went as far as stating that on the asset side of the balance sheet, perhaps the amount of cash might be the only item which is not subject to a significant estimation uncertainty, and which may therefore be considered as substantially accurate.

She assessed the effect of the latter to be 50% considering the whole gap, and identified eight areas from which this difference may arise. One of these was the set of auditors' tasks related to items involving an element of estimation.

Lukács (2011a) also mentions expectation gap and information gap regarding auditing. He states that assertions concerning future data and doubtful forecasts are based on complicated estimations, hardly foreseeable events and individual judgment. As a potential consequence of these, the business decisions made on the basis of financial statements with false contents further aggravate the lack of confidence in the auditing profession and accounting in general. He adds that risks have lately increased as a result of the higher level of subjectivity and a rise in estimation uncertainty.

This also seems to point to the fact that the auditor needs to manage these uncertainties (and the ensuing risks!) already in the course of the audit; yet the present audit model is unsuitable for this purpose. According to Smieliauskas (2007), the reason for this is that the present model primarily concentrates on the risks deriving from the nature of evidence collection. This means that each risk component – including inherent risk – constitutes a planning tool in the first place, and their main function is to contribute to the collection of sufficient and appropriate audit evidence. If this can be managed, audit risk decreases to an acceptable level (Allen *et al.*, 2006). However, this (effectively salutary) decrease in the risk levels does not include the decrease in the risks due to forecast (primarily estimation) uncertainties in the financial statements. Nevertheless it is exactly this estimation risk which may be considered as the main risk ensuing from the accounting system, or shortly, accounting risk. This is a kind of information risk[79] which would be worthwhile to be included in the audit risk model. Yet as soon as we try to apply the current model also in relation with the estimation uncertainties in the financial statements, we are immediately faced with the criticism, dating back to several decades[80], that it is not exactly suitable for such a purpose (but only for the planning phase).

[79] The risk consists in the fact that the annual report is unable to reflect the activity of the entity correctly, including its business risks and the resulting uncertainties.
[80] See the sections on Cushing and Loebbecke (1983) above.

Skinner's (1995) opinion underpins these views concerning information risk: he considers that every substantial element of the financial statements actually implies an implicit probability test in relation to the amount disclosed; however, this test is different for each asset element. On the other hand, the audit standards expect a high level of assurance for the whole of the financial statements, without regard to the individual asset elements and the related uncertainties.

According to the standards, as I mentioned before, audit is in fact a compliance test, and as such, wants to find an answer to the question if the financial statements are in line with the regulation on which its elaboration should be based. Those criticising this view consider this criterion to be too soft: compliance with some GAAP may not in itself constitute a sufficient condition of fulfilling the requirement of true and fair view. Glover ***et al.*** (2005) think that this desirable position may only be reached if also the estimates in the statements are reliable. In their publication they introduce a dichotomous risk taxonomy, which sets out that ***accounting risks*** are derived from forecasts concerning the future[81], whereas ***audit risks*** point back to facts of the past (transactions without uncertainty). This means that theoretically in case of the items without an element of uncertainty, sufficient and appropriate evidence may be collected until the moment of issuing the auditor's opinion; however this favourable attribute does not apply to estimates.

Smieliauskas (2007) considers that the easiest way to synthesise the two kinds of risk in a single model would be to merge the (according to him unsatisfactory) definition of 'misstatement' as provided in the present auditing standards with the definition of 'misstatement' in accounting. Pursuant to standard no. 200: ***"Misstatement – A difference between the amount, classification, presentation, or disclosure of a reported financial statement item and the amount, classification, presentation, or disclosure that is required for the item to be in accordance with the applicable financial reporting framework. Misstatements can arise from error or fraud"*** (ISA 200, section 13i). Here again, we witness an occurrence of the compliance test approach: an error is any instance not in line with the financial reporting framework. On the other hand, a misstatement in accounting is, as stated above, the difference between the amount estimated in line with the relevant accounting system and the

[81] According to some views accounting has no future orientation at all and as such all estimates are merely arithmetic estimations of not completely known (or knowable) past events.

amount actually realised. Accordingly, Smieliauskas defines misstatement in the audit sense as any difference occurring between the reported value and the actually realised value, even if the reported value otherwise complied with the requirements of the applicable reporting framework. And this is where we return to our starting point, the expectation gap: such a definition of misstatement and the risk concept building on it would be much more instrumental in achieving what the stakeholders expect an accounting statement should deliver. Undoubtedly however, such a system would entail a much greater workload for auditors, as they would also need to assess the uncertainties resulting from the reporting system itself.

Another issue to scrutinise is the nature of the relationship between the present elements of audit risk and accounting risk. Let us illustrate this point with an example. At present, the auditing standards make it possible for auditors to establish, in response to the estimated risks of material misstatement due to estimation, a point estimate or an interval in order to assess the management's point estimate (ISA 540, section 13(d)(i)). In case an interval is used, the auditor shall narrow it until all outcomes within the interval are considered reasonable (ISA 540, section 13(d)(ii)). In this case, if the value the client wishes to recognise in the report is outside the interval determined by the auditor, then the auditor shall consider the difference between the closest value of his/her interval and the value indicated by the entity to be an error. Figure 5 demonstrates the points explained through a quantified example.

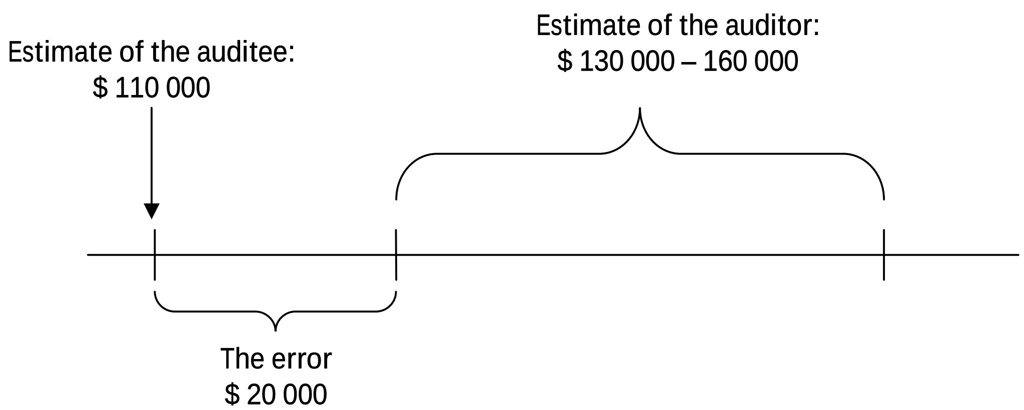

Figure 5: Difference between the estimates of the auditee and the auditor Smielauskas (2007) p. 352., based on Figure 1

What happens if the client's estimate is exactly USD 130 000 and the auditor indicated the interval between USD 130 000-160 000 as reasonable, with a materiality threshold of USD 15 000? Let us assume that all of the outcomes in the interval estimated by the auditor have the same probability. This is quite a reasonable assumption, particularly in the light of the above cited provisions of the standard concerning the interval. What do we know then about the inherent risk? Not much, unfortunately: it may have any value; yet the fact that the auditor determined this specific interval implies that he/she had collected sufficient and appropriate evidence to show that this is the reasonable interval; consequently, he/she managed to obtain a suitably high level of assurance – i.e. a low level of risk – through the consideration of the detection risk. The key question however, is what we know at the same time about accounting risk? If, in view of an even probability distribution, the auditor sticks to the representation of an amount of USD 145 000 in the financial statements, then the extent of accounting risk shall be 0 in every case. If he/she accepts the value provided by the client (i.e. USD 130 000), then the value of the accounting risk shall be 0.5, quite independently from the extent of the inherent risk. It is important to note that we are talking about risk – despite the fact that the amount of USD 130 000 is in line with the relevant reporting standards!

As far as the remaining risk elements are concerned, we may establish the following. Control risk exerts a similar effect on audit risk as inherent risk; it is therefore apparent that its value is also independent from the extent of accounting risk. As the value of detection risk shall be the quotient of these two independent risk factors and the also independent value of audit risk, also its value needs to be independent from the value of the accounting risk.

Therefore, we can see that the elements of audit risk are not dependent on accounting risk. This result is not very surprising though if we recall that the present audit risk model is primarily a planning tool, and as such it impacts on the process of evidence collection; while accounting risk is informative concerning the entity's business risk as become apparent through the estimates in the financial statements. Smieliauskas thinks that on the basis of the accounting risk model, we have to declare that not every value which may be considered reasonable—and otherwise in compliance with the reporting standards—should necessarily be accepted in the report. For example, PCAOB suggested in 2006 that the reasonable interval should not be wider than the corresponding materiality threshold. Would this be a solution? Not necessarily as for in the case presented above, the accounting risk would still be as high as 25%, a value which may be considered to be rather high for a service that intends to provide a high level of assurance. Not to mention that even this value is not 'guaranteed' if the preliminary assumption of even distribution of probability is not fulfilled.[82]

Smieliauskas therefore suggests the following equation as the synthesis of accounting risk and audit risk:

$$(30)\ P_{MM} = AR + (1\text{-}AR) \cdot AccR,$$

where

P_{MM}	*is the probability of a material misstatement,*
AR	*is the audit risk according to the present model,*
AccR	*is the accounting risk.*

Smieliauskas thinks that this would make it possible to indicate in an explicit way that the accounting estimates are not certain to be realised accurately, even if the auditor does not detect an error in the auditing sense. This way the immanent feature of estimates that they might bear a substantial element of uncertainty would become apparent for everyone. Furthermore, as opposed to the present concept of audit risk, considered to be of the same value for every asset element, the probability of material misstatement will be different every time.

Does or would such a model have practical relevance? According to certain empirical research (see for instance: Petroni *et al.*, 1996)[83] it seems that using the above equation, we would obtain a probability value of more than 90% for P_{MM} in the case of the impairment of accounts receivable at companies where audit is conducted. Assuming that the auditors performed their work in line with the effective

[82] Unfortunately however, also this distribution of probability is outside the scope of the current risk model, as it is not influenced by the quality and quantity of the evidence collected but by the client's business risk.
[83] The research examined the (estimated) impairment calculated for the individual accounts, then observed the actually realised amounts. The difference between the two was treated as a deviation.

auditing standards and managed to keep the value of audit risk down at about 5%[84], then the value of accounting risk regarding these estimates of impairment shall be approximately 90%[85].

In another study, Boritz (1991) found that in case of 50% of the companies having gone bankrupt, there is no sign whatever in the last audited annual report issued before the bankruptcy showing that certain factors threaten the principle of going concern. Smieliauskas considers that this is an unequivocal indication of estimation errors.

How can we summarise the essence of the extended audit risk model? First, the model highlights that the present concept is characteristically an audit planning tool in the first place, and as such it impacts on the quantity of evidence to be collected. It is also apparent that accounting risk may not be decreased by collecting audit evidence (as these reflect the auditee's business risk in the annual report); therefore, the auditor's most important task is to make sure that the related risks are appropriately disclosed.

I consider that such a model could effectively represent an improvement. It is nevertheless questionable whether the setting of the above mentioned objective really falls into the scope of auditing methodology or rather represents an issue of purely accounting nature.

Marden and Brackney (2009) also examined the audit risks resulting from accounting risk; they approached the issue from the direction of the differences in the accounting systems. Their basic proposition was whether the flexibility provided by the IFRSs increases audit risk[86]. As IFRSs (in contrast with the US GAAP) are commonly considered to be a principle-driven rather than rule-driven framework, it is possible that the number of disputes between auditors and managers might increase with regard to cases where the IFRSs provide the power of consideration and discretion to the compiler of the financial statements. The authors identify the issue of fair

[84] Another malicious explanation for this phenomenon may be that although the auditors planned with an audit risk of 5%, they proved to be so incompetent that they finally only managed to realise a 90% risk. Let us not take this version into consideration.
[85] NB: We are still talking about a service providing a *high* level of *assurance*!
[86] The authors analyse this issue in the context of the convergence process, the main question being whether the IFRSs imply more risk for auditors than the US GAAP.

valuation as a particularly sensitive area, where the two frameworks differ on more than 19 points. Similarly critical points were revealed regarding IAS 7, 17, 18 and 36 as well.

As a consequence the number situations where one *opinion* is confronted with another may in theory significantly increase the auditors' risks. Are these problems mentioned by the authors justified? Not necessarily, if we recall the fact that the IFRSs are applied with success in more than 110 countries, without being extremely problematic for the auditors working in those countries. At the same time – argue the authors – this may be due to the fact that in these countries the supervisory and regulatory systems may be weaker and the legal and accounting culture may be different[87]. Therefore, the future transition to the use of the IFRSs is expected to be a great challenge, not only for businesses but also for auditors. Indisputably, there is a possibility that the danger of fraudulent reporting may increase as the imminent danger of immediate detection decreases. The authors also recognise that the application of the US GAAP did not exclude failures either (Enron, WorldCom etc.); therefore, not even a basically rule-driven system is a guarantee against errors.

In this respect I only wish to remark that in recent years there is a clear tendency of the IFRSs becoming ever more rule-driven. Therefore, although I by all means consider that the authors are right, it would seem that in the course of time the danger they forecasted tends to decrease.

One also has to add that against bad will more regulation is not necessarily the best protecting tool. To put it simple: who wishes to commit a fraud will eventually manage to do so anyway.

8.3 The lack of recognition of business risks

As we could see, the standards use a rather narrow interpretation of the concept of audit risk. They exclude from the concept not only the case of the rejection of a correct report but also the various business risks borne by the auditor. For the purpose of their research, Houston *et al.* (1999) extended the model to include this latter factor, approaching the problem from the angle of audit costs. In their model,

[87] It is revealing to consider how easy it is to initiate a lawsuit in the US. It is rather difficult to document 'opinions', 'professional judgment' and 'intents', and even more difficult to defend them in court – comment the authors with a certain amount of malice.

$$(31)\ E(c) = c \cdot q + [E(d) \cdot E(r)] + [E(f) \cdot E(p)],$$

where

E(c) is the expected total cost of auditing,

c is the unit cost of the audit (including every opportunity cost),

q is the quantity of resources used for the audit,

E(d) is the expected present value of future stakeholder losses resulting from undetected material misstatements,

E(r) is the expected probability of the position where the auditor will be hold liable for the losses incurred by stakeholders as a result of undetected material misstatements,

E(f) is the expected present value of future stakeholder losses resulting from factors other than undetected material misstatements,

E(p) is the expected probability of the position where the auditor will be blamed for the losses incurred by stakeholders as a result of other causes than undetected material misstatements.

In this model therefore $[E(d) \cdot E(r)] + [E(f) \cdot E(p)]$ represents the auditor's business losses. According to this formula, first the extent of business risk is estimated then resources are allocated for auditing up to the point where the marginal decrease in the business risk becomes equal to the marginal cost of the subsequent audit operations.

It also ensues from the above that the risk model used by the standard is able to manage the business risk resulting from $[E(d) \cdot E(r)]$. Consequently, several factors which impact on the probability of material misstatement will have a comparable effect on the business risk, too. However, the model used in the standard is explicitly unsuitable to manage the factor $[E(f) \cdot E(p)]$[88]. Therefore the authors essentially intend to complement it with this element.

[88] Such may be, for instance, the poor financial situation (liquidity) of the client, or the substantial volatility of its share prices (Brumfield *et al.*, 1983).

8.4 The lack of recognition of fraud risks

With the publication of SAS 53, the auditors' tasks related to fraud have substantially increased[89], including the assessment of fraud risks. This new development, however, was not followed by the adjustment of the risk model – a fact that researchers working in this field pointed out quite soon.

Loebbecke *et al.* (1989) were among the first to react: in response to the alleged deficiencies of the standards, they elaborated the *Loebbecke–Willingham management fraud assessment model*. Their starting point is that unintentional errors and fraud set quite different requirements for the auditor and the assessment of the probability of the latter is far from being a matter of course (although it should form part of each and every audit). Instead, it is a high-level decision task involving several factors, necessitating expertise, experience and outstanding logical capacities. Earlier research clearly demonstrates that the circumstances of the risk or uncertainty frequently result in distortions and that humans 'intuitive statistical capacity' is far from being perfect either[90]. The authors conclude that it is quite improbable that anyone should be successful in intuitively assessing the risk of frauds with major impacts. Their model may be summarised in the following formula:

$$(32)\ P(MI) = f(C, M, A)$$

where

P(MI)is the probability of the occurrence of a material fraud,
C is the extent to which circumstances make it possible for the management to commit fraud,
M is the extent of the management's motivation and initiative to commit fraud,
A is the management's attitude towards fraud and the extent of their negative ethical convictions related to fraud.

[89] See Chapter 4.
[90] I.e. it is not easy to intuitively identify statistical results.

Where all of the above factors have zero value, then also ***P(MI)*** will be equal to 0. If all three factors are present, it is very probable that a material fraud has been committed, or will be committed in future[91].

The model has also been tested empirically, with the cooperation of 277 audit partners (all working for KPMG USA). The test revealed – among other results – that frauds happen relatively rarely, but those who have already had such experience tend to react in a very proactive manner, defending the interests of their companies. On the basis of the empirical test, the three factors of the model were broken down to further primary and secondary indicators[92] according to their frequency of occurrence.

Srivastava et ***al.*** (2009) continued Loebbecke's work by developing a Bayesian model of fraud risk assessment[93]. They think that the increased stress laid on the management of fraud was not followed by the development of theoretically well-founded fraud risk assessment models. Instead, every company proceeds according to their own in-house methodologies. However, none of these are well-founded in a theoretical sense, neither regarding risk assessment, nor in respect of risk aggregation. The authors base their model on the ***'evidential reasoning'*** (ER) approach and construct it on the basis of the fraud triangle (incentive, attitude, opportunity). The following figure shows their starting point.

[91] These three factors correspond to the factors of the classical *fraud triangle*: opportunity, incentive and attitude. For their appearance in the auditing standards, see ISA 240(A25).
[92] A total of 37 such indicators have been identified.
[93] The direct motivation factor in this case (as two decades earlier) was the fact that fraud regulations were becoming stricter and more complex. The authors made reference to SAS 99 (2002) and PCAOB standard no. 5 (2007) as well as ISA 240 (2004). They complain that none of these provide real guidance concerning the methods of quantifying the factors influencing risk assessment.

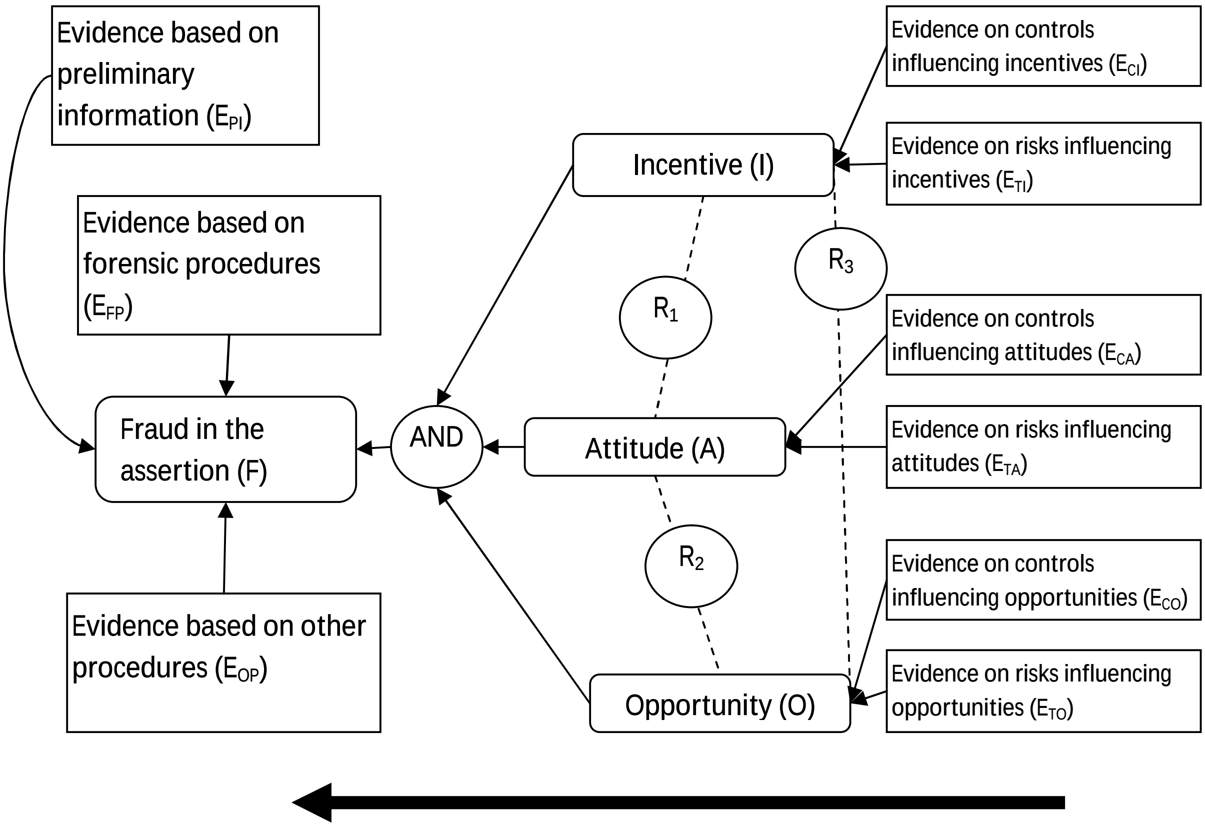

Figure 6: The network of evidence in the model of Srivistava et al.; Srivistava et al. (2009) p. 73.; *the arrow below the figure indicates the direction of reading*

Similarly to Loebbecke's model, they relate the presence of fraud to the simultaneous occurrence of the three factors ('AND' relationship). Variables *I*, *A*, *O* and *F* are binary variables in the model, i.e. they are either present or absent. The mutual relationships between the variables are expressed by the circles designated with *R*. They use three sources of evidence for fraud, including 'other evidence' covering all types of usual audit procedures[94]. Regarding variables *I*, *A* and *O*, they assume the existence of two sets of evidence where risks increase and relevant controls decrease the probability of occurrence. Based on the above, the authors express the probability of fraud risk as follows:

$$(33)\ FR = P(FRAUD|E_{TI}E_{CI}E_{TA}E_{CA}E_{TO}E_{CO}E_{OP}E_{FP})$$
$$= \rho_1\rho_2\rho_3\lambda_{TI}\lambda_{CI}\lambda_{TA}\lambda_{CA}\lambda_{TO}\lambda_{CO}\lambda_{OP}\lambda_{FP}\pi_I\pi_A\pi_O\pi_F/D.$$

In the equation factors designated with ρ show the strength of the *R*'s, respectively. They may take values between 0.5 and 1.0, where 0.5 means that there is no

[94] For instance analytical procedures etc.

relationship between the two variables. If the value is 1, this means that the relationship between the two variables is as strong as possible, meaning that if one of them is present, the other may also be observed (e.g. $i \Rightarrow a$), or if one is absent the other will not be present either (e.g. $\sim i \Rightarrow \sim a$).

λ's are rates of probability. For example, $\lambda_{TI} = P(E_{TI}|i)/\ P(E_{TI}|\sim i)$, where $P(E_{TI}|i)$ is the conditional probability of the existence of evidence E_{TI} in presence of I (i), whereas $P(E_{TI}|\sim i)$ is the conditional probability of the existence of evidence E_{TI} in absence of I $(\sim i)$. If $\lambda=1$, the available evidence does not provide information about the presence or absence of the corresponding variable. If the values are over 1, the evidence supports the assertion; in case of values between 0 and 1, they reject it. Therefore in case of an indefinite value (with 0 in the denominator) there is a probability of 1 that the assertion is true, while if the value is 0, there is a probability of 1 that the assertion is not true.

Factors denoted by π relate to the preliminary chances of existence of the factors: e.g. $\pi_i = P(i)/P(\sim i)$. If the auditor does not possess any preliminary information for the estimation of π's, then they will have a value of 1. Consequently, in general, the numerator comprises the impact of the collected evidence concerning the presence of fraud.

The denominator designated by D in the formula represents the sum of eight factors (eight possible combinations)[95]. These are the following:

(34) $D = D_1 + D_2 + D_3 + D_4 + D_5 + D_6 + D_7 + D_8$
(35) $D_1 = \rho_1\rho_2\rho_3\lambda_{TI}\lambda_{CI}\lambda_{TA}\lambda_{CA}\lambda_{TO}\lambda_{CO}\lambda_{OP}\lambda_{FP}\pi_I\pi_A\pi_O\pi_F$
(36) $D_2 = (1-\rho_1)\rho_2(1-\rho_3)\lambda_{TA}\lambda_{CA}\lambda_{TO}\lambda_{CO}\pi_A\pi_O$
(37) $D_3 = (1-\rho_1)(1-\rho_2)\rho_3\lambda_{TI}\lambda_{CI}\lambda_{TO}\lambda_{CO}\pi_I\pi_O$
(38) $D_4 = \rho_1(1-\rho_2)(1-\rho_3)\lambda_{TI}\lambda_{CI}\lambda_{TA}\lambda_{CA}\pi_I\pi_A$
(39) $D_5 = \rho_1(1-\rho_2)(1-\rho_3)\lambda_{TO}\lambda_{CO}\pi_O$
(40) $D_6 = (1-\rho_1)\rho_2(1-\rho_3)\lambda_{TI}\lambda_{CI}\pi_I$
(41) $D_7 = (1-\rho_1)(1-\rho_2)\rho_3\lambda_{TA}\lambda_{CA}\pi_A$
(42) $D_8 = \rho_1\rho_2\rho_3$

Subsequently, the authors examine the operation of their model in three scenarios, and conclude that it may be used both for planning and assessment, in contrast with

95 As the model derives the occurrence of fraud from the presence or absence of three variables, there are eight possible combinations regarding the presence or absence of these variables, from the version 'all three variables are present' to 'none of the variables can be observed'.

the models based on decision trees, for instance, which quickly become unmanageable if several interrelated variables are introduced.

Shibano's (1990) study operated with an initial hypothesis somewhat different from the models discussed above. He departed from the assumption that the risk model used in the standards does not formally cover the possibility that the client tries to manipulate the audited financial statements. Although the compiler of the standard claims that the risk of fraud always represents a significant risk (ISA 240(27)), at the same time he recognises that in case of suspicion of fraud, the nature of audit procedures to be performed may need to be different from those applied when errors due to a mistake are likely to occur[96].

Shibano also bases his reasoning on the definition of risk as used in the standards, but he differentiates between so-called 'error-prone' and 'irregularity-prone' asset elements. He considers the audit risk related to the first category as 'nonstrategic audit risk' (NSAR), and the audit risk related to the latter as 'strategic audit risk' (SAR). The auditor uses his/her professional judgment to decide which category the individual elements belong to.

The author uses several simplifying assumptions[97] in his work and constructs a strongly formalised model for the assessment of SAR and NSAR elements. The conclusion is that if an NSAR exists (that is, when the auditor expects primarily unintentional errors), the increase in inherent risk does not necessarily result in the increase of risk, as the auditor has the possibility to decrease detection risk. However, if SAR is present (i.e. when the auditor suspects fraud) the decrease in the client's fraud incentives does not necessarily decrease risk. Certainly, it does have such a direct effect but indirectly this leads to the situation that the auditor will be prone to reject the client's figures less frequently, and therefore, unintentionally increases the detection risk. Shibano considers that the available audit technology will determine which of these contrary influences will be stronger.

[96] See the requirement of changing the nature, timing and extent of audit procedures (ISA 240 (A37–A40)).

[97] These being: 1. In the case of irregularity-prone elements, the client knows the correct financial value. 2. The client has an operational internal control system, and is unable to circumvent it. 3. The testing of controls does not provide evidence for the substantial audit procedures to be performed. This restriction makes it possible to assess control risk independently from the other risk elements.

9 Hungarian literature in the field of audit risk

Unfortunately, Hungarian literature in the field of audit risk may be best characterised by its relative scarcity. This evidently does not affect the quality of the existing works. Another of its features is the virtually complete lack of scientific publications in the proper sense of the term. The works published typically describe the professional or legal framework, or intend to provide a guideline for professionals in certain subject matters. Characteristically, almost no empirical research has been published in this field.

We may state that audit risk appears in Hungarian-language literature, predominantly and most frequently, in the context of fraud – but here again, it usually tends to provide professional guidance or information rather than to describe specific Hungarian instances. Ámon (2006) for example discusses the risks and effects of fraud in relation to auditing standard ISA 240. In this work he makes the following statement relevant to my subject matter, i.e. the methodology of audit risk assessment: *"A common feature of accounting scandals of great notoriety is that the fraud was not made possible by, or failed to be detected because of weaknesses in the control system, but certain members of the management abused of their position by circumventing the operative control system"* (Ámon, 2006, p. 319). This means that the major cases of fraud were not due to weaknesses in the risk assessment systems or the available methodology, but were a result of the 'human element'. The author concludes that signs and circumstances pointing to fraud are not an indication of fraud itself, but rather of the increased level of the related risk. In such cases, the auditor needs to adjust his/her audit approach in a way that the risky areas receive more attention.

In another study, Ámon (2011a) examines corruption in public procurement (as fraud) and its repercussions in the financial statements and states that although the auditor is not directly responsible for identifying fraudulent cases, it is necessary and expected from the auditor to detect any material misstatements related to public procurement and this may be done through forming a judgment on the compliance of controls related to fraud. Ámon adds: *"Statistics clearly show that auditors still have to go a long way. In my personal experience the assessment of corruption risk is a particularly difficult task."* (Ámon, 2011a, p. 76)

Ámon (2011b) also notes in relation to fraud that the management of the related risks does not necessarily mean that the auditor performs more analysis, but rather affects the way he/she performs the tests. On the other hand: *"It is practical to take fraud risks into consideration during the planning of the audit; yet efficient steps may be taken in this respect right until the moment when the auditor's opinion is issued"* (Ámon, 2011b, p. 171).

Still in the field of fraud risk, Katalin Braunné Fülöp (2010) analyses the auditor's responsibility in detecting fraud in relation to standard ISA 240, and discusses the risk factors of fraud as well as the instruments available for its detection. Placing fraud risk into a wider context she establishes: *"Fraud may entail a loss of confidence in the accounting system and in the published annual reports. Therefore it is in the interest of society as a whole to detect, unfold and – even better – prevent the risk of fraud. The auditor plays a key role in this process; yet if left alone, he may never succeed."* (Katalin Braunné Fülöp, p. 89)

Another popular – and, unfortunately, quite hot – issue in Hungarian literature on risk is the economic crisis and its correlations with risk assessment (and auditing in a broader context). In connection with the 2008 economic crisis, Lukács (2009a, 2009c) enumerates the ways in which the unfavourable economic conditions may be reflected in the financial statements, as well as the (mostly fraud-related) risks they imply from the auditors' viewpoint. He draws attention to the increased probability of the occurrence of incorrect (manipulated) data[98], to the factors jeopardising the principle of going concern, and to the exceptionally important role of quality assurance and risk assessment. In respect of the latter, he remarks that risk mitigation lends more weight to analytical procedures and interim assessments. Ladó (2009) and Balázs (Balázs *et al.*, 2009) also discuss audit risks related to the principle of going concern. Fekete (2008) writes about the auditing of fair value based estimates, with the economic crisis in the immediate background, but also having regard to the typically high audit risk of these elements.

Among the Hungarian publications taking a somewhat more theoretical approach, we should mention Ladó's (2010) article[99] examining whether the risk-based approach is

[98] Not only in the balance sheet and in the income statement but also in the notes and the business report.
[99] Based on Stuart Hartley (2010).

implemented in a cost effective way. The article finds that auditors, when asked to identify the risks tend to review the financial statements. Although it is true that by doing so they are able to identify the ***impacts*** of the risks, this approach may also be incorrect inasmuch as it does not make it possible to discover the ***sources*** of the specific risks of large extent and scope. It is therefore practical to examine the causes of the risks rather than their symptoms.[100]

Virtually every single Hungarian publication in this field makes reference to Lukács's (1998a, 1998b) series on audit risk. In these articles the author reviews the elements of risk as defined in the auditing standards, differentiating between external risk factors (such as systemic risk or control risk) and detection risk. Among the external factors he quotes the risk resulting from the contradictions within legislation: *"Flawless auditing of an annual report prepared on the basis of erroneous accounting rules is only an illusion – actually infeasible. This is how law, due to its asynchrony, becomes an external risk factor in auditing"* (Lukács, 1998a, p. 373). Lukács introduces the following function-like relationship for systemic risk:

$$(43)\ R_k = f(N;I;K;J),$$

where

R_k *is systemic risk,*
N is the size of the company,
I is the set of the motives which may lead to the perpetration of economic crime,
K are the inherent risk factors,
J is the kind of error committed (whether due to mistake or fraud).

However, the author fails to explain in detail what form this *"function-like relationship"* (Lukács, 1998a, p. 374) actually takes. The second part of the series of articles (Lukács, 1998b) describes a broader interpretation of detection risk, identifying a total of 22 risk factors. These are basically deducted from two main factors: the auditor as a person and his/her assessment procedures.

[100] In other words: build on the risk concept and its content as stipulated in the standards, instead of trying to improvise in an intuitive manner (G.M.).

Despite its shortness, Wágner's (2010) publication examining the role of risk assessment in the auditing of financial statements represents an important initiative in Hungarian literature. His study incorporates both theoretical and practical dimensions. In his introduction, he defines risk management as a measurable concept: i.e. as ***"a forecast rendered as accurate as possible by an ideal combination of human and algorithmic knowledge elements"*** (Wágner, 2010, p. 19)[101]. As a result of the above Wágner introduces the concept of 'risk-based thinking', trying to identify the quantitative and qualitative factors causing the 'problems' related to financial statements. The author also draws up a rough sketch of his own-elaborated methodology, determining the risk-related significance of the individual areas (during the assessment of the individual risks) as the root of the inherent and control risks, the weight of the given area, and the magnitude effect. Therefore, the significance of the given risk shall be calculated from the formula *(IR x CR)+2 x Materiality.*[102] He also mentions the difficulties in creating objective risk assessment methodologies. He underlines the problem that quantitative methods are extremely labour intensive[103] and are primarily based on expert estimates, therefore cannot be objective by their very nature. He cites as another drawback of such procedures the fact that the assessment of risks of a not entirely professional nature (financial or accounting types of risks) is not sufficiently elaborated. He mentions the fact – also frequently cited in international literature – that the individual risk factors are closely interrelated. Therefore their isolated analysis may yield substantially different results from those we would obtain them in the frame of a holistic analysis. Wágner suggests the use of multifactor decision models as a solution: in his opinion this might result in an improvement of audit quality.

In his previously cited study, Lolbert (2008) examines the applicability of different statistical procedures for the purposes of auditing. In this context, he also engages in a criticism of the audit risk model. He notes that risk elements are usually difficult to quantify. In his opinion, the probability of non-detection may only be accurately determined in the case of conclusions based on statistical sampling. He concludes: *"The approximate quantification of audit risk factors and, as a result, the*

[101] The author builds measurability on 'accuracy' as a quantitative feature.
[102] Inherent risk (IR) and control risks (CR) are represented on a 0–5 scale, and materiality on a 0–10 scale.
[103] This assertion is also supported by the models and methods introduced above in the present study.

determination of the optimal labour input, is much easier to perform with the use of statistical procedures" (Lolbert, 2008, pp. 31–32).

In another study, Lukács (2008) presents the results of an empirical research he carried out (one of the rather scarce instances of empirical research in Hungarian literature). In the framework of a joint research programme of the Financial Accounting Department of Corvinus University of Budapest and the Chamber of Hungarian Auditors, he made a representative questionnaire survey on the population of Hungarian auditors[104], trying to find an answer to five main questions. The second question concerned the way Hungarian auditors perform their work and the auditing methods they use. The research also inquired about the application of risk assessment and calculation procedures: it became apparent that about 60% of the respondents performs a risk assessment on every occasion (which they are otherwise required to do pursuant to the standards); 22% only perform it if they deem it necessary, and 11.5% never or only rarely assess the risks. The author remarks in this respect: *"It would seem therefore that these methods are not extremely popular with auditors; their use requires comprehensive knowledge on issues marginal to auditing, and their methodologies are quite sophisticated. It is however more probable that the respondents [...] are simply unaware that [...] in accordance with ISA 500, risk assessment is an obligatory requirement"* (Lukács, 2008, p. 469). At the same time, it is a favourable finding that *"the most frequently used audit procedures are risk analysis and sampling – although in the case of the latter, the optimal rate of use would be 100%"* (Lukács, 2008, p. 470).

Also Bosnyák (2003) conducted an empirical research concerning the auditing profession. In the framework of a questionnaire survey he asked the targeted auditors to answer the question to what extent[105] in their practical experience the choice of the valuation procedures stipulated in the accounting policies of the companies they audited was influenced by the 20 factors enumerated in the questionnaire (Bosnyák, 2003, pp. 162–163). The responding professionals had to break down their answers according to their experiences with micro/small, medium and large enterprises, also stating on how many enterprises (in the different categories) they base their opinions.

[104] Of the 3500 questionnaires dispatched, 710 were answered in substance, representing a response rate of app. 20%.
[105] On a scale from 1 to 5.

Although this research does not immediately concern the subject matter of the present dissertation, we may be interested in the fact that in several cases, substantial differences were present in the answers relating to the smaller and larger companies. This suggests that such differences might also exist in the field of audit risk.

10 Some empirical study findings in the field of audit risk

In the forthcoming chapter I will give a brief overview[106] of international literature concerning research related to audit risk, also reflecting on certain thoughts expressed in previous chapters of the dissertation. It would be impossible to discuss each subject in substance; therefore I will focus on those which serve as a basis for my own empirical research.

10.1 A comparison of different risk assessment approaches

Dusenbury *et al.* (1996) compared three risk assessment approaches: the model used in the standards (with quantified probabilities), a model they claim to be company-specific (where risk assessment was performed using four qualitative categories; the model was effectively used by a company for purposes of auditing[107]), and risk assessment conducted on the basis of the belief function theory. 80 auditors participated in the survey, all of them working for one of the Big6 companies. In the course of the survey they had to perform risk assessment twice[108] in respect of tangible assets and accounts receivable and the authors compared the results of the two assessment. Substantial differences came to light between the risk sensitivity of tangible assets and receivables: the risk assessment of accounts receivable reacted much more vividly to the results of the control tests. One of the findings of the comparison between the three examined models was that the company-specific model gave a significantly more conservative estimate (allowing lower risk) of the risk of test of details during the first, preliminary assessment (58%)[109] than the model used by the standard (91%). The assessments based on the belief function theory proved to be even more conservative (25%)[110], which is a repeated indication of the fact that the procedure is very sensitive to the quality of the available evidence. A similar order emerged in the case of the second assessment, the deviations being significant in all cases. The authors drew several conclusions from these results:

[106] I will follow a thematic instead of a chronological order.
[107] The authors claim that this was the first research making an empirical analysis of the functioning of such a model.
[108] A preliminary estimate and a new one based on the results of the control tests. The authors also generated a positive and a negative set of results, thus examining the reactions of the models to the characteristics of evidence.
[109] The % values show the extent of detection risk (including the risk of data testing) allowed by the given model.
[110] We consider a model to be more conservative if it allows a lower level of detection risk, for this means that it will require the auditor to perform more (and more extended) procedures.

- The comparison of the model used by the standards and of the company-specific model supports the view that audit risk is not routinely underestimated in practice.

- The relationship between the company model and the belief function model may not be generalised: the order depends on the quality characteristics of the available evidence.

- The model used by the standards, although the least conservative on the whole, was prone to show distortion towards the consideration of negative evidence. This means that it reacted more vividly to negative control test results than to positive ones.

The authors conclude that a 'reliability of evidence' element should be integrated into the audit risk assessment model. Belief functions might be efficiently used for this purpose.

In a recent study, Fukukawa and Mock (2011) compared risk assessments performed on a probability basis and using belief functions, also on a sample of accounts receivable. In their study they use four different risk concepts in relation to material misstatements. These are as follows, keeping the designations used by the authors and in the chapter on belief functions:

- RMM_m[111] is the assurance that an assertion ***a*** is erroneous: ***m(~a)***;
- RMM_{pl} is the plausibility of the erroneous nature of an assertion: ***m(~a)+ m({a,~a})***;
- RMM_{pb} is the probability that an assertion is erroneous: ***p(~a)***;
- RMM_{cs} is the belief calculated by using the Cobb-Shenoy transformation, that an assertion is erroneous: ***m'(a)*** = [***m(a)*** + ***m({a,~a})***] / [1 + ***m({a,~a})***].

The first two risk definitions follow from belief function theory; the third is the concept of risk according to the classical probability approach; the fourth is a transformation of belief functions.

[111] RMM = Risk of Material Misstatement.

The authors ask the question whether auditors working on the basis of probability on the one hand and on the basis of beliefs on the other hand obtain significantly different results in risk assessment. To put it differently: what is the extent of the deviation between the four risks mentioned above?

The authors found that in the case of estimates based on beliefs, the level of ambiguity ***(m(a, ~a))*** decreased as a result of supplementary information. This led them to draw the conclusion that they were relevant for risk assessment. Evidently, as explained earlier, such an observation was not feasible in the case of probability-based approaches. The results of Question 1 are summarised in the following chart.

Compared risk assessments	Result	Note
RMM_m; RMM_{pb}	$RMM_m << RMM_{pb}$	The difference was larger before introducing the supplementary information.
RMM_{pl}; RMM_{pb}	$RMM_{pl} >> RMM_{pb}$	This is an important evidence of the fact that the effects of ambiguity is split up between p(a) and p(~a) by those who apply the probability approach.
RMM_{cs}; RMM_{pb}	$RMM_{cs} \approx RMM_{pb}$	It seems that the split up of ambiguity in case of the probability approach gives approximately the same results as the Cobb-Shenoy transformation.
RMM_m; RMM_{pb}; RMM_{cs}; RMM_{pl}	$RMM_m << RMM_{pb} \approx RMM_{cs} << RMM_{pl}$	

Chart 4: The comparison of risk assessment method by Fukukawa and Mock (2011)

Their second question examines a cognitive limitation of audit risk assessment. Their question is whether the assertion framing effects[112] depend on the risk assessment and on the available evidence. 96 senior auditors, working for one of the Big4 companies' Japanese branch, took part in this study. Their task was to perform repeated risk assessments[113] concerning three audit assertions (existence, valuation, accuracy) concerning accounts receivable.

[112] This simply means whether we formulate the assertions the auditor needs to test in a positive or a negative form. Previous studies examining the occurrence of this phenomenon in auditing activity produced contradictory results.
[113] Preliminary assessment, then a revised assessment based on supplementary information, and a comprehensive risk assessment for the entire accounts receivable.

Here the authors found unequivocal evidence that in case of assertions formulated in a negative form (e.g. ‘the valuation of the accounts receivable is inappropriate’), the estimated risks are significantly higher, regardless of the risk assessment method used. At the same time, the extent of the deviation depends on the risk assessment method and on the nature and quantity of available evidence. The experiment actually showed that in possession of extra information the deviation between the estimated values was even greater.

The analysis of the two questions examined by this study is particularly important because in today’s auditing practice risk assessment plays an ever greater role, which in its turn affects the entire audit process. It is effectively an idea worth consideration that as it seems to be proved: *substantially* different results may be reached on the basis of identical evidence through the formulation of the assertions and the method chosen for risk assessment. Not to mention the effectiveness and efficiency of the audits also affected by these factors.

10.2 Assessment and independence of risk components

In an earlier experiment, Daniel (1988) examined with the cooperation of 33 auditors how risks related to accounts receivable[114] are broken down to the level of the components of the risk model. Based on this, he analysed how these elements are combined in order to assess audit risk. In the experiment, the participants had to assess the inherent and control risk as well as the components of the detection risk (risk related to the test of details and to the analytic procedures) and the comprehensive audit risk itself, giving the results on a 5-point scale and in a percentage form. The author then calculated the risk values of the individual components on the basis of the models[115] and found that these are significantly *lower* than the auditors’ comprehensive assessments. From this he drew the conclusion that professionals do not use the formulas defined in either SAS 39 or SAS 47 or by CICA. At the same time more than half of the test subjects (18 auditors) assessed the

[114] It is not by chance that the choice fell on this balance sheet item again. By reason of its comparatively risky nature (and risk sensitivity) and the fact that it is relatively easy to test afterwards, accounts receivable is a popular target of audit risk research. This also becomes apparent from this overview of rather restricted scope.

[115] See the parts on SAS 39 and SAS 47 above.

ultimate audit risk to be 5%.[116] The author thinks there are several possible reasons for this: this value might be just a desired level of risk; or the companies the auditors in question work for accept this value as maximal risk level; or perhaps they saw this value in professional literature so many times that they automatically gave that as the ultimate result.

Dusenbury ***et al.*** (2000) examined partly as a result of earlier criticisms of the risk model[117] , whether auditors assess the risk factors independently from one another. 67 auditors working for one of the Big6 companies participated in their research. They were asked to assess the inherent, control and analytical procedures risk. They had to do this twice: first based on an initial set of information and then in possession of the results of the control tests. The experiment showed that there is a strong interdependence between the assessments of the individual components. It appeared that the assessment of the inherent risk strongly influences the estimation of the control risk, which in turn affects the assessment of the analytical procedures risk. At the same time no statistically significant relationship could be demonstrated between the assessment of the inherent risk and the analytical procedures risk. This is explained by the fact that the effects of the inherent risk have already been incorporated in the control risk and therefore it exerted no further effect on the risk of the analytical procedures.

Earlier, Waller (1993) also made a research on the assessment of inherent and control risks, which brought surprising results. According to the initial hypothesis of his study, it is possible that auditors do not strictly follow the requirements of the standards in their assessment of inherent and control risk. He thinks that in practice, these two estimates appear as the answers to the question ‘On the basis of the preliminary knowledge and information about the client and its internal controls, what is the probability of the occurrence of a material misstatement before the application of the controls, and if the statements effectively contain an error, what is the risk that the controls prove to be ineffective?’ Formally:

$$(44)\ P_K(M \cap -C) = P_K(M) \cdot P_K(-C|M),$$

[116] The interesting fact is that this assessment was not corroborated by the combination of the component estimates in either case, with the use of either model.
[117] See the parts on the independence of risk factors earlier.

where

P *is probability,*

K *is the auditor's knowledge,*

M *is an occurrence of misstatement,*

-C *is the case of non-detection of an error by the controls.*

Waller considers that this approach may build up a knowledge-based dependence between the auditor's assessments of the inherent and control risk, resulting from the preliminary knowledge. According to Waller's hypothesis, there is a relationship between the two risk assessments, as to the direction of which earlier literature gives contradictory indications (e.g. Cushing and Loebbecke, 1983, and Graham, 1985). He also tested three other hypotheses in his study, two of which are especially relevant for the subject matter of this dissertation. They are as follows:

- the auditors' inherent and control risk assessment differs for each audit assertion concerning the individual asset elements;

- a positive relationship exists between the auditors' assessment of inherent risk and the rate of detected errors[118].
  The author defines this as $R(M \cap -C \cap D)$.

In his research, Waller examined 385 engagements of KPMG USA[119] using a questionnaire method. The results show that as opposed to expectations, there is no important relationship between the assessment of inherent and control risk. The author thinks this is partly due to the fact that in most cases the control risk was taken to be 1 as the auditors did not want to rely on internal controls in the course of the audit work. This leaves open the possibility that such a relationship may exist if control risk is not set to 1. In this respect, Waller also notes that this practice – although in compliance with the requirements of the standards – raises the question whether risk assessment should corroborate or direct the auditor's acts. It seems that in this case the first possibility prevails – which is rather odd considering that we deem risk assessment to be a planning tool.

[118] I.e. if the inherent risk is assessed as more important, this has to result in a lower detection risk, if every other condition is unchanged. This in its turn means a more extended audit, which is likely to increase the detection rate.
[119] To be exact the accounts receivable, the accounts payable and the inventories for five assertions.

The research also shows that the risk assessments are not different from each other for every assertion concerning the individual asset elements, i.e. risk assessment is not performed on an assertion basis. There was no clear confirmation of the third hypothesis either, claiming the existence of a positive relationship between the estimated extent of inherent risk and the rate of detected errors.

10.3 Business risk based approaches

Schultz *et al.* (2010) examined to what extent the approaches applied by auditors support the consideration of the client's business risks when assessing the audit risk. In their research, they compared the Transaction-Focused Approach (TFA) and the Strategic Systems Approach (SSA) with the participation of 93 auditors. TFA primarily focuses on the operating cycle of businesses and its elements, such as the revenue process or the purchasing process etc., while SSA devotes a central role to certain key benchmark performance indicators. With the help of these auditors seek for circumstances that may give rise to an increased probability of misstatements.

According to the hypothesis of the authors, auditors who have been trained to use the strategic approach and who accordingly base their work on structured data, directly integrate their assessment of business risk into the assessment of the risk of material misstatement. As the hypothesis also formulates two preconditions (training and data structure), a whole of 4 groups were examined, as described below:

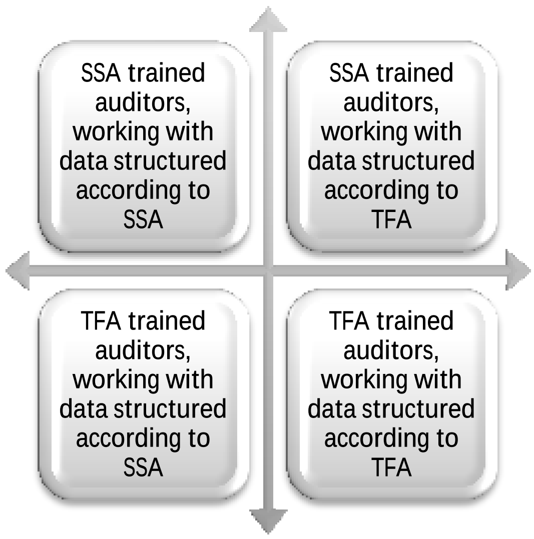

Figure 7: The control groups of Schultz et al. (2010)

The research tried to find an answer to the question to what extent auditors modify their preliminary risk assessment in the light of new information structured according to TFA or SSA. In the en their hypothesis was confirmed, because out of the four groups only the members in the one trained for the use of SSA – and obtaining new information in this framework – modified significantly their assessment of the extent of material misstatement.

The strategic systems approach has many advantages, but it is good to know that also this model has certain setbacks. One of these was examined by O'Donell and Schultz (2005). The authors departed from the assumption that auditors who use this approach try to acquire a holistic image of the auditee during their work. However, there is a phenomenon called the ***'halo effect'***, also known in psychology. It amounts to the fact that if we obtain a preliminary comprehensive impression of another person, we try to assess all subsequent information in accordance with that preliminary overall picture. This effect is particularly strong in case of a complex assessment (Murphy ***et al***., 1993). If, for example, our preliminary impression about a person is on the whole positive, then later we will try to suppress and underestimate any negative features discovered during his subsequent detailed examination and to highlight and exaggerate the positive features which comply with our preliminary opinion. O'Donnell and Schultz examined whether these observations also hold water in auditing, namely in the case of auditors who – by using SSA – judge strategic risks on a holistic basis. In their research, they tested two hypotheses with the cooperation of the auditors of one of the Big4 companies[120]:

1. Because of the effect of 'inconsistent fluctuations'[121], those auditors who perform a comprehensive strategic risk analysis before the detailed examinations tend to make less modifications to the account-level risk assessment then those who do not perform a comprehensive risk assessment.

2. Strategic risk assessment shows positive correlation with the assessment of misstatement risk in case of accounts showing 'inconsistent fluctuation'.

[120] The first hypothesis was tested on 90, the second on 48 auditors.
[121] The authors call 'inconsistent fluctuation' every change in the total of the individual ledger accounts which is not in accordance with other information available on the client's operation.

On the basis of the experiments performed, both hypotheses were accepted. In the first case, it was proved that preliminary comprehensive impressions distort the perception of factors inconsistent with this overall picture. This means that auditors using a strategic approach were less ready to modify their assessment of the risk of material misstatements in the light of factors inconsistent with the overall picture than those who used another approach to perform the task set out in the experiment. It was observed during the research that if the auditor estimated the strategic (business) risk to be low, he/she also assessed the account level risk to be lower, even if no conclusion could be drawn from the strategic risk regarding the risks of the given account. In the research, when testing the second hypothesis, the participating auditors used a strategic risk assessment obtained from a higher level their task was only to assess the account level risks. Also in this case, the halo effect could be observed clearly. The auditors who obtained a low/high assessed level of strategic risk as a starting point also made lower/higher estimates of the account level risks themselves, even if their totals showed inconsistent fluctuation. It was therefore visible that the auditor's level of tolerance towards unexpected fluctuations changed as a result of the assessment of the strategic risk. Nevertheless, despite these results, the authors made it clear that they are not at all opposed to the use of SSA. On the contrary, they mean to call attention in this way to the fact that even this model – which they otherwise consider appropriate – has some weak points that may necessitate further improvement.

10.4 Risks and the performance of the audit

Houston ***et al.*** (1999) analysed in a research involving 34 audit partners working for Big5 companies to what extent the audit risk model described in the standards is appropriate to forecast the behaviour of auditors (i.e. the actual performance of the audit)[122]. In their research they reached the conclusion that the explanatory power of the audit risk model largely depends on the reason of the alleged misstatement. If there is a greater chance that the error is due to a mistake, the model has a suitable explanatory power and the auditor's business risk does not possess any further explanatory power. However, in case of suspicion of fraud the business risk model

[122] Let us not forget that the audit risk model is primarily considered as a planning tool both by the profession and the academic community. This is true even if researchers sometimes criticise its quality as a planning tool.

dominates over the audit risk. The authors concluded from this that the business risk model takes into consideration some factors that the standard audit risk model fails to recognise.[123] These findings accord with Shibano's (1990) opinion described earlier concerning the applicability of the standards' risk model. Auditors are unable to treat the effects of fraud satisfactorily by modifying the risk elements, for in this case such potential costs may be incurred which cannot be linked with the probability of the non-detected material misstatements. Based on this, also with reference to Cushing and Loebbecke (1983), they conclude that the risk model used by the standards would need to be complemented.

Here I wish to stress once more that risk assessment is not an audit activity for its own sake and most of all it should not be done as a kind of obligatory documentation, or "for the sake of the quality controller". As the professional standards make it clear, the objective of risk assessment is to plan the audit in an effective and efficient way and its results may also be used for the purpose of the *ex post* assessment of the audit process. Therefore we may state that Bedard (1989) and Mock and Wright (1993, 1999)[124] were discussing an issue central to risk assessment when they examined whether risk assessment, if performed in compliance with the requirements of the standards, *effectively* influences the planning and implementation of the audit. Their results are rather disappointing.

On the basis of the analysis of 54 engagements of three Big8 companies, Bedard (1989) found that auditors usually decrease the scope of the audit procedures if the client had good results in the previous years, and leave it unchanged in case errors had been detected in the given field. The author attributes this phenomenon to the strong competition in the audit market (USA, 1989).

Mock and Wright (1993) examined 159 audit engagements[125] of a Big6 company concerning the 1985–86 period, focusing on the field of accounts receivable and payable. They did not find a strong relationship between the character of the tests performed and the level of assessed risk. There proved to be a relationship however,

[123] As another hypothesis, they examined the effect of the applied model on pricing audit works. Here again, their results coincide with those of the first hypothesis. In case of mistakes the fee did not contain a risk premium, while in case of an alleged fraud it did.
[124] Certainly many more studies also deal with this issue. For considerations of volume and their special relevance I chose to introduce these three.
[125] The sample contained both manufacturing and merchandising companies.

between the scope of the audit performed and certain risk factors (primarily the number of errors detected in the previous periods). They also examined to what extent the changes in the risks are followed by adjustments to the audit programmes. In their experience, neither the scope nor the character of the procedures showed strong correlation with the changes in the risks.

In their 1999 research (Mock *et al.*, 1999) the authors revisited the same company and tried to find the answers to the same question on a sample of 160 elements[126], focusing this time on accounts receivable. Their results more or less coincide with those of the first research. However, positive deviations were found in case of certain factors. It still seems that risk assessment relating to a given client only changes very little from one period to another and 99% (1993: 95%) of the audit programs is identical for all clients. Only a very loose relationship may be discovered between the level of assessed risk and the scope and character of the audit work programmes. It was also observed on both occasions that the scope of the audits depends on the audit plan of the previous year to a large extent and auditors do react – if only superficially – to changes in risks by adjusting the types of tests to be performed.

Thinking about the reasons behind these results the authors consider that a possible explanation lies in the fact that auditors have to follow a certain methodology established with their companies and they do not have a large room to adjust their audit plans. On the other hand, these ‘ready-to-use packages’ have proved to work for a wide range of clients and there is no reason to change them.

Finally, I wish to discuss Low’s (2004) research results, who examined the impact of the auditors’ industrial specialisation on risk assessment. His subjects were 98 senior audit partners working for a Big5 company, who had to solve two versions (low and high risk) of a case study related to a credit institution. 36 of the participants specialised in this industry, the others did not. The versions of the case studies were assigned to the test subjects on a random basis. The author found that the auditors working in the given field day by day were better able to differentiate between the two cases on the basis of risk (also their risk assessment was more accurate) and they also made more adjustments to the ready-made audit programs than their colleagues working in other fields of specialisation. What is more, their adjustments to the

[126] The sample comprised 100 manufacturing and 60 technological companies.

procedures and to the composition of the team working on the given engagement were far more risk sensitive than those made by the auditors with different specialisations[127].

10.5 Summary of the results of the empirical research

Empirical research into the practical implementation of the risk model prescribed by the standards offers a great number of conclusions:

1. The model is not applied or not applied correctly by a considerable number of auditors.

2. The individual risk components are not always considered separately as entirely independent entities – though the mathematical formula behind the model of the standard would indicate this. However, certain research results contradict this assertion.

3. The work of the professional auditor – as almost every human activity based on personal judgment – is threatened by the halo effect.

4. The current model is primarily appropriate for managing risks arising from (unintended) errors, while in case of fraud it represents a less effective audit tool.

5. The application of the risk model in practice is quite rigid – it does not react to changes in the risks. At the same time, the influence exerted by the model on behaviour is frequently exiguous – there is only a weak relationship between (previously) estimated risks and the audit carried out based on these estimates. However, relevant professional experience plays a vital role in its actual application as it significantly increases efficiency.

[127] It is true however, that the same did not happen regarding the changes made to the timing of the engagement. This may lead to the conclusion that pure business considerations exert an important impact on the content of the professional activity.

11 Hypotheses of the empirical research

As I mentioned in the first part of this dissertation, the objective of my empirical research is to learn what relevance and explanatory power the audit risk model of the standards have in today's audit practice in Hungary.

Even this elementary and very general question was motivated by various factors. First, it is sad to see that this issue is virtually ignored in Hungarian literature. Although the small number of training materials and professional handbooks on auditing written in the Hungarian language all discuss and stress the importance of audit risk[128] (its assessment, the basics of audit risk planning etc.), they do not reach farther than the mere description of the requirements of the standards. The situation is even more distressing in the field of empirical research. With the exception of the sole research mentioned above (Lukács, 2008) no other study deals with this topic. We may therefore venture the statement that today (2013) the field of audit risk is truly a 'terra incognita' in Hungary.

Nevertheless I think it is possible to draw up some preliminary hypotheses concerning the subject matter.

I assume that the Hungarian market of auditing is basically characterised by a certain duality. There is the Big4, and all the 'others'. Again, this latter category may be broken down among others to the independent auditors and to the Hungarian members of the networks, in international jargon called 'mid-tier companies'. At the same time, as the handbook of the Chamber of Hungarian Auditors (MKVK) observes: *"Unfortunately, the creation and expansion of Hungarian networks of companies is starting very slowly; therefore, only the Big4 and a maximum of 3 or 4 other companies have their own auditing manuals. Such a manual should exactly serve the purpose of providing the auditor (as an addition to the professional training) with a tool he may adapt to the necessities of his daily work and which gives a response to the new challenges he faces in the course of each audit."* (Csendes *et al.*, 2010, p. 5)

We may therefore assume that a certain part of Hungarian auditors work without a written methodology when assessing risks. If we combine this with the research

[128] See for example: Lukács (2009b) pp. 71–75, or Bary *et al.* (2005) pp. 172–180.

finding presented earlier that only 60% of Hungarian auditors perform a risk assessment at all, we may set up the following hypotheses[129]:

H_1: A certain part of Hungarian auditors – mostly smaller market participants without an international background, not belonging to any of the international networks – do not work according to a written methodology, but proceed in an intuitive manner when assessing audit risks.

H_2: A certain part of Hungarian auditors actually do not use a risk based audit approach.

In case of the first hypothesis one may expect significant differences based on the size of the audit firm and its international embeddedness (Big4 background and membership in international networks).

The second hypothesis is a consequence of certain earlier research findings (Lukács, 2008), namely that no risk based audit may be performed in the lack of risk assessment.

However, no data are available concerning the way risk is assessed during the performance of audit engagements. The main question here would be whether separate risk assessment is carried out for the individual risk components. If yes, which method is used for this purpose (on the basis of probabilities, using Shafer's belief approach [Shafer, 1982; Shafer *et al.*, 1990], having recourse to a checklist etc.). And if an assessment is performed, does this result in a quantitative or a qualitative assessment? These are the issues the next hypothesis is bound to test.

H_3: In most of the cases, risk assessment is not performed on a component basis and the estimated risks are not quantified but qualitative categories (such as low, medium, high) are used.

The basis for this hypothesis was provided by earlier empirical evidence (see e.g. Daniel, 1988). The testing of this hypothesis also gives one the opportunity to examine whether in the cases where risk based auditing is effectively conducted is it

[129] The hypotheses are formulated in the form I expect to accept them.

a transaction based or a strategic approach (i.e. one focusing on the client's business risk). This is the subject of the fourth hypothesis:

H_4: The majority of auditors performing a risk based audit use a transaction based[130] approach.

The assumption behind this hypothesis is that the use of the strategic approach requires a thorough methodological knowledge and substantial resources (see for example: O'Donnell *et al.*, 2005; Peecher *et al.*, 2007; Marden *et al.*, 2009; Schultz *et al.*, 2010). Out of these two requirements, especially the latter one is something that most Hungarian auditors lack and will probably lack in future as well (see: Lukács, 2011; Garajszki, 2011).

Farther along these thoughts one may ask whether the auditors who do perform a risk assessment effectively implement a risk based audit or rather consider risk assessment as a formal obligation (required by the standards and in QA etc.) only. In short: I wish to test the auditors' attitude towards audit risk assessment. The analysis of such a hypothesis may also be useful to reveal to what extent the performed assessments are taken up in the course of the effective performance of the engagement (planning, gathering of evidence, evaluation). This would offer another opportunity to reflect on parallel international empirical research (see e.g.: Bedard, 1989; Mock *et al.*, 1993 and 1999). Based on the above hypothesis 5 shall be:

H_5: Hungarian auditors who carry out a formal audit risk assessment do not use its results in the course of the performance of the audit engagement.

Finally, as far as the practical usefulness of this dissertation is concerned the intended survey may offer a good opportunity to prepare an empirical risk map, which may help one identify the areas that professional auditors consider to be riskiest in the financial statements. This would essentially make it possible to confirm or refute the claims which accord a special emphasis to items containing accounting estimates (see e.g.:. ISA 315; ISA 540; Boritz, 1991; Petroni *et al.*, 1996; Mohl, 2004; Glover *et al.*, 2005; Smieliauskas, 2007; Marden *et al.*, 2009). The experience gained this way could subsequently be used in many other fields, such as education, training, for the purposes of legislation etc. It would also make it possible

[130] See chapter 10.3.

to examine the auditors' perception of fraud (more exactly, of the risk of fraud) and the methods they apply in this respect. This again offers a good opportunity to analyse the extent to what the methods described in international academic literature are applied and make comparisons with the empirical research results published therein (Loebbecke *et al*., 1989; Shibano, 1990; Srivastava *et al*., 2009). Based on the above, the last hypothesis shall be:

H_6: Hungarian auditors – in accordance with professional standards and international literature – identify items containing accounting estimates as significant sources of risk.

In accordance with international literature, I expect that the research will confirm this hypothesis too.

12 The empirical research

12.1 Research methodology and population

Based on the aforementioned facts the empirical research necessarily turned out to be investigative in nature, as according to Babbie (2003) all of its three regular elements were present (better understanding of an uncharted area, grounding of future research and elaboration of future processes).

The method used to collect data was the survey method. Due to reasons of cost effectiveness and to increase the willingness to participate in the research, the survey was common with another research studying fair valuation. In contrast to previous plans the survey was not sent out via post, but electronically[131] in association with the Chamber of Hungarian Auditors (MKVK, hereinafter the Chamber or MKVK) [132]. The chosen questionnaire-based method certainly carries a great risk of non-response: earlier experience shows that the response rate tends to be rather low in Hungarian research in the field of accounting. It has also been observed however that auditors show more willingness to respond.[133]

Naturally, the ideal solution would have been to test the hypotheses using the methods normally applied in international practice (in the framework of a simulation case study, simultaneously, under controlled circumstances and on a larger sample of 50-100 subjects). It is however, probable that Hungarian auditors would not welcome such a test, considering that it would take quite a long time, from 2 hours up to a whole day.

On the basis of the opponents' opinions on the draft dissertation I dropped the initial idea of preparing interviews with practicing quality controllers.[134]

The research carried out is based on primary collection of data, which means that it contacted all the domestic, active (not suspending his or her Chamber membership)

[131] For the purposes of the research I used the platform of online-kerdoiv.com. Auditors had the option to ask for the survey via post and to answer on paper sending back the package free of charge. No such request has come to me.
[132] I express my special gratitude to Erika Sándor from MKVK who helped to coordinate the research.
[133] Lakatos (2009), for instance, reports a 1.52% response rate for enterprises (p. 132), while Bosnyák (2003) experienced a rate of 25% with auditors (p. 99).
[134] According to the opponents' views the quality controllers themselves are practicing auditors too, so the interviews with them are not likely to enhance the research.

auditor members of the Chamber. From a temporal aspect, the research was meant to record a status, so it is basically a cross-sectional research. Questions asked of auditors related to the practices followed during the finished audit season of 2011. In the framework of the research I did not intend to address audit companies in particular, for the ultimate goal was to gain knowledge about the risk assessment performed for the purpose of the individual engagements and about the auditors' individual procedures and attitudes related to risk assessment.[135]

Accordingly, the subjects of the analysis were the audit engagements conducted by the auditors or more exactly the risk assessment practice they follow during these engagements. In theory, the observation units should be the individual audit engagements. Yet assuming that the auditors proceed in a consistent way in respect of risk assessment in the course of their work the research may be extended to the entire set of engagement belonging to a same individual.

As a result the population consists of auditors registered in Hungary and having an active membership in the professional Chamber.

12.2 Timing of the research

The questionnaire was finalised in June–July 2012, following the discussion about the draft dissertation which took place at the end of May 2012. Before the finalisation and disclosure, I tested the questionnaire in academic circles: several lecturers of the Departments of Financial and Managerial Accounting of Corvinus University of Budapest also working actively as auditors gave feedback on the basis of which I made certain modifications to the structure of the questionnaire and to the formulation of the questions.

Auditors were informed about the final accessible version of the survey on 25th July 2012 via the regular electronic newsletter of the Chamber. Based on the information

[135] The engagements are conducted by the individual auditors and also the preparation of the risk assessment falls within their responsibility. Upon this consideration it seemed logical not to include the companies in the research. This is without ignoring the fact that companies working with more than one auditor tend to impose a common methodology upon the individual auditors' work.

received from MKVK an email was sent to 3,152 auditors asking them to fill in the questionnaire on a voluntary basis.[136]

The questionnaire was open till 15th September 2012, which gave enough time for a response (taking summer holidays and preparations for the new audit season etc. in consideration) and to process the received answers.

Before the research I had expected to have a sample with 100 to 120 units in it. These expectations were then met, as I received 104 adequate answers, which means a response rate of merely 3.3%.[137] All this means that I had a well analysable sample in the end with a unit number that exceeded that available for previous research. It is also instructive to study the figure generated by the survey system on the timing of responses received.

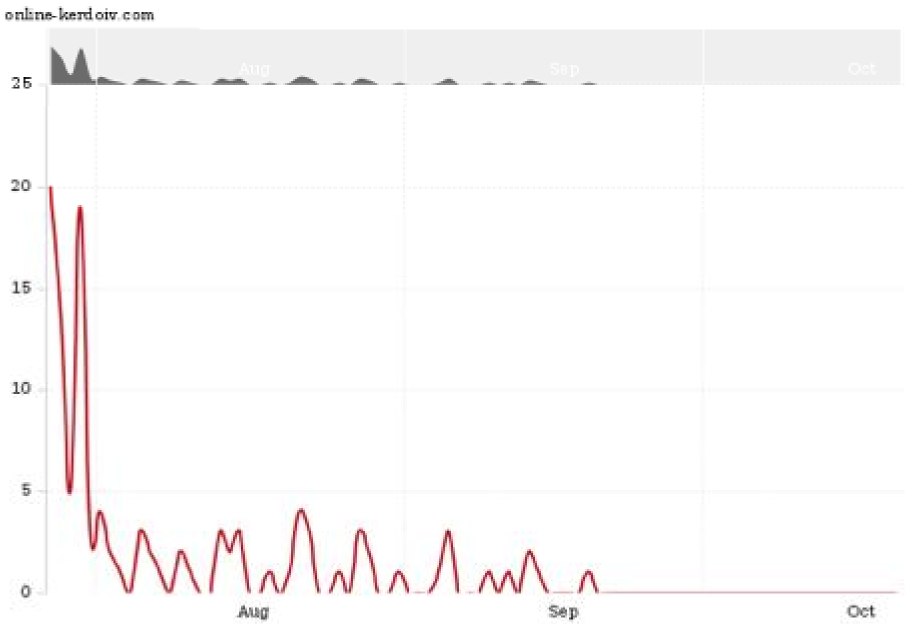

Figure 8: The timing of the responses received
Source: online-kerdoiv.com.

It is therefore clear that almost half of the answers were submitted in the first five days. Subsequently, responses came in a steady flow but in considerably smaller quantities.

[136] The research could address 100% per cent of the target population, with relatively low costs, which is undoubtedly a large advantage compared to former paper based inquiries. It is another remark that not even this method could result in a high response *rate*, but at the same time the *absolute number* of elements in the resulting sample was adequately high.
[137] Whether this is a good or poor rate, and what is to be deduced from it with respect to Hungarian accounting research and the acting auditors exceeds the frames of this dissertation.

12.3 Structure of the research questionnaire

The questionnaire and the cover letter are enclosed in Appendix and Appendix 2.

To test my hypotheses I needed to collect information from active players of the business market. This does not go without problems, as nobody likes to give out information about oneself, especially not sensitive information. I made it very clear in the cover letter that I seek responses for statistical/research purposes and any contribution is voluntary.

In the first section of the survey (Questions 1 to 7) my aim was to learn the auditor's and his company's main features[138]. I asked them about the general form of activity (privately, in a company, with assistants or without them, international relations etc.; Questions 1 and 2), the number of audit engagements (Q/3), the nature of clients (company, bank, public sector institution etc.) and their size (sales revenue in case of ordinary companies, the PSZÁF[139] classification by banks; Q/4 to Q/6) and the accounting system (Hungarian Act on Accounting, IFRS, US GAAP, other etc.) behind the financial statements audited (Q/7).

In the second, essential part of the questionnaire (Questions 8 to 19 and 27) I asked questions about the practice of risk assessment pursued by the auditors. The questions were closed ones to ease answering and processing and with one exception I used a 6-level modified Likert scale, where answer 1 meant "it is not true in my case / I do not agree with it at all", while answer 6 meant "it is always true in my case / I completely agree with it". I decided to use a 6-level scale, in contrast to the 5-level scale usual in Hungarian accounting research[140], so as to eliminate the 'temptation' to always choose the medium value[141]. The only exception was the supplementary question to Question 15, where I wanted to know – in the form of an open question – how many qualitative risk categories the auditors use.

The questions related to audit risk comprised the following topics:

- general conditions of the auditor's work (Questions 8 and 9),

[138] This served as a basis for both involved research projects.
[139] Hungarian Financial Supervisory Authority
[140] See for example Bosnyák (2003) and Lakatos (2009).
[141] In case of scales with an odd number of levels the medium value actually meaning *"neither yes nor no"* frequently reflects incapacity to decide or the lack of interest in the given issue.

- general conditions of risk assessment (Question 10),
- attitudes towards risk assessment (Question 11),
- practice of risk assessment (Question 12),
- methods of risk assessment (Questions 13–15),
- interpretation of the results of the risk assessment (Question 16),
- use of the results of the risk assessment (Questions 17–19),
- risk map (Question 27)[142].

The third part of the questionnaire (Questions 20–26) contained questions related to the other research, inquiring about Hungarian practices in the field of fair valuation. I will not discuss the pertaining details or results, as they do not directly affect the subject matter of this dissertation.

Finally, closing Question 28 examined the willingness to respond to questionnaire surveys and the possible ways to enhance this willingness. As opposed to the other questions, in this case the subject could choose one of five previously formulated answers.

Certainly these types of questions and answers give a less nuanced picture of the examined area than a research built on case studies or on a series of in-depth interviews could have given. Yet I consider that the form of research applied was in compliance with the exploratory nature of the research.

[142] This question was placed at the end of the joint questionnaire because of its complexity (possibly having a deterring effect from continued cooperation) and its synthesising nature.

13 Analysis of collected data and verification of the hypotheses

13.1 Preparation of the questionnaire for processing

To process the answers I used the IBM SPSS Statistics 20 programme package, which was made available to me by the university. Accordingly, every statistical output table displayed in the dissertation was produced using this software.

In case of Questions 4–6, for IT-related reasons and to speed up and simplify the answering process, percent-value data had to be selected by choosing from 10% ranges between 0% and 100% on the online interface, instead of entering the accurate values manually. In the course of the preparation of the answers for processing, I substituted the ranges chosen by the respondents with the values of the respective range medium.

Furthermore, in the case of questions where respondents had to qualify each assertion on the above mentioned 1-to-6 level scale (Questions 8–19) I assigned zero value to non-responses and treated them as missing data (‘Missing System’ in the respective outputs) during the actual analysis. By doing so, I prevented the distortion of the structure of the valid answers. For the sake of processability, minor – essentially formal – corrections were necessary in case of the single open question of the questionnaire (subquestion to Question 15)[143].

Where the respondent chose more than one answer for Question 27 (although, logically, only one answer should have been given to this question), I considered the median of the chosen values (always rounding upwards)[144].

[143] Such as converting text-based answers to numerals, deletion of measurement units (e.g. ‘pieces’ or ‘pcs’), deletion of additional textual remarks etc.

[144] For instance, if a respondent chose 1 and 6 for the riskiness of intangible assets, I substituted the answers with the single value of 4. Presumably, the respondent works with some clients in where this area has a very low level of risk, as well as with others where this field extremely risky. The reason why I handled these answers – not necessarily erroneous in themselves – in this manner lies in the formulation of the question: “Please indicate that when these items occur how risky they are *in general*”.

13.2 Findings related to the general questions

As I mentioned before, the first seven questions in the questionnaire served to map out the respondents and their engagements. The main statistical results of their answers are presented in Appendix Appendix 3

To the question in what organisational form the auditors perform the audit, the 104 respondents gave a total of 112 answers (multiple responses were possible). Most of the double responses (5) were given by auditors working on an independent basis and for smaller firms at the same time. One of the respondents said he was working with assistants too; two auditors perform auditing activity both independently and with Big5–10 companies.

Most of the respondents (68) work alone and without assistants; 32 works for minor audit firms. Much fewer are those who work alone but employ assistants (5), those who work for Big5–10 category companies (4) and those working for a Big4 firm (3). Quite as a matter of course, the rate is about the inverse when examining who (or whose companies) are members of some international networks. In case of the Big4–10 companies, this rate is 100% (actually, as far as they are concerned this question rather served a testing purpose in their case only); 12.5% for the smaller companies and only 4.4% for freelancers. Among those who work independently but with an assistant, nobody claimed to have international embeddedness. The answers reflect the dual structure of the Hungarian audit profession and its impact on international embeddedness. **Companies and auditors without international roots typically do not strive to build international connections implying a more or less strong dependence relationship**[145]**.** International connections were important mostly in consideration of Hypothesis H_1; on the basis of the answers received to this part of the questionnaire, I considered that my assumptions leading to the formulation of Hypothesis H_1 were all justified.

The research opened an insight into 1619 audit engagements, i.e. my respondents were personally responsible auditors in such a number of cases. The number of engagements per person again reflected the duality of the profession (1 to 150

[145] My earlier personal experience also proves that different international networks may impose very different levels of integration on their members. For instance, some allow their members to be integrated in other international networks as well (multiple membership), while others strictly forbid any such thing.

engagements). The average number of engagements per respondent was 15.57. The distribution of the numbers of engagements has a high kurtosis and a positive skewness. This is explained by the analysis of the number of engagements per the different category of auditors. Individual auditors wrote about their experiences gained through a total of 853 audits; those working with an assistant, of 148; the smaller firms of 499; auditors working for Big5–10 companies, of 84; and the three Big4 respondents, of 173. Examining this in the light of the number of respondents in each category, we obtain as a result the widely known fact that **auditors working for bigger – especially Big4 – companies perform a much greater number per capita of audits than those working for smaller companies or on a freelance basis**.

Analysing the composition of the entities audited by the respondent auditors, we may state that the decisive majority (75 persons) only audited general for-profit entities (enterprises). The majority never audited financial and public sector institutions (95 each) or other organisations (88).

For the distribution of the audited companies on the basis of their turnover, I weighted the turnover categories disclosed in the answers with the rate of the audit engagements and specifically within this the rate of enterprises. The results obtained show that the audits performed in 2011 concerned in majority companies with a revenue not reaching HUF 200 million (618 instances); then there is a balanced increase in the range between HUF 200 million and 2 billion (372, 209 and 108 instances respectively, with internal limits of HUF 500 million and 1 billion). A noteworthy result is the large number of audits of companies with turnovers exceeding HUF 2 billion in the sample (176).

The distribution of the accounting systems on which the audited annual reports were based shows a rather unilateral picture: 93 respondents only perform audits based on the Hungarian Act on Accounting (and the relevant government decrees), while only 5 respondents claimed to mostly work with financial statements based on the IFRSs, and only one respondent answered that the US GAAP is among the accounting systems on which a small part of the statements he audits is based.

The picture is even less nuanced when weighted by the number of engagements: auditors working exclusively with financial statements based on the Accounting Act issued 1370 of the 1619 opinions in the sample. Audit opinions on annual reports based on the IFRSs were issued in 238 cases and opinions on US GAAP based financial statements in 12 cases only.

Based on the so explored structure of the respondents and the objects of their work, we expect to obtain evidence supporting the common view that in case of less strict accounting systems and smaller entities audit risk assessment only plays a negligible role. We shall be able to corroborate or refute this expectation after having analysed the questions related to risk.

13.3 Analysis of answers to questions concerning audit risk and risk assessment – General considerations

Throughout the analysis of the questions related to risk and risk assessment and the testing of the various hypotheses, I used the number of engagements of the individual subjects as a weight variable.[146] The main statistical results of the answers are presented in Appendix Appendix 4.

As I explained above, the respondents had to assess all statements in this group of questions on a scale from 1 to 6 to what extent they think that the assertion is correct or that the statement applies to them.

In academic and statistical literature there is no uniform measurement scale for this kind of data. Sajtos and Mitev (2007) consider the variables measured on the Likert scale as variables measured on an interval scale (p. 25), whereas Füstös, Kovács, Meszéna and Simonné Mosolygó (2004) consider subjective assessment as though measured on an ordinal scale (p. 26). Clason et al. has the same opinion (Clason *et al.*, 1994).

In my study I used this latter approach, and in case of methods necessitating variables measured on an interval scale (e.g. discriminant analysis, factor analysis) I equated the obtained rank numbers with the identical length classes of the interval scale.

[146] Except for statistical methods automatically disregarding weighting, or where I made an analysis of the individual respondents explicitly.

13.4 Verification of Hypothesis H_1

H_1: A certain part of Hungarian auditors – mostly smaller market participants without an international background, not belonging to any of the international networks – do not work according to a written methodology, but proceed in an intuitive manner when assessing audit risks.

When testing Hypothesis 1[147] I primarily wished to examine the occurrence of intuitive risk assessment. To do so, first I had to reveal the methods the responding auditors apply when conducting their audit engagements.

The result of Question 8, inquiring about the general circumstances of the auditing activity, yields a number of interesting conclusions concerning this dissertation as well as the wider professional horizon. It appears that auditors proceed completely without a written handbook in 37% of the cases, and always with a written handbook in 33% of the cases. This again throws light on a rather serious scission within the auditing profession. While freelance auditors working without an assistant only work on the basis of a handbook in 19% of the cases, this rate is 31.7% for the smaller companies, 77.4% for the Big5–10 companies, and 100% for the Big4 firms.

Without overstressing the role of handbooks one has to note that in case of audits supported by written guidance the room for intuitive acting is presumably smaller than in other cases. [148]

Another important finding however is that in some 76% of the cases (answers 5 and 6), auditors rely on the professional guidance material published by the MKVK[149]. The situation here is quite the reverse of what we saw in connection with the company made handbooks: it is predominantly the independent auditors who always or very frequently use these publications (76% is the ratio of answers 5 and 6); this value is only about 40% in case of the smaller companies. The answers show that even bigger companies (Big5–10) like to use the guidance materials issued by MKVK (64% always uses it); however, respondents working for the Big4

[147] The basic statistics related to the hypothesis are in Appendix 4., further detailed statistics are to be found in Appendix 5.

[148] This duality may also be observed with respect to the other questions: in 49% of the cases, it is not at all characteristic (answer 1) that the auditors work on the basis of ready-made working paper packages, while in 18% of the cases this is virtually always the case (answer 6).

[149] Median of the answers to the question is 5.

consistently refuse to use them (in 98% of the cases they are never or virtually never used; ratio of answers 1 and 2)[150].

However, the different audit software packages are widely used (Question 9): practically in every group, 80–90% of the respondents claim to use them very frequently and only a layer of 18–21% among freelance auditors and small companies never uses audit software[151].

To verify the above frequencies first I ran a binomial (sign) test on the one hand (P = 0.5), then a Friedman test and finally a Wilcoxon signed ranks test pairwise.

Based on the results obtained one can state – though not formulated as a hypothesis – that the two most frequently used working methods are the use of the materials published by MKVK and that of audit softwares while the least frequent is the use of ready-made working papers.

Question 10 inquired about the methodology of risk assessment, using a structure similar to Questions 8 and 9 about the general methodology of auditing. It is very instructive to compare the answers to the two questions. As the assertions of Questions 8 and 9 and the first five assertions of Question 10 correlated with each other in pairs, I used Spearman's rank correlation coefficient for the analysis.

The analysis showed in each case a strong or very strong positive relationship concerning the work methods applied[152]; therefore we may state that **as far as their work methods are concerned, auditors do not make exceptions concerning the issue of audit risk**, and this also holds true for software use (Spearman: 0.864**[153]).

It is also clear that the use of the MKVK published materials is also very similar during the audit in general and when it comes to risk assessment (Spearman: 0,856**).

[150] Nevertheless, the small number of Big4 respondents (3) makes it impossible to generalise on this result, as we do not have information about the potential differences in attitude and methodology amongst the auditors working for the Big4.
[151] Median of the answers to the question is 6.
[152] Meaning for example that those who generally use a handbook for their audit activity will also use a handbook for the purposes of risk assessment.
[153] Hereinafter ** indicates a significance level of 0.01 and * a significance level of 0.05.

I reached the same conclusion by the factor analysis of the subquestions to Questions 8 to 10 about work methods. The 5-factor principal component analysis assigned in every case the same method – as applied in the contexts of auditing in general and risk assessment – into the same factor[154].

The analysis of the answers given to the last two subquestions to Question 10 also yields very interesting results. Here I analysed

1. whether auditors proceed on an intuitive basis during risk assessment, or
2. whether if they use an intuitive procedure or one based on a fixed methodology varies from one engagement to another.

I observed a medium strong ***negative*** relationship between the answers to both questions and the use of audit softwares (in general as well as in the field of risk assessment – although in case of the latter, the relationships are somewhat weaker); **therefore we may conclude that software use tends to incline auditors towards formalism.**

At the same time, it is interesting to realise that a weak/medium *positive* relationship exists between the use of ready-made working papers and intuitive assessment (Spearman: 0.187** and 0.315**, respectively). From this I conclude that software users might proceed in a less intuitive way because the software assesses the risks for them[155], and they only need to intervene if for some reason the automatically generated results do not tally with their professional opinion. As **this mechanism is absent in case of (printed) working papers, professional opinion gains here more importance**.

I performed a cross table analysis, essential with respect to Hypothesis H_1, to learn what relationship exists between the organisational circumstances of auditing (from individual to Big4) and the intuitiveness of the approach to risk assessment.

From the results it appears that auditors working independently and without an assistant typically proceed on an intuitive basis in their audits in some 37% of the

[154] For instance, the variables "For the purpose of conducting my audit engagements I use a customised, updated working paper package" *in general* and "For the purpose of conducting my audit engagements I use a customised, updated working paper package" *during risk assessment* were assigned to the same factor.
[155] Though from my personal experience I know that not every audit software is capable of doing so.

cases (statements 4 to 6), whereas in almost half of the instances (48%) they typically decide whether to choose an intuitive or a formalised approach based on the engagement in question.

It is very interesting to compare these results with the answers given by auditors working independently but with the help of assistants. Actually, in this category, no answer shows in any of the filled questionnaires that any of these auditors typically worked in an intuitive way, rather than using a formalistic approach (all the answers are from 1 to 3, the mode is 1). *An explanation of this puzzling result – worth proving in another research – may be that the presence of assistants tends to incline auditors towards formalism and leaves less room for professional judgement.*

In the light of the above, it may be surprising that in 44.1% of the cases smaller audit companies rely on their judgement rather than on formalisms, and 68.1% (ratio of answers 4 to 6 in both cases) decide on the course to follow based on the nature of the given engagement.

In the Big5–10 category, the role of intuitiveness is of a dual nature: the answers obtained were either 1 or 2 (i.e. “I never or very rarely proceed in this way”) or else 6 (i.e. “I virtually always proceed in this way”), and no answers were given in between. There is a layer who relies on it (64.3% in case of those who decide on a case by case basis), yet the other segment is sharply against this usage (the remaining 35.7% answer is 1 and 2).

Respondents working for Big4 companies clearly do not use the intuitive approach.

I also analysed whether the membership in an international network exerts any influence on the use of professional judgement. The results show that **those who have any kind of international background clearly do not tend to proceed intuitively**; although – making reference to the answers given by the Big5–10 respondents as mentioned above – it rather happens that the applicable method is chosen on the basis of the given engagement. Among auditors without international embeddedness, the rate of those (answers 4 to 6) who rely on intuition – in general (28%) or on a case by case basis (32%) – is considerably higher.

For the purposes of a further cross table analysis based on the occurrence of intuition in the sample I divided the respondents into two groups: those who do not tend to work like this (answers 1 to 3) and those who tend to work like this (answers 4 to 6).

The resulting cross table is as follows:

Cross table of network membership and intuitive risk assessment

		Intuition (1: rather not; 2: rather yes)		Total
		1	2	
Network?	YES	307	17	324
	NO	633	402	1035
Total		940	419	1359

Chart 5: The cross table of network member and intuitive risk assessment

I prepared a similar table in relation to organisational form and intuition.

Based on the statistical analysis performed (Chi-square test) it is revealed that both the network membership and the organisational form have an explanatory force regarding the occurrence of intuition (i.e. intuitive risk assessment is a dependent variable of these two variables). At the same time the dependency is in both cases only of medium strength (based on Phi and Cramer's V). It is also clear that intuition mostly appears by auditors without and international embeddedness or by freelancers or those who work at smaller firms.

I examined the same issue using discriminant analysis. I wanted to find an answer to the question whether the turnover of the general businesses (independent variable, Question 5) affects the intuitiveness of the risk assessment (dependent variable). The Wilks' lambda values obtained **confirm in every revenue category that such an effect may not be observed**.

Based on the above I accepted Hypothesis H_1: it is true that a segment exists within the Hungarian audit society – primarily those without international embeddedness – who tend to proceed on an intuitive basis in the course of their audits.

13.5 Verification of Hypothesis H_2

H_2: A certain part of Hungarian auditors actually do not use a risk based audit approach.

When testing Hypothesis 2[156] I analysed whether audit engagements are conducted with the implementation of a risk-based approach. For the purposes of testing I first analysed the frequencies obtained from the descriptive statistics of the related questions and then with the help of cluster analysis I tried to separate two groups in the sample, which have a different attitude towards audit risk in a methodological sense.

Question 11 of the questionnaire aimed to test the auditors' attitude towards risk assessment. The answers show that in more than 77% of the cases auditors consider risk assessment to be a very important planning tool (which tallies with what the professional standards hold about them). A similarly high percentage claims that the estimates obtained greatly influence the course of the audit. It is however important to notice that in 43.1% of the instances risk assessment is only regarded as a mere administrative burden (all percentages show the rate of 4 to 6 answers).

The basically positive picture drawn up above is slightly blurred by the fact that 75% of the respondents think that risk assessment is mainly necessary for the bigger clients only, and 46.9% would rather skip it in the case of small clients. This latter finding tallies with the results of Lukács's (2008) research made in a Hungarian context: i.e. that auditors do not make a risk assessment, or only *"if necessary"*, in about one third of the cases.

Regarding the quantifiability of the results of risk assessment opinions tend to be quite firm: 13.9% considers that it can never be done, 17.6% thinks that it can be done in every case, and a little more than half of the respondents wavers between options 3 and 4 ('yes, with reserves' and 'no, with reserves'). Hardly any respondents answered by choosing options 2 and 5.

[156] The basic statistics related to the hypothesis are in Appendix 4., further detailed statistics are to be found in Appendix 6.

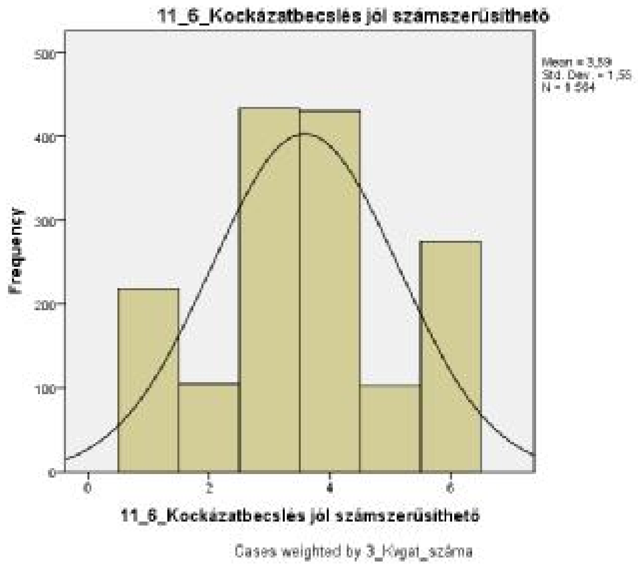

Figure 9: The distribution of answers regarding the quantifiability of audit risk

In the light of this, it is rather surprising that in the case of another question that may be regarded as complementary to the above, asking whether the respondents consider risk assessment to be more of descriptive nature the answers are much more balanced, each in the range between 10% and 21%.

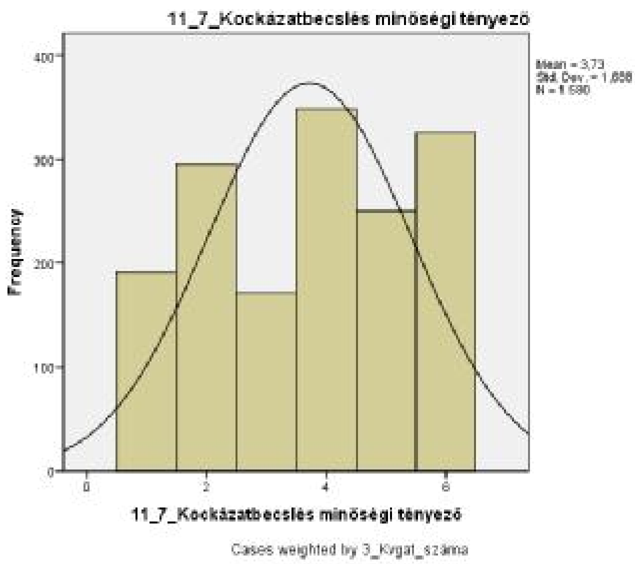

Figure 10: The distribution of answers regarding the qualitative nature of audit risk

This apparent contradiction is explained by the correlation analysis of the answers to the two questions. The Spearman coefficient (-0.033) shows[157] that there is

[157] The result is not significant.

practically no observable relationship whatsoever between the answers to the two questions – although one would expect to find a strong or very strong negative relationship.

The answers to the last two questions – inquiring whether auditors basically consider risk assessment to be an objective or a subjective procedure – should also have been mutually exclusive, at least in theory. Nevertheless, only a medium negative relationship could be measured between the answers to these two questions (Spearman: -0.439**). Similarly, only a medium strong relationship existed between quantifiability and objectivity on the one hand and between subjectivity and qualitative description on the other hand. We may therefore conclude that in the studied sample **there are no strong correlations between the general perception of audit risk** (i.e. whether it is fundamentally subjective or objective) **and the actual realisation of risk assessment,** but at least some directions could be revealed.[158]

I structured the questionnaire in a way that it provides possibility for a cross check regarding Questions 11 and 15. As described before, the former inquired whether auditors considered that risk assessment is *in general* a quantifiable or rather a qualitative factor; the latter obtained information about the two corresponding methods in *the actual* performance of risk assessment. Based on the answers, we may state that in case of the combination “it is quantifiable and I quantify it” there is a weak/medium positive correlation (Spearman: 0,503**), while in case of the combination “it is a qualitative category and I use qualitative categories” there is virtually no correlation at all (Spearman: 0,080**), which questions the consistency of the responses.

Within a future research it might be worthy to investigate whether this contradiction really exists and if yes, what is the reason for that?

Answers to Question 12 show that in 77% of the cases, respondents virtually always perform a written risk assessment on the occasion of the first audit (ratio of answers 4 to 6). Yet there is a remarkable segment that does not perform one even then

[158] E.g. there is a negative correlation between qualitative factor and quantifiability, but a positive one between qualitative factor and subjectivity etc.

(23%).[159] This latter result is rather surprising in consideration of the philosophy behind the professional standards claiming that what has not been documented during the audit is deemed nonexistent and not done.

It is clear however that also this result accords with Lukács's findings of 2008.

It may also be observed that **auditors are consistent in the performance of risk assessment with respect to the 'first and subsequent audits' dimension**, for in 68.9% of the subsequent audits (ratio of answers 4 to 6) they make a documented risk assessment, but 41.8% only makes a 'mental calculation'. These observations are corroborated by the values of the correlation indicators (very strong positive correlations).

It is also clear that those who document their assessments from the start do not tend to change their minds about the necessity of risk assessment later either. At the same time, there is a strong positive relationship between those who fail to document the risks in the first year of their engagement and then in the subsequent years. A medium strong correlation (Spearman: 0,564**) may be observed in case of those who work without documentation in the subsequent years and those who do not even consider it necessary to think over this factor.

Interestingly however, the respondent auditors do not differentiate concerning their procedure (documentation or lack of it) according to the importance of the engagements as in the case of both questions related to this issue (whether they make a written risk assessment or they perform an undocumented risk assessment only in case of an important engagement), a great number of the respondents did not agree with these assertions (70.1% and 76.1%, respectively is the ratio of answers 1 to 2). This tallies with the results of the discriminant analysis performed earlier.

[159] Meaning that in more than one fifth of the 1619 engagements covered by the sample, *no* written risk assessment has been prepared.

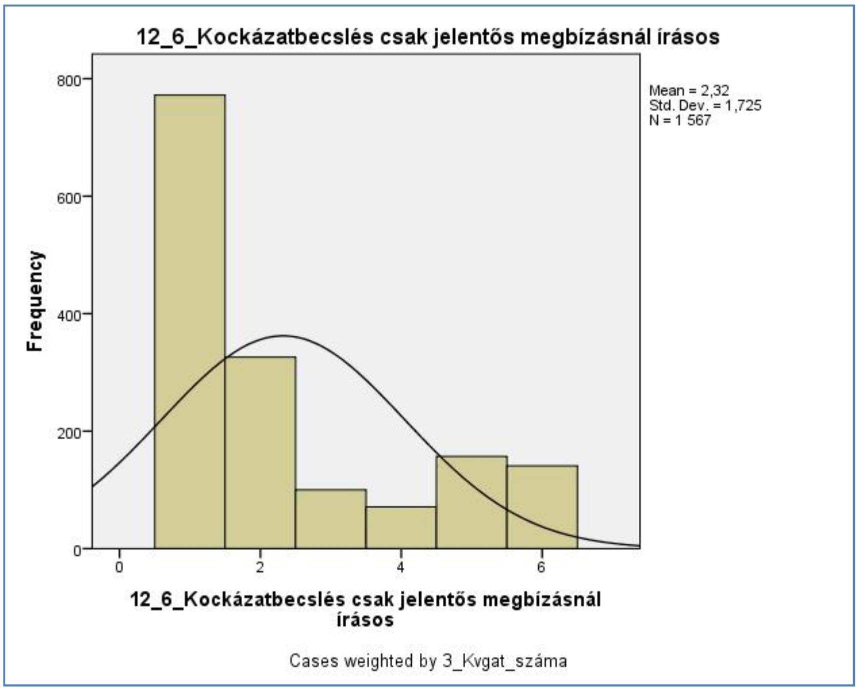

Figure 11: Written risk assessment only in case of significant engagements – the distribution of the responses

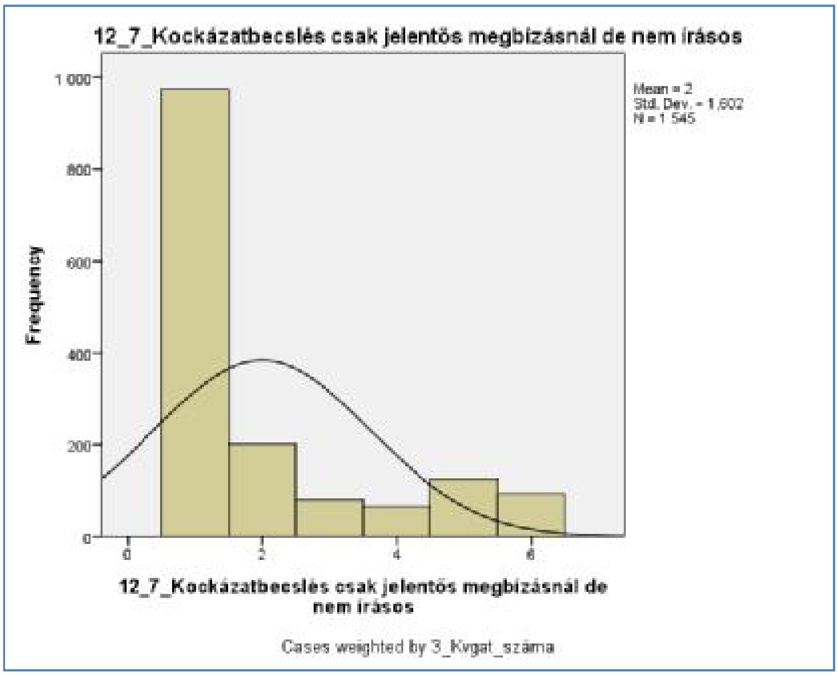

Figure 12: Risk assessment only in case of significant engagements but not in a written form – the distribution of the responses

Subsequently I analysed using a cross table analysis whether the general organisational circumstances of the auditing activity (from freelancers to the Big4) has any bearing on the documentation of risk assessment. While respondents working for the Big4–10 unequivocally rejected the idea of any form of lack of documentation there is a great number of auditors working independently or for smaller firms who opt for a non-documentational approach. 11.5% of the respondents working alone ***without*** assistants[160] think that there are cases when it is on the whole unnecessary to consider the risks. Based on the answers to the previous questions, it is not at all surprising that auditors working independently but ***with*** assistants[161] are profoundly against non-documentation: in this group only answers 1 and 2 (rejecting the idea) were selected. It logically follows from the above that those who do not consider it at all necessary to think about the risks will not be performing a risk based audit.

Based on the cross table analysis I stated that the organisational form plays an important role in risk assessment and its documentation. This result is supported in each case by the contingency coefficients and the Phi values.

Drawing on some subquestions to Questions 10, 11 and 12 I performed a hierarchical cluster analysis to reveal whether we may distinguish at least two separate groups of respondents with radically different ideas about audit risk, its role and importance. I performed the analysis on the following questions:

10/ When assessing audit risk I do not follow a formalised method, but I rather work on an intuitive basis.
11/ The assessment of audit risk is only an administrative (documentation) burden.
12/ When conducting audit engagements I consider risks in case of first year audits but not in a written form.
12/ When conducting audit engagements I consider risks in case of subsequent audits but not in a written form.
12/ When conducting audit engagements I do not think it is necessary to even consider risks in case of subsequent audits.

I reckon that the selected questions might give a good description of a certain attitude towards auditing. The elements of this attitude are: intuitiveness, lack of documentation, assignment of only a minor importance to risk assessment. I think it is a good point that these questions were mixed with others in the questionnaire,

[160] Designation in the related cross table: 1.
[161] Designation: 2.

which[162] prevented auditors from automatically giving the same kind of answers (those which they might think the researcher expects them to give) to the concentrated set of questions.

The obtained results only differed minimally, depending on whether I formed 2, 3, 4 or 5 clusters; therefore I finally performed the remaining analyses for two clusters (number of elements: 67 for [K1] and 37 for [K2]).

The distribution of respondents assigned to the larger cluster on the basis of their form of enterprise was as shown in the following table:

Cluster K1	Frequency	%	Valid %	Cumulative %
Individually	35	52.2	52.2	52.2
Individually with assistants	3	4.5	4.5	56.7
Smaller firm	18	26.9	26.9	83.6
Big 5-10	2	3.0	3.0	86.6
Big 4	3	4.5	4.5	91.0
Individually + smaller firm	3	4.5	4.5	95.5
Individually w/assis + smaller firm	1	1.5	1.5	97.0
Individually + Big 5-10	2	3.0	3.0	100.0
Total:	67	100.0	100.0	

Chart 6: Distribution of membership within Cluster K1 according to the organisational form

The distribution in the smaller cluster by the same lines was:

Cluster K2	Frequency	%	Valid %	Cumulative %
Individually	26	70,3	70,3	70,3
Individually with assistants	1	2,7	2,7	73,0
Smaller firm	8	21,6	21,6	94,6
Individually + smaller firm	2	5,4	5,4	100,0
Total:	37	100,0	100,0	

Chart 7: Distribution of membership within Cluster K2 according to the organisational form

162 To some extent, at least...

As a next step I examined the answers to the questions involved in the cluster analysis for both clusters separately. The following table shows the result (displaying the rate of answers typically agreeing with the assertions [values 4 to 6] regarding the individual questions analysed):

Assertion	K1	K2
10/ When assessing audit risk I do not follow a formalised method, but I rather work on an intuitive basis.	40.5%	15%
11/ The assessment of audit risk is only an administrative (documentation) burden.	72.9%	25.4%
12/ When conducting audit engagements I consider risks in case of first year audits but not in a written form.	91.8% (!)	1.5% (!)
12/ When conducting audit engagements I consider risks in case of subsequent audits but not in a written form.	81%	18%
12/ When conducting audit engagements I do not think it is necessary to even consider risks in case of subsequent audits.	27%	4.5%

Chart 8: The results of clustering

I consider that the results shown in the table speak for themselves. The analysis actually made it possible to isolate two well distinguished groups in the sample. The statistical validity of the results was verified by Mann-Whitney U tests that shown a significant difference between the two clusters in all five cases.

Considering, furthermore, that Cluster K2 predominantly contained independent auditors working without an assistant and the categories of the Big4–10 are not represented at all, we may venture to state that in fact a certain segment of Hungarian auditors (if its representatives answered truthfully to the questions, which I have no reason to doubt) does not perform risk-based audits. This is confirmed by the frequent occurrence of intuitiveness (see the results of H_1 as well), the perception of risk assessment as an administrative burden and consequently the lack of documentation both in the case of first and subsequent audits, and even the lack of consideration of such risks in a relatively important number of cases. **Based on the above results, I accepted Hypothesis H_2.**

13.6 Verification of Hypothesis H_3

H_3: In most of the cases, risk assessment is not performed on a component basis and the estimated risks are not quantified but qualitative categories (such as low, medium, high) are used.

The third hypothesis[163] intended to examine two methodological questions. In its first part I assumed that auditor do not assess audit risk on a component basis, in the second half that they basically work with qualitative categories.

The testing of Hypothesis H_3 proved to be more easily feasible than the previous ones, for a well delimited sequence of questions (Questions 13 to 15) was relevant to it.

Questions 13 and 14 examined the breakdown of the comprehensive audit risk into components in order to test the hypothesis. The result is that 60% of the respondents tend to assess risks by components (answers 4 to 6) and even in 62.8% of the cases, deal with inherent and control risk separately. The decisive majority of the respondents typically did not agree (answers 1 to 3) with the assertion that it does not really make sense to consider the components separately (77.4%), and was equally hostile towards the question challenging the reason to separate inherent and control risk (73.4%).

The consistency of the answers is confirmed in this case by the fact that a medium strong negative correlation exists between the answers to the questions about assessment by components and about the unnecessary nature of assessing by **components (Spearman: -0.262**).**

Using binomial test (P=0.5) I examined whether those who perform risk assessment on a component basis really have a majority among respondents. The obtained results

[163] The basic statistics related to the hypothesis are in Appendix 4., further detailed statistics are to be found in Appendix 7.

supported both the component based assessment and the separate assessment of inherent and control risks.

I examined the answers to the same questions on Cluster K1 (respondents basically in favour of risk based auditing), used for the verification of Hypothesis H_2 and found that the results show even more clearly that risk assessment is performed on a component basis.

In addition to the above, I also examined whether there is a relationship between the use of audit softwares for the purpose of risk assessment and the performance of the assessment on a component basis. There is a very weak negative correlation between the answers to the two variables (Spearman: -0,086**), which seems to be surprising provided that softwares usually make it possible to perform the assessment for each component separately.

Based on these observation findings, I had to reject the first part of Hypothesis H_3 stating that risk assessment is predominantly not performed on a component basis.

Regarding the decomposition of detection risk however, the rates are reversed: in 58.6% of the cases, it is typically not broken down to sampling and non sampling errors (answers 1 to 3), while in 22.6% of instances such a decomposition is always performed (answer 6). The rates are similar, albeit somewhat lower regarding the breakdown of detection risk into risk related to the test of details on the one hand and to the analytical procedures on the other hand. 51.9% of the respondents typically does not proceed this way, while 21.3% always does. The majority of the respondents (64.6%) prefer to *calculate* the detection risk (answers 4 to 6), while far less auditors (40.8%) opt for the *estimation* of the detection risk.

It would be worthwhile to give some further consideration to these latter findings, as 'mainstream' audit methodology stipulates that detection risk should not be estimated but calculated from the values of the formerly assessed risk elements. Compared to this the almost 40% rate of estimation may be indicative of the existence of an alternative methodological approach – an issue certainly worth examining in the framework of a future research.

Regarding the actual method of risk assessment (Question 15), most respondents (69.5%) refused to quantify risks (answers 1 to 3) [164] and 88.6% prefer to work with qualitative categories (answers 4 to 6) [165]. The hostility towards other methods was also high (86.1% for answers 1 to 3).

I asked the auditors working with qualitative categories an open question inquiring into the number of categories they typically use. The respondent using the largest number of categories gave 10 as an answer; the average number of categories (weighted by the number of engagements) was 2.52, with a standard deviation of 1.49. These results tally with the general practice of using 2 to 4 categories so the respondents were quite mainstream in this respect.

Based on the findings described above I accepted the second part of Hypothesis H_3, stating that auditors tend not to quantify the assessed risks but use a small number of qualitative categories instead.

To summarise the findings one may state based on the available sample that it is not true that risk assessment is not performed on a component basis, but at the same time it is proven that risks are not quantified but qualitative categories (such as low, medium, high) are used instead.

13.7 Verification of Hypothesis H_4

H_4: The majority of auditors performing a risk based audit use a transaction based approach.

The fourth hypothesis[166] was aimed to examine the practice of auditors who perform risk based audits and was searching for the answer to the question: what approach exactly is used to assess and estimate risks. The main difficulty during the inspection was not the testing itself but the judgement of the issue whether the received responses are consistent at all.

[164] The obtained result is also supported by a binomial test (P=0.7, p=0.05) i.e. the quantification of risks is indeed widely rejected.
[165] The obtained result is also supported by a binomial test (P=0.1, p=0.05) i.e. those who work with qualitative categories have a vast majority within the sample of respondents.
[166] The basic statistics related to the hypothesis are in Appendix 4., further detailed statistics are to be found in Appendix 8.

Question 16 of the questionnaire was fundamentally of theoretical nature inquiring into the auditors' general perception of comprehensive audit risk. From the answers obtained it appears that in the auditors' general views the value of comprehensive risk is determined by the values of the individual components (62.7% for answers 4 to 6), and they are strongly against the idea that the comprehensive risk would affect the value of the components (73.1% for answers 1 to 3)[167] and that its value is always identical (83.2% for answers 1 to 3). This latter response should follow logically from the answers in favour of the idea that comprehensive risk is determined by the components.

Another instance indicating the inconsistent nature of the answers (or the failure to completely understand the question) is however the fact that there is actually no relationship whatever (Spearman: 0.009) [168] between the answers given to the first and the third question ("audit risk is determined by the value of the risk components" and "audit risk is identical for every engagement", respectively) – although one would expect to find a strong negative correlation.

To get a better understanding of the problem, I tested the answers to Question 16 by comparing them to the first two subquestions of Question 14. It turned out that in case of a pair of logically corresponding questions there is a weak negative (!) correlation, though one would expect a strong positive correlation. So in case of the statements " & "Audit risk has a fixed value that determines the value of the individual risk components" the Spearman rank correlation has a value of 0.091**, while in the case of the remaining pair ("When assessing detection risk I estimate it..." & "Audit risk is determined by the value of the risk components") its value is -0.063*.

The existence of a medium strong positive relationship (Spearman: 0.349**) between the factors that the value of the risk is determined by the components and that its value is identical for each engagement tallies with preliminary expectations.

Another reason why the answers should be regarded as consistent (and why I consider that valid conclusions may be drawn from them) is that the results of the examined question (Question 16) are perfectly in agreement with the answers

[167] It should however be noted that the rate of answers 5 and 6 was 26.2%.
[168] The result is not significant.

relating to the estimation by components (Question 13) and to the distinction between inherent and control risk questions. From this it clearly appears that **in current Hungarian practice auditors typically build up comprehensive risk departing from the individual components, by sharply separating these and** (in accordance with the responses to Question 14) **do not even determine detection risk based on comprehensive risk**.

Here again I consider that we face a phenomenon worth examining in more depth in the framework of future research. Such a hypothetical research should try to find answers to several questions, including the problem how, in actual practice, auditors compose audit risk (or how they decompose it, if they prefer that approach).[169] *It would also be worthwhile to inquire into the exact extent of audit risk that auditors reckon within the course of their work for this would make it possible to directly confront international empirical research with Hungarian practice.*

The answers to the previous questions also tally with the result that in a majority of cases (66.7%; ratio of answers 4 to 6), the value of risk is influenced by the size of the audited business entity.

Auditors proved to be rather hostile to the idea of the existence of an ideal value of audit risk: 79.5% claims this is not equal to 5%, 81.4% (rate for answers 1 to 3) thinks it is not less than 5%, and 64.1% considers that such a value does not exist at all (rate of answers 4 to 6)[170].

I may venture to conclude that when answering this question the auditors confused inherent risk with comprehensive risk. This also becomes apparent from the answers to the questions concerning the values of the components and the influence exerted by the size of the client (bigger and more complex entity – presumably greater inherent risk) and is also reflected in the respondents' opposition to the existence of an approximately ideal value of audit risk (for inherent risk is by nature

[169] We are actually returning to the issue first proposed for consideration by Cushing and Loebbecke in 1983, i.e. the direction of the relationship between risk components and risk. On the topic, see the explanations hereinabove.

[170] However, 23.4% thinks that such an ideal value exists (rate for answer 1) – and actually these respondents think correctly. Although this value would not be 5%, as insinuated by the questionnaire, but 0%, which is unfortunately unreachable in practice.

uncontrollable as opposed to comprehensive risk, which may be controlled through the detection risk).

Answers to Question 17 also draw up a very interesting picture. 78% of the respondents (answers 4 to 6) claim to depart from the client's business risks; 87.4% depart from the transactions actually enacted by the client (there is a medium strong positive relationship between the answers to these two questions: Spearman: 0.430**). It seems that part of the respondents failed to recognise in the case of these two questions that these assertions are supposed to be mutually exclusive or as an alternative explanation they do mix these two approaches.

The big picture did not change much when I applied the same analysis to Cluster K1, set up previously (the cluster of those who assess risks). Here I obtained an 80.3% and an 85% result (rate of answers 4 to 6 respectively).

It may therefore be stated both on the basis of the entire sample and of a subsample thereof that the transaction based approach is more widely accepted and applied; yet this does not preclude the parallel existence of a business risk based approach.

I examined the same problem without weighting with the number of audited entities. This way the rate of auditors who typically agree with the reliance on business risks (answers 4 to 6) was 73.4%, and that of auditors typically in favour of the transaction based approach was 88.9%. Here again, a medium strong positive correlation may be observed between the answers to the two questions (Spearman: 0.423**).

When analysing the answers to the remaining questions it turns out that 72.1% of the respondents (answers 4 to 6) actually make use of the results of risk assessment; however, 40.8% (answers 4 to 6) think that risk assessment only exerts a minor influence on the performance of the audit because of the fix audit programmes. It may also be observed that a weak positive relationship exists between the reliance on the results of risk assessment and the answers given to both of the questions related to the audit approach (business risk or transaction based; Spearman: 0,259**, and 0,238** respectively), although one would expect to obtain a strong positive correlation since what is the aim of the applied approach if its results are not used later.

We may therefore conclude that in the majority of cases, auditors do use a business risk or transaction based approach; yet they are far less inclined to rely on the results of the assessment because the rigidity of the prescribed audit programmes frequently deter them from this.

As earlier results did not allow me to answer the question whether the transaction based or the business risk based approach is the more widespread among those who perform a risk based audit I turned to factor analysis.

When doing so, the idea was to find a significant difference between the use of the results of these two risk assessment methods in any of the possible fields (planning, performing, evaluation of the audit etc.), then the method that could be linked more to use will be the one that is actually applied by the respondents, despite the fact that the responses are quite similar (though the transaction based approach always prevailed) with respect to these two more or less contradicting methods.

The factor analysis was a principal component analysis using the varimax rotation method and Kaiser normalisation. The analysis resulted in two factors; the outcomes are listed in Appendix 8. These also demonstrate that the preconditions for using factor analysis were fulfilled in respect of the selected variables (subquestions). These were the following:

When conducting an audit I...

- 17_1: base my approach on the business risks of the auditee
- 17_2: base my approach on the transactions that took place by the auditee
- 17_3: do use the results of risk assessment.

I use the results of risk assessment...

- 18_1: for audit planning.
- 18_2: when conducting the audit tests.
- 18_3: for evaluation.
- 18_4: to plan next year’s audit.

The component graph and the rotated component matrix were as follows:

Rotated component matrix

Statements	Component	
	1	2
18_2	,955	,085
18_3	,918	,049
18_4	,894	,185
18_1	,881	,035
17_3	,858	,040
17_2	-,002	,853
17_1	,143	,821

Chart 9: Component matrix of the factors for testing Hypothesis H_4

The resulting first factor contains the different fields of application, while the second the approaches. The main component of the application factor is the conduction of the audit, while that of the approach factor is the transaction approach.

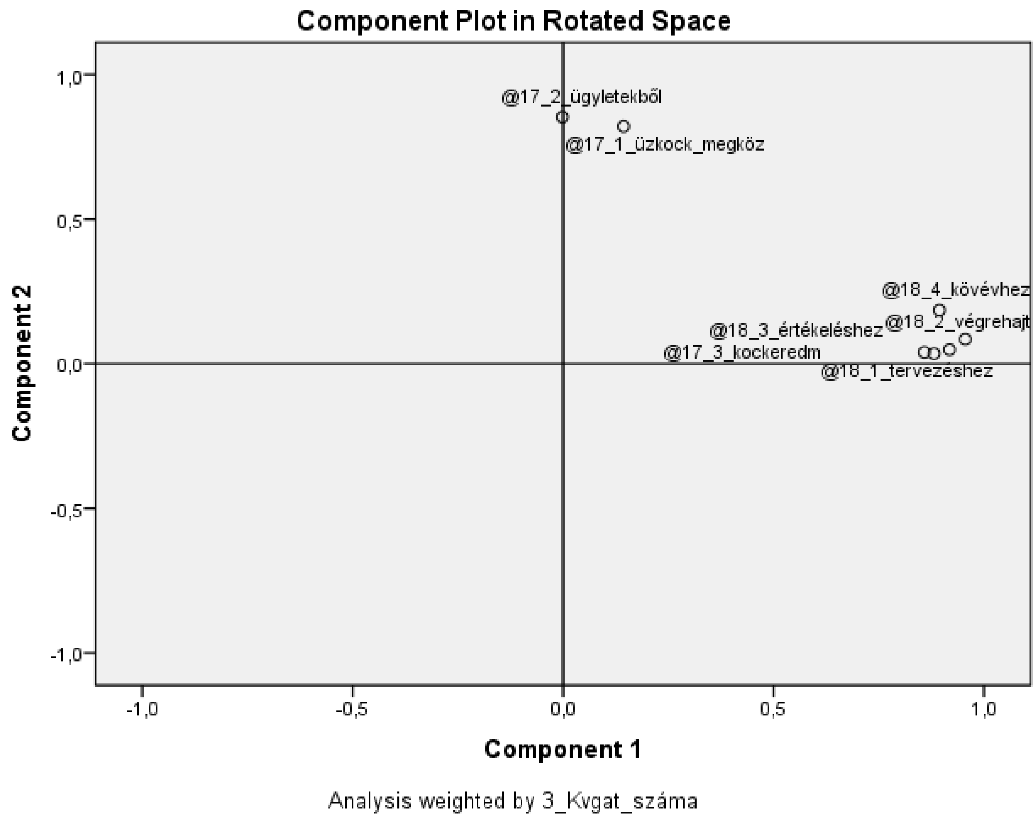

Figure 13: The component plot of the factor analysis to test hypothesis H4

Visibly, the factor analysis also failed to bring any the methods of risk assessment and any field of use into the same factor. Consequently, this analysis does not allow

us to establish unequivocally which approach is actually privileged by the respondents. However, based on the matrix of factor weights the transaction based approach seems to play a more important role in the use of the results of the risk assessment than the business risk approach.
In order to finally decide on the issue I ran a Friedman test. Its results revealed that the transaction based approach has higher average rank. The obtained results were checked by running a Wilcoxon signed ranks test that also confirmed at a significance level of 0.015 the primacy of the transaction based approach.

Therefore, based on the tests performed I accepted Hypothesis H_4.

13.8 Verification of Hypothesis H_5

H_5: Hungarian auditors who carry out a formal audit risk assessment do not use its results in the course of the performance of the audit engagement.

The fifth hypothesis[171] related to the utilization of the results of risk assessment.
In Question 18, I examined the use made of the results of the risk assessment on the set of the respondents in Cluster K1, weighting by the number of audit engagements. It should be noted that the second subquestion to Question 11 essentially reformulated this question, and may thus be considered as a control question.

The answers draw up a very clear picture. It appears that auditors usually performing risk based audits typically tend to use the results of their risk assessment (rate of answers 4 to 6) for planning (97%), for implementation (97.4%), for the evaluation of the audit results (89.7%), and also for planning in the subsequent year (87.8%).[172]
Furthermore, there is a very strong positive correlation between the answers given to these four subquestions and those given to the control question (second subquestion to Question 11: “Audit risk is something that fundamentally influences the audit process.”) in each case. Between the answers to the question concerning lack of use (fifth subquestion to Question 18) and to the remaining questions, a medium strong negative relationship existed in each of the cases.

[171] The basic statistics related to the hypothesis are in Appendix 4., further detailed statistics are to be found in Appendix 9.
[172] The results are verified by binomial tests (P=0.2) as well.

Question 19 inquired to what extent the audit of the previous year influences the risk assessment in the next year. The answers to the individual assertions show that auditors are overwhelmingly hostile to the assertion that previous year's opinion does not influence the next year's risk assessment (94.9% for answers 1 to 3). For the majority the subsequent year's assessment is typically always affected by the fact that a qualified opinion had been issued in the previous year (84.8% for answers 4 to 6); however, only 47.8% answered (4 to 6) that only a qualified opinion of the immediately preceding year has an impact on the estimated risks of the subsequent year. Views are somewhat more divided on the point whether detected fraud exerts an influence on next year's work. 58.4% typically agree (answers 4 to 6), which is queer, to say the least, in respect of the answers to the second subquestion, as there is a weak negative (!) relationship between the answers to the two questions (Spearman: -0.162**). This may probably be traced back to the misinterpretation of the question[173].

To verify the answers I ran a Friedman test a pairwise Wilcoxon signed ranks test. Both tests confirmed that a statistically significant difference exits only related to use/not use (in favour of use), but related to the field of use (planning, implementation, evaluation etc.) no differences could be discovered.

From the above, it seems to be clear that auditors claim to heavily rely on the results of the risk assessment in every respect; **therefore Hypothesis H_5 had to be rejected.**

Nevertheless, I consider that the picture outlined on the basis of the analytic work performed and the data collected may serve as a basis for further research. For instance, it would be worthwhile to examine exactly what form this wide range of use of risk assessment results takes. It would also be practical to study the specific changes in the risk assessments and in the audit programmes occurring due to the results of the last year's audit.

[173] Actually, the question did not ask whether *exclusively* the presence of the risk of fraud exerts such an influence, but if the risk of fraud, *in general*, does so. Based on this and on the answers to the previous question, we would expect a strong positive correlation.

13.9 Verification of Hypothesis H_6

H_6: Hungarian auditors – in accordance with professional standards and international literature – identify items containing accounting estimates as significant sources of risk.

The last risk related question of the survey (Question 27) was aimed at preparing the already mentioned risk map.[174] Respondents had to indicate whether they find a certain area of the balance sheet (and the related parts of the I/S) or a certain issue (such as taxation or the evaluation of the going concern assumption) risky if they occur, and to what extent do they think they are risky and what is the reason for this riskiness: error or fraud.

First I examined which areas auditors consider to be risky by the auditors. I considered as risky those areas by which the median of the answers was 3 or higher.

The following table shows the list of the areas the respondents considered to be risky:

With respect to all engagements	
Tangibles in general	**Accruals and prepayments in general**
Revaluation of tangible	**Valuation of accruals and prepayments**
Depreciation of tangibles	**Provisions in general**
Impairment of tangibles	**Valuation of provisions**
Inventories in general	**Liabilities in general**
Write down of inventories	**Valuation of liabilities**
Receivables in general	**Taxation related issues**
Valuation of bad and doubtful debts	**Going concern principle**
Write down of investments	

Chart 10: The list of risky areas

As it appears from the table that out of the generally 'estimate prone' areas only the amortization, impairment and revaluation of intangibles and fair valuation is missing. All the other areas involving estimates were identified by the participants as risky.

[174] The basic statistics related to the hypothesis are in Appendix 10., further detailed statistics are to be found in Appendix 11.

The absence of the aforementioned areas may be explained by the fact that the amortization of intangible assets rarely represents a critical issue for an average company (both in terms of accounting and taxation) while revaluation and fair valuation rarely occur in annual reports based on the Hungarian Act on Accounting.

Extremely risky areas (median 4 or 5) are inventories, receivables, liabilities and as a more or less Hungarian specialty, the field of taxation.

The next table shows the major sources of risk in the above listed areas (error or fraud has a higher median) and whether the difference between error and fraud as a source of risk is statistically significant or not.

Areas previously identified as risky	Source of risk?	Significant difference?
Tangibles in general	error	yes
Revaluation of tangible	error	yes
Depreciation of tangibles	error	yes
Impairment of tangibles	error	yes
Inventories in general	error	yes
Write down of inventories	error	yes
Receivables in general	error	yes
Valuation of bad and doubtful debts	error	yes
Write down of investments	error	yes
Accruals and prepayments in general	error	yes
Valuation of accruals and prepayments	error	yes
Provisions in general	error	yes
Valuation of provisions	error	yes
Liabilities in general	error	yes
Valuation of liabilities	error	yes
Taxation related issues	error	yes
Going concern principle	error	yes

Chart 11: The source of risks and the tendency of risk sources

We may establish that error as a source of risk dominates absolutely and the difference to fraud is always significant. So I reached the following conclusions:

- risky areas include almost all those that involve accounting estimates,
- fraud as a main source of risk does not appear (though it is of course present as a source)
- inventories, receivables, accruals, prepayments and provisions are the critical areas.

Based on the above I accepted Hypothesis H_6.

I consider that future research should examine the possible reasons – in accordance with international literature – for the fact that the risk model performs more weakly in the case of fraud than in the case of errors; also, the items considered by auditors as risky in relation to the different areas should be further specified and detailed. In my opinion such research would be very useful not only for the auditing profession in the strict sense of the word (CPAs), but also for the entire audit profession.

Further research could also result in more insight into one of the most surprising findings of this research, namely that fraud nowhere appears as a primary source of risk (though for example in the case of taxation one would expect that).

13.10 Summary of conclusions

Based on the testing of the hypotheses through a sample of professional Hungarian auditors I managed to form a view on their perceptions and practice related to audit risk. **As it was expected the research according to its investigative nature raised as many new questions as many it managed to answer and as such a bunch of relevant new research topics have emerged.**

The results of the research carried out are summarised in the below points (in brackets the number of the hypothesis that led to the conclusion):

Based on the analysis of the responses it turned out that the Hungarian profession shows the signs of duality in many aspects, let it be the general circumstances of the activity or the methods used (working papers, publications of the Chamber etc.).

It could be clearly seen that the companies and auditors without international roots do not build international connections. It also became evident that auditors of larger firms – mostly the Big 4 companies – have a larger number of engagements per auditor than individual auditors or those who work at smaller companies.

It also turned out that auditors do not make an exception with respect to the methods used to assess audit risk: they use the same methods, guides as they use generally.

It could be stated that the use of audit software brings auditors towards formalism. This phenomenon could not be discovered by those mainly using printed working papers.

A significant difference could clearly be seen between auditors working individually and those working with assistants related to the level of intuitivism pursued in their work. The presence of assistants and the fact of working in a workgroup are likely to play a role in this. *Revelation of the effects of these factors could definitely be subject to future research.*

Based on the analysis performed it could be stated that the sales revenue of the auditees has no clear impact on the level of intuitivism in the work of auditors.

The fundamental perception of auditors concerning audit risk (whether it is a quantitative or a qualitative category) is not completely consistent.

In contrast to this, auditors are consistent in risk assessment concerning first and subsequent audits: those who prepare written risk assessment in the first engagement are likely to do so in subsequent periods as well, while those who do not do so are likely not to do so in the future either. This latter group is also likely to completely skip risk assessment.

After stating that there is a part of the Hungarian auditor profession that does not perform risk based audit, it also turned out that those who do perform a risk based audit assess risk on a component basis and work with qualitative categories.

An interesting instructive of the question researching detection risk is that the profession is quite divided concerning its treatment. *The different existing methodological approaches in this field would be worth to be researched in the future.*

Based on the responses received it turned out that the respondents build up the comprehensive audit risk from its components rather than decomposing it to separate components. *The practice and methodology applied here could be subject to future research.*

I also managed to conclude that auditors use the business risk or the transaction based approach in most of the cases, but at the same time they are lot less determined in using the outcomes of these methods. Most likely the rigidity of the prescribed working programmes hijacks them from doing so. I managed to prove that the transaction based approach plays a larger role in the audits of the respondents than the business risk based approach.

It also became clear that those auditors who follow a risk based approach do utilise the results of the risk assessment – both in the given and in subsequent years. *What this utilisation actually covers, and what effect the previous year's audit has on the next year's audit risk assessment and the generally followed working programme could be subject to future research.*

Finally it also could be proven that accounting estimates are identified as sources of risk almost without exception irrespectively of the accounting system of the financial statements being audited. It was also discovered that auditors mostly identify errors as the cause behind risk, while they do not devote this role to fraud. *Further research could reveal the actual causes of riskiness and the relationship of errors and frauds.*

14 Final reflections on a comprehensive risk model

In my dissertation, I tried to introduce the major theories and regulations pertaining to the concept of audit risk and to outline some of the empirical and theoretical research made in this field.

What lessons may one learn from these?

Principally perhaps what the motto to this dissertation also states: basically, all models are wrong, but some are useful. Consequently, it would be impossible to select a winner among the many parallel approaches in the competition for the 'perfect model'.

Practically all professional or scientific publications in this field, issued in the last three decades, arrive to the conclusion – or at least mention the fact – that the present risk concept used by the standards has many deficiencies and it is high time for a comprehensive risk model to be created. However, this model has not been created up to this day (2013).

The question is why this could not be achieved; what such a comprehensive model should be able to do; and most of all what the auditor should be able to achieve through its use.

Allen *et al.* (2006) consider that a possible reason for this failure lies in the positivist approach of the researchers active in the academic field: there is not enough normative research and so it fails to reach the different regulators.

In Hungary, the situation is somewhat less favourable inasmuch as not even a real forum, a dedicated interface of accounting research exists – neither for the positivist nor for the negativist one. We may only hope that more people will recognise this deficiency and take steps towards the foundation of a Hungarian *Accounting Review*.

Regarding the visionary 'perfect' model: let us first make it clear that the definition of 'audit risk' is 'ready'. This concept means the risk that the auditor issues an incorrect opinion on the financial statements he/she audited. It would be perhaps worthwhile to take a look at some other professions. The auditor needs to set up diagnoses – just like the mechanic or the physician to give two distant examples.

They operate with risks similar to the auditors' and what is more, a mistake may even be fatal in their case. What does the mechanic do? He tries to check as many parts of the car as possible, looks out for potential problems, with special regard to the known weaknesses of the given type[175]. At the same time he keeps himself up to date concerning the new brands and makes. What does the physician do? He performs comprehensive and detailed examinations, tests for diseases (especially for the most frequent ones), continuously takes part in mandatory and optional professional trainings. Whichever profession we look at, the knowledge of the potential errors (knowledge of the industry) and professional training are indispensable. One may say that while two cars may have the same problems and two patients may have the same diseases, which makes them easier to cure no two identical audits exist.[176] This is true in a way, yet the number of possible transactions is finite, which may give hope.

We may state that in the audit profession, it is practically impossible to do high quality work (i.e. successful in both the professional and the business sense) without a profound knowledge of the client's operation. Based on risk evaluation and on the knowledge of the business activity and of the factors influencing operation, auditors may determine the risk of material misstatement which will be decisive in the subsequent phases of auditing, in the identification of the critical areas and the audit objectives and in the preparation of the audit plan. It may also be useful in assessing whether the principle of going concern is still valid and in settling any possible doubts in this respect.

To continue the train of thought initiated in connection with the definition of risk: we should not forget that this risk is an objective reality. It was part of every audit even when the concept did not exist at all. Therefore, I consider that in relation to a model intended to be comprehensive at least the following points should be cleared:

- What purpose does the model serve? Does it intend to recognise, detect, decompose risk or control it and decrease it through being used in the

[175] See: risk map.
[176] NB: The vaccination against the flu virus of last year will not be certain to work for the flu strains of this year!

planning phase?[177] Regarding this latter objective – no matter how appealing it might appear – we have to bear in mind that our opportunities are limited and it is impossible to reduce risks to zero.

- What exactly should the definition of risk contain? Should it also cover the risk that the auditor rejects a report which is otherwise devoid of material misstatements? Should it cover the auditor's business risks? We know that the present standards give 'no' as an answer to these questions but like any other rules made by man they are not impossible to modify.

- Should the risks due to accounting estimates and the risk of fraud be explicitly in the model? We know that at present these form part of the risk *in an implicit manner* and what is more, the compiler of the standards identified both of them as significant risks. At the same time we could also see that many researchers opt for the explicit appearance of these risks and give many reasons for doing so.

- What form should risk be expressed in? Should we strive to quantify it numerically with some method even if we know that this will necessarily be subjective? Or should we content ourselves with qualitative categories, even if we know that these have little explanatory power and are difficult to verify? I think that this question should be addressed in detail after having set the objectives and defined the contents.

Anyhow, research is unimaginable without the cooperation of the audit profession and the researchers. This should principally be incarnated in the form of data provided for the researchers. Hungarian experience in this field has been rather unpromising so far. The willingness to respond is low, the practical use of research is at least questionable.

Based on feedback from the auditors having filled in this questionnaire, I wish to draw attention to the fact that according to about one third of them the willingness to respond would be substantially increased if the participants received credit points usable for the purposes of compulsory professional training and another third think it

[177] Allen *et al.* (2006) formulates a similar idea when they write that the audit risk model has proved to be efficient as a planning tool, but does not work as a precise mathematical formula.

probable that this would be beneficial regarding the response rates. Only 15% think that this arrangement would have no or hardly any effect.

In your opinion could the willingness of auditors be increased to participate in research similar to the present one if the participants were to receive training credits for their cooperation?

	Frequency	%	Cumulative %
No response	1	1,0	1,0
Not at all.	8	7,7	8,7
Yes, significantly.	33	31,7	40,4
I cannot judge it.	21	20,2	60,6
Perhaps yes.	34	32,7	93,3
Perhaps not.	7	6,7	100,0
Total	104	100,0	

Chart 12: The distribution of answers to Question 28

We are only partly consoled by the fact that the situation does not appear to be much more cheering in the international context either. In the words Allen *et al.* (2006)*: „…auditing research cannot proceed without data…In the current litigious environment, the audit firms seem less willing to provide the information researchers need to assess audit efficiency and effectiveness. The result is a loss to the public good…”* (Allen et al., 2006; p. 171.)

Can we afford such a loss?

Acknowledgements

„…I have fought a good fight, I have finished my course…"

The writing of a dissertation is a course one has to finish alone, just as the sprinter is alone once the race has started. But as there is a whole professional team behind the runner the writer of the dissertation is also helped by many.

First of all I must express my gratitude to my supervisor, Dr. János Lukács head of the Financial Accounting Department, who did not allow me to let that course.

I am also grateful to my colleague László Bary, who has spent lots of energy and time to help me in the preparation and improvement of the questionnaire and gave me lots of useful advice regarding the empirical research.

In the same manner I express my honest gratitude to my other colleague Dr. László Péter Lakatos who reviewed the final version of the dissertation and gave me several useful pieces of advice to improve the work.

Professor Dr. Rezső Baricz with his useful advice helped the completion of the thesis and the questionnaire.

But not even their help would have been enough, if my wife, Bori had not helped me, taking away all the burdens of everyday life off my shoulders and holding back the two little saboteurs Tomó and Peti.

"And if any man thinks that he knows anything, he knows nothing yet as he ought to know."I do hope the little knowledge incorporated into this dissertation might help sometimes somebody to achieve a higher level of knowledge.

Appendix 1 – Cover Letter

BUDAPESTI CORVINUS EGYETEM

Magyar Könyvvizsgálói Kamara

Request for participation in research

Dear Auditor,

The Department of Financial Accounting and the Department of Management Accounting of our university, the Corvinus University of Budapest, in close cooperation with the Chamber of Hungarian Auditors are the prestigious workshops of theoretical research and practical development of accounting and auditing. It is in this scope that we would like to utilize your methodological experience and practice. Please spare 25 to 30 minutes to complete the questionnaire referred to hereunder.

Herewith we kindly ask you to provide assistance in a research project undertaken in collaboration between the University and the Chamber, which examines the risk of auditing and the subject of estimation and valuation in an anonymous and non-retraceable manner. We are obliged to signal that the data provision is not mandatory but your response will greatly contribute to the research, therefore we are counting on your cooperation.

When completing the questionnaire it is essential that we are interested in the practice adopted during the auditing of financial statements of 2011 and the conclusions drawn thereupon. If you do not know the exact data for any question, *please provide an estimate*. Your expert estimation is greatly appreciated.

The data obtained will be used in an aggregate form and they will be processed using statistical methods; the questionnaire does not enable individual identification.

For the sake of easy completion and processing of the questionnaire, as well as ensuring anonymity, you can access it and enter your answers by clicking on the internet address below. All you need to do is click on the link below and you can start responding. To enable us to complete the research in due time please submit your response by 15th September 2012 at the latest.

PASSWORD required for completing the questionnaire (all uppercase characters, written together): MKVK12

Link to access the questionnaire:
http://www.uni-corvinus.hu/szamvitel/bkae_tsz.php?id=99

Should you have any question, we will be glad to answer them. In this case please email us at szamvitel@uni-corvinus.hu or call our Faculty at 06–1–482–5040 (landline) or 06-30-422-59-79 (mobile).

If it is any easier for you, we can also mail you the questionnaire in paper form with a pre-stamped response envelope. Just let us know at one of the above contacts where we should mail you the letter.

Thanking you in advance, your collaboration and assistance is greatly appreciated.

Budapest, 25 July 2012

Dr. Rezső Baricz
professor emeritus
Founding Vice-President of the
Association of Hungarian Auditors

Dr. János Lukács
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President of the Chamber of Hungarian
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Dániel Máté Kovács
Assistant Professor
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Gergely Mohl
Assistant Professor
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Appendix 2 – The Questionnaire

Questionnaire

(Participation is voluntary and anonymous)

Please, answer the questions based on the audits of 2011 financial statements.

General questions

1. Please indicate with an 'x' in what form you have conducted audits in 2011? *(more than one answer may be chosen)*

Statement	
Individually without assistants	
Individually with assistants	
Partner or employee of a smaller audit firm (cooperation of more auditors)	
As a partner or employee of a mid tier firm or network („Big 5- Big10")	
Big 4 firm	

2. Are you or your firm a member of any international audit networks?

   o YES o NO o NO, but we are planning membership or it is already in progress

3. For how many audit engagements were you responsible in person in the 2011 business year? ___________pcs

4. What percent of your clients is a...

Statement	%
General profit oriented company	
Financial institution, insurance company	
Public sector organisation	
Other organisation (e.g. condominium, foundation, bureau of attorney etc.)	

5. What percent of your general profit oriented company clients has an...

Statement	%
annual sales revenue below HUF 200 million	
annual sales revenue between HUF 200 million – 500 million	
annual sales revenue between HUF 501 million – 1.000 million	
annual sales revenue between HUF 1.001 million – 2.000 million	
annual sales revenue above HUF 2 billion	

6. What percent of your financial institution and insurance company clients is a(n)...

Statement	%
Large bank (total assets >HUF 1.500 billion)	
Small and medium bank (total assets < HUF 1.500 billion)	
Other financial institution, insurance company	

7. The financial statements you audit are based on the...

Statement	%
Hungarian Act on Accounting and related government decrees	
IFRS	
US GAAP	
Other	

The following questions are related to audit risk and risk assessment of 2011. You can answer the questions by clicking on the chosen value of the "Rating" column. If you wish to change your answer later you can do that before submitting the questionnaire. Please evaluate each statement (row) one by one.

8. Please rate the following statements.
   (1: not at all, never...6: always)
   For the purpose of conducting my audit engagements I use...

Statement	Rating
a written audit manual compiled by me or my firm.	1 2 3 4 5 6
an off- the-shelf working paper package.	1 2 3 4 5 6
a customised, updated working paper package.	1 2 3 4 5 6
the guidebooks and manuals issued by MKVK.	1 2 3 4 5 6

9. Please rate the following statement.
   (1: not at all, never...6: always)
   For the purpose of conducting my audit engagements I use...

Statement	Rating
an audit software.	1 2 3 4 5 6

10. Please rate the following statements.
   (1: not at all, never...6: always)
   When assessing audit risk I...

Statement	Rating
use a written audit manual compiled by me or my firm.	1 2 3 4 5 6
use an off- the-shelf working paper package.	1 2 3 4 5 6
use a customised, updated working paper package.	1 2 3 4 5 6
use the guidebooks and manuals issued by MKVK.	1 2 3 4 5 6
use an audit software.	1 2 3 4 5 6
do not follow a formalised method but rather I work on an intuitive basis.	1 2 3 4 5 6
decide based on the actual engagement whether I follow a written methodology or I work on an intuitive basis.	1 2 3 4 5 6

11. According to your views the assessment of audit risk is...
   (1: I do not agree with the statement ...6: I completely agree with the statement)

Statement	Rating
an important planning tool.	1 2 3 4 5 6
something that fundamentally influences the audit process.	1 2 3 4 5 6
only an administrative (documentation) burden.	1 2 3 4 5 6
important primarily with larger auditees.	1 2 3 4 5 6
to be skipped with smaller auditees.	1 2 3 4 5 6
well quantifiable („can be calculated").	1 2 3 4 5 6
rather descriptive, a qualitative factor.	1 2 3 4 5 6
objective.	1 2 3 4 5 6
subjective, an issue of professional judgement.	1 2 3 4 5 6

12. Please rate the following statements.
(1: I never act like this… 6: I always act like this)
When conducting audit engagements I…

Statement	Rating
prepare a written risk assessment in case of first year audits.	1 2 3 4 5 6
consider risks in case of first year audits but not in a written form.	1 2 3 4 5 6
prepare a written risk assessment in case of subsequent audits.	1 2 3 4 5 6
consider risks in case of subsequent audits but not in a written form.	1 2 3 4 5 6
do not think it is necessary to even consider risks in case of subsequent audits.	1 2 3 4 5 6
only prepare a written risk assessment in case of significant engagements.	1 2 3 4 5 6
only consider risks in case of significant engagements but not in a written form.	1 2 3 4 5 6

13. Please rate the following statements.
(1: I never act like this/I do not agree… 6: I always act like this/I completely agree)
When assessing risks…

Statement	Rating
I assess the risk components separately.	1 2 3 4 5 6
I assess inherent and control risks separately.	1 2 3 4 5 6
I assess inherent and control risks jointly.	1 2 3 4 5 6
there is no reason to separate the risk components.	1 2 3 4 5 6
there is no reason to separate the inherent and control risk.	1 2 3 4 5 6

14. Please rate the following statements.
(1: I never act like this … 6: I always act like this)
When assessing detection risk I…

Statement	Rating
separate sampling and non-sampling risks.	1 2 3 4 5 6
separate the risk of test of details and the risk of analytical procedures.	1 2 3 4 5 6
calculate it as a function of inherent, control and audit risks.	1 2 3 4 5 6
estimate it as a separate risk component.	1 2 3 4 5 6

15. Please rate the following statements.
(1: I never act like this … 6: I always act like this)
I…

Statement	Rating
estimate risks (e.g. as a percentage).	1 2 3 4 5 6
describe risk using qualitative categories (e.g. low, middle, high).	1 2 3 4 5 6
describe risk otherwise.	1 2 3 4 5 6

If you work with qualitative categories (as well), please indicate the number of categories you apply: ________________

16. Please rate the following statements.
(1: I do not agree with the statement …6: I completely agree with the statement)
Audit risk…

Statement	Rating
is determined by the value of the risk components.	1 2 3 4 5 6
has a fixed value that determines the value of the individual risk components.	1 2 3 4 5 6
is identical for every engagement.	1 2 3 4 5 6
is influenced by the size of the auditee.	1 2 3 4 5 6
has an optimal value, which is 5%.	1 2 3 4 5 6
has an optimal value below 5%.	1 2 3 4 5 6
has no optimal value.	1 2 3 4 5 6

17. Please rate the following statements.
    (1: I never act like this … 6: I always act like this)
    When conducting an audit I…

Statement	Rating
base my approach on the business risks of the auditee.	1 2 3 4 5 6
base my approach on the transactions that took place by the auditee.	1 2 3 4 5 6
do use the results of risk assessment.	1 2 3 4 5 6
rarely let risk assessment have an impact on the actual audit work (e.g. because I have a fixed audit programme I have to go through anyway).	1 2 3 4 5 6

18. Please rate the following statements.
    (1: I never act like this … 6: I always act like this)
    I use the results of risk assessment…

Statement	Rating
for audit planning.	1 2 3 4 5 6
when conducting the audit tests.	1 2 3 4 5 6
for evaluation.	1 2 3 4 5 6
to plan next year's audit.	1 2 3 4 5 6
I do not use the results of risk assessment.	1 2 3 4 5 6

19. Please rate the following statements
    (1: I do not agree with the statement …6: I completely agree with the statement)
    Previous year's auditor's opinion…

Statement	Rating
has no effect on next year's risk assessment.	1 2 3 4 5 6
always has an effect on next year's risk assessment.	1 2 3 4 5 6
only has an effect on next year's risk assessment if the opinion was a modified one.	1 2 3 4 5 6
only has an effect on next year's risk assessment if the risk of fraud is present.	1 2 3 4 5 6

The following questions are related to valuation. You can answer the questions by clicking on the chosen value of the "Rating" column. If you wish to change your answer later you can do that before submitting the questionnaire. Please evaluate each statement (row) one by one.

20. How frequently did you encounter revaluation (HAA 58 (5)-(8)) in case of the below listed asset elements during your 2011 audits when auditing financial statements based on the Hungarian Act on Accounting (HAA)?
    (1: no occurrence… 6: present everywhere)

Statement	Rating
Intangible assets (rights and intellectual property)	1 2 3 4 5 6
Land and buildings	1 2 3 4 5 6
Machinery	1 2 3 4 5 6
Fixtures and fittings	1 2 3 4 5 6
Breeding stock	1 2 3 4 5 6
Long-term investments	1 2 3 4 5 6

21. How frequently did you encounter fair valuation (HAA 59/A-F §§) in case of the below listed asset elements during your 2011 audits when auditing financial statements based on the Hungarian Act on Accounting?
    (1: no occurrence… 6: present everywhere)

Statement	Rating
Shares	1 2 3 4 5 6
Securities embodying creditor relationship	1 2 3 4 5 6
Receivables	1 2 3 4 5 6
Derivatives	1 2 3 4 5 6

22. How frequently did the entities listed below and classified according to the amount of their sales revenue apply revaluation or fair valuation in their financial statements based on the Hungarian Act on Accounting?
(1: no occurrence… 6: present everywhere)

Statement	Revaluation	Fair valuation
Companies with a revenue below HUF 200 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with a revenue of HUF 200 – 500 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with a revenue of HUF 501 – 1.000 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with a revenue of HUF 1.001 – 2.000 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with a revenue above HUF 2 billion	1 2 3 4 5 6	1 2 3 4 5 6
Financial institutions, insurance companies	1 2 3 4 5 6	1 2 3 4 5 6
Public sector organisations	1 2 3 4 5 6	1 2 3 4 5 6
Other entities	1 2 3 4 5 6	1 2 3 4 5 6

23. How frequently did the entities listed below and classified according to the amount of their total assets apply revaluation or fair valuation in their financial statements based on the Hungarian Act on Accounting?
(1: no occurrence… 6: present everywhere)

Statement	Revaluation	Fair valuation
Companies with total assets below HUF 100 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with total assets of HUF 100 – 250 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with total assets of HUF 251 – 500 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with total assets of HUF 501 – 1.000 million	1 2 3 4 5 6	1 2 3 4 5 6
Companies with total assets above HUF 1 billion	1 2 3 4 5 6	1 2 3 4 5 6
Financial institutions, insurance companies	1 2 3 4 5 6	1 2 3 4 5 6
Public sector organisations	1 2 3 4 5 6	1 2 3 4 5 6
Other entities	1 2 3 4 5 6	1 2 3 4 5 6

24. What was the reason for the APPLICATION of revaluation or fair valuation at companies where it occurred in the HAA based financial statements?
(1: no such reason occurred…6: it was always the reason)

Statement	Rating
The owners' equity would otherwise remain below the threshold set in the Companies Act	1 2 3 4 5 6
It was required by the owners to assess the wealth of the company	1 2 3 4 5 6
To improve profitability	1 2 3 4 5 6
The company is member of a group and the group applies these	1 2 3 4 5 6
Prepares financial statements according to different set of rules as well (e.g. IFRS), where these are applied	1 2 3 4 5 6
The creditor demanded the application when assessing credibility	1 2 3 4 5 6
To take advantage of taxation	1 2 3 4 5 6
Other:………………………………………………………………………………..	1 2 3 4 5 6

25. When applying revaluation or fair valuation the value of the subject…
(1: never… 6: always):

Statement	Rating
was determined based on its quoted market value.	1 2 3 4 5 6
was determined based on the quoted market value of similar items.	1 2 3 4 5 6
was determined based on the income generated by the item.	1 2 3 4 5 6
was determined based on the costs of replacement.	1 2 3 4 5 6
was determined as a combination of the above options.	1 2 3 4 5 6
Other:……………………………………………………………………………..	1 2 3 4 5 6

26. What was the reason for NOT applying revaluation or fair valuation in HAA based financial statements?
(1: no such reason occurred…6: it was always the reason)

Statement	Rating
It would have been too costly (administration, external expert etc.)	1 2 3 4 5 6
More relevant information is not provided	1 2 3 4 5 6
The value of item cannot be determined reliably	1 2 3 4 5 6
Has no item to which these could have been applied	1 2 3 4 5 6
The company is member of a group and the group does not apply these	1 2 3 4 5 6
Prepares financial statements according to different set of rules as well (e.g. IFRS), where these are applied, so it is not relevant in the HAA based financial statements	1 2 3 4 5 6
Because of the potential tax losses	1 2 3 4 5 6
As it had no effect on taxation	1 2 3 4 5 6
No or unknown reason	1 2 3 4 5 6
Other:……………………………………………………………………………..	1 2 3 4 5 6

27. What factors, what fields proved to be a risk factor during your audits? Please indicate that when these items occur how risky they are in general
(1: minimally risky, 6: bears significant risks),
and what is the primary source of this riskiness (error or fraud).
(1: only minimally the source of risk; 6: always the source of risk)

Field	How risky is it?	If risky, is the source of risk	
		error?	fraud?
Intangibles “in general”*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Determination of cost	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Amortization	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Impairment	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Revaluation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of goodwill	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Tangibles “in general”*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Determination of cost	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Depreciation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Impairment	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Revaluation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Inventories „in general”*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Write down of inventories	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Receivables „in general”*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of bad and doubtful debts	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Securities, long-term investments „in general”*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Revaluation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Write down of investments	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Fair valuation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Cash „in general”*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of cash	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Accruals and prepayments „in general”*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of accruals and prepayments	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Owners’ equity	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Provisions „in general”*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of provisions	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Liabilities „in general”*	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Valuation of liabilities	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Issues of taxation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
Judgement of the going concern principle	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6

*: with the exception of the below listed items printed in italics, as there is a separate question related to them.

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28. In your opinion could the willingness of auditors be increased to participate in research similar to the present one if the participants were to receive training credits for their cooperation?

- Yes, significantly.
- Probably yes.
- Probably not.
- Not at all.
- I cannot judge this.

Once again we appreciate your cooperation!

Appendix 3 – Statistics related to the respondents

What organisational form do the respondents operate in?

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
1_Indiv * 2_Network	68	65,4%	36	34,6%	104	100,0%
1_Indiv_assist * 2_Network	5	4,8%	99	95,2%	104	100,0%
1_Small_audit_firm * 2_Network	32	30,8%	72	69,2%	104	100,0%
1_Big5_10 * 2_Network	4	3,8%	100	96,2%	104	100,0%
1_Big4 * 2_Network	3	2,9%	101	97,1%	104	100,0%

The level of networking

1_Indiv * 2_Network Crosstabulation

			2_Network		Total
			YES	NO	
1_Indiv	Individually without assistants	Count	3	65	68
		% of Total	4,4%	95,6%	100,0%
Total		Count	3	65	68
		% of Total	4,4%	95,6%	100,0%

1_Indiv_assist * 2_Network Crosstabulation

			2_Network	Total
			NO	
1_Indiv_assist	Individually with assistants	Count	5	5
		% of Total	100,0%	100,0%
Total		Count	5	5
		% of Total	100,0%	100,0%

1_Small_audit_firm * 2_Network Crosstabulation

			2_Network		Total
			YES	NO	
1_Small_audit_firm	Smaller audit firm	Count	4	28	32
		% of Total	12,5%	87,5%	100,0%
Total		Count	4	28	32
		% of Total	12,5%	87,5%	100,0%

1_Big5_10 * 2_Network Crosstabulation

			2_Network YES	Total
1_Big5_10	Mid tier (Big5-10)	Count	4	4
		% of Total	100,0%	100,0%
Total		Count	4	4
		% of Total	100,0%	100,0%

1_Big4 * 2_Network Crosstabulation

			2_Network YES	Total
1_Big4	At Big 4	Count	3	3
		% of Total	100,0%	100,0%
Total		Count	3	3
		% of Total	100,0%	100,0%

Organisational form – multiple selections

1_Indiv * 1_Small_audit_firm Crosstabulation

			1_Small_audit_firm Smaller audit firm	Total
1_Indiv	Individually without assistants	Count	5	5
		% of Total	100,0%	100,0%
Total		Count	5	5
		% of Total	100,0%	100,0%

1_Indiv_assist * 1_Small_audit_firm Crosstabulation

			1_Small_audit_firm Smaller audit firm	Total
1_Indiv_assist	Individually with assistants	Count	1	1
		% of Total	100,0%	100,0%
Total		Count	1	1
		% of Total	100,0%	100,0%

1_Indiv * 1_Big5_10 Crosstabulation

			1_Big5_10	Total
			Mid tier (Big5-10)	
1_Indiv	Individually without assistants	Count	2	2
		% of Total	100,0%	100,0%
Total		Count	2	2
		% of Total	100,0%	100,0%

Descriptive statistics of the audit engagements

	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
3_No_audits	104	149	1	150	1619	15,57	20,483	419,568	3,865	,237	19,820	,469
Valid N (listwise)	104											

The number of engagements as per categories

		3_No_audits
		Sum
1_Indiv	Individually without assistants	853

		3_No_audits
		Sum
1_Indiv_assist	Individually with assistants	148

		3_No_audits
		Sum
1_Big4	At Big 4	173

		3_No_audits
		Sum
1_Small_audit_firm	Smaller audit firm	499

		3_No_audits
		Sum
1_Big5_10	Mid tier (Big5-10)	84

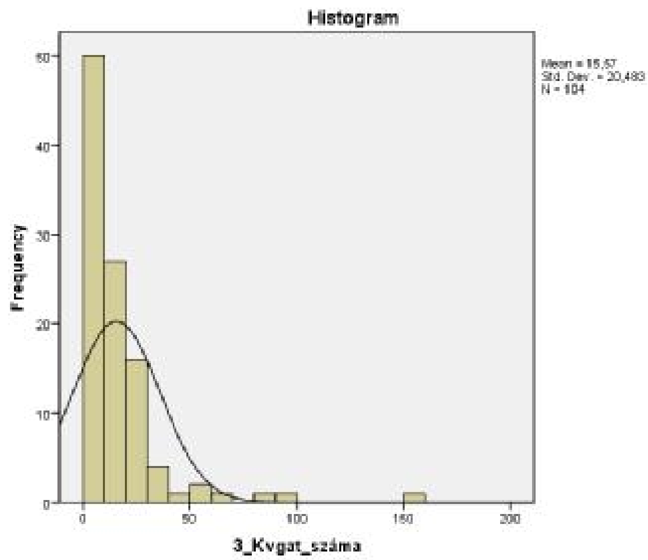
Number of engagements – multiple organisations

				3_No_audits
				Sum
1_Small_audit_firm	Smaller audit firm	1_Indiv	Individually without assistants	60

				3_No_audits
				Sum
1_Big5_10	Mid tier (Big5-10)	1_Indiv	Individually without assistants	54

				3_No_audits
				Sum
	Smaller audit firm	+	Individually with assistants	24

Histogram of the number of audit engagements



The audited entities broken down according to their sales revenue, weighted by the number of audits (companies)

		noXunder200mio	noX200_500	noX500mio_1bn	noX1_2bn	noX2bn
N	Valid	104	104	104	104	104
	Missing	0	0	0	0	0
Mean		5,9445	3,5797	2,0186	1,0343	1,6970
Std. Error of Mean		,74827	,47190	,26665	,20828	,68443
Median		3,9000	2,0000	,9000	,0000	,0000
Std. Deviation		7,63091	4,81245	2,71934	2,12405	6,97980
Variance		58,231	23,160	7,395	4,512	48,718
Skewness		2,845	3,132	1,795	3,583	8,690
Std. Error of Skewness		,237	,237	,237	,237	,237
Kurtosis		10,523	13,610	3,531	17,056	82,185
Std. Error of Kurtosis		,469	,469	,469	,469	,469
Range		46,50	32,55	13,06	14,63	68,25
Minimum		,00	,00	,00	,00	,00
Maximum		46,50	32,55	13,06	14,63	68,25
Sum		618,23	372,29	209,93	107,57	176,49

Appendix 4 – The basic statistics of the questions related to audit risk

Frequency distributions

8_1[178]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	553	34,2	37,3	37,3
	2	116	7,2	7,8	45,1
	3	175	10,8	11,8	56,9
	4	47	2,9	3,2	60,0
	5	104	6,4	7,0	67,0
	6	489	30,2	33,0	100,0
	Total	1484	91,7	100,0	
Missing	System	135	8,3		
Total		1619	100,0		

8_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	742	45,8	49,4	49,4
	2	160	9,9	10,7	60,1
	3	114	7,0	7,6	67,7
	4	110	6,8	7,3	75,0
	5	99	6,1	6,6	81,6
	6	276	17,0	18,4	100,0
	Total	1501	92,7	100,0	
Missing	System	118	7,3		
Total		1619	100,0		

[178] Hereinafter the first figure indicates the number of the question, while the second figure the number of the subquestion. Accordingly 8_1 means: 8th question, 1st subquestion.

8_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	458	28,3	33,1	33,1
	2	90	5,6	6,5	39,6
	3	73	4,5	5,3	44,9
	4	183	11,3	13,2	58,1
	5	214	13,2	15,5	73,6
	6	366	22,6	26,4	100,0
	Total	1384	85,5	100,0	
Missing	System	235	14,5		
Total		1619	100,0		

8_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	183	11,3	12,3	12,3
	2	29	1,8	1,9	14,2
	3	51	3,2	3,4	17,7
	4	406	25,1	27,3	45,0
	5	221	13,7	14,9	59,8
	6	598	36,9	40,2	100,0
	Total	1488	91,9	100,0	
Missing	System	131	8,1		
Total		1619	100,0		

9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	225	13,9	13,9	13,9
	2	71	4,4	4,4	18,3
	3	102	6,3	6,3	24,6
	4	4	,2	,2	24,8
	5	294	18,2	18,2	43,0
	6	923	57,0	57,0	100,0
	Total	1619	100,0	100,0	

10_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	603	37,2	42,3	42,3
	2	120	7,4	8,4	50,7
	3	103	6,4	7,2	57,9
	4	77	4,8	5,4	63,3
	5	86	5,3	6,0	69,4
	6	437	27,0	30,6	100,0
	Total	1426	88,1	100,0	
Missing	System	193	11,9		
Total		1619	100,0		

10_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	850	52,5	63,3	63,3
	2	83	5,1	6,2	69,5
	3	130	8,0	9,7	79,2
	4	74	4,6	5,5	84,7
	5	62	3,8	4,6	89,3
	6	144	8,9	10,7	100,0
	Total	1343	83,0	100,0	
Missing	System	276	17,0		
Total		1619	100,0		

10_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	555	34,3	41,5	41,5
	2	114	7,0	8,5	50,1
	3	39	2,4	2,9	53,0
	4	177	10,9	13,2	66,2
	5	273	16,9	20,4	86,7
	6	178	11,0	13,3	100,0
	Total	1336	82,5	100,0	
Missing	System	283	17,5		
Total		1619	100,0		

10_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	215	13,3	14,7	14,7
	2	23	1,4	1,6	16,2
	3	148	9,1	10,1	26,3
	4	211	13,0	14,4	40,7
	5	227	14,0	15,5	56,2
	6	642	39,7	43,8	100,0
	Total	1466	90,5	100,0	
Missing	System	153	9,5		
Total		1619	100,0		

10_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	229	14,1	14,7	14,7
	2	86	5,3	5,5	20,3
	3	18	1,1	1,2	21,4
	4	111	6,9	7,1	28,6
	5	202	12,5	13,0	41,5
	6	909	56,1	58,5	100,0
	Total	1555	96,0	100,0	
Missing	System	64	4,0		
Total		1619	100,0		

10_6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	640	39,5	47,1	47,1
	2	240	14,8	17,7	64,8
	3	60	3,7	4,4	69,2
	4	149	9,2	11,0	80,1
	5	180	11,1	13,2	93,4
	6	90	5,6	6,6	100,0
	Total	1359	83,9	100,0	
Missing	System	260	16,1		
Total		1619	100,0		

10_7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	581	35,9	41,3	41,3
	2	139	8,6	9,9	51,2
	3	175	10,8	12,4	63,6
	4	171	10,6	12,2	75,8
	5	122	7,5	8,7	84,4
	6	219	13,5	15,6	100,0
	Total	1407	86,9	100,0	
Missing	System	212	13,1		
Total		1619	100,0		

11_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	38	2,3	2,4	2,4
	2	118	7,3	7,3	9,7
	3	216	13,3	13,4	23,1
	4	248	15,3	15,4	38,5
	5	188	11,6	11,7	50,2
	6	801	49,5	49,8	100,0
	Total	1609	99,4	100,0	
Missing	System	10	,6		
Total		1619	100,0		

11_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	68	4,2	4,3	4,3
	2	118	7,3	7,4	11,7
	3	198	12,2	12,5	24,2
	4	238	14,7	15,0	39,2
	5	193	11,9	12,2	51,3
	6	773	47,7	48,7	100,0
	Total	1588	98,1	100,0	
Missing	System	31	1,9		
Total		1619	100,0		

11_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	396	24,5	26,6	26,6
	2	237	14,6	15,9	42,5
	3	214	13,2	14,4	56,9
	4	321	19,8	21,6	78,5
	5	167	10,3	11,2	89,7
	6	153	9,5	10,3	100,0
	Total	1488	91,9	100,0	
Missing	System	131	8,1		
Total		1619	100,0		

11_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	214	13,2	13,6	13,6
	2	40	2,5	2,5	16,2
	3	106	6,5	6,7	22,9
	4	260	16,1	16,5	39,5
	5	354	21,9	22,5	62,0
	6	597	36,9	38,0	100,0
	Total	1571	97,0	100,0	
Missing	System	48	3,0		
Total		1619	100,0		

11_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	212	13,1	13,4	13,4
	2	338	20,9	21,4	34,8
	3	289	17,9	18,3	53,1
	4	192	11,9	12,2	65,3
	5	163	10,1	10,3	75,6
	6	385	23,8	24,4	100,0
	Total	1579	97,5	100,0	
Missing	System	40	2,5		
Total		1619	100,0		

11_6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	218	13,5	13,9	13,9
	2	105	6,5	6,7	20,7
	3	433	26,7	27,7	48,3
	4	430	26,6	27,5	75,8
	5	103	6,4	6,6	82,4
	6	275	17,0	17,6	100,0
	Total	1564	96,6	100,0	
Missing	System	55	3,4		
Total		1619	100,0		

11_7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	191	11,8	12,1	12,1
	2	295	18,2	18,7	30,8
	3	171	10,6	10,8	41,6
	4	348	21,5	22,0	63,6
	5	250	15,4	15,8	79,4
	6	325	20,1	20,6	100,0
	Total	1580	97,6	100,0	
Missing	System	39	2,4		
Total		1619	100,0		

11_8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	335	20,7	21,8	21,8
	2	111	6,9	7,2	29,0
	3	326	20,1	21,2	50,2
	4	384	23,7	25,0	75,1
	5	161	9,9	10,5	85,6
	6	222	13,7	14,4	100,0
	Total	1539	95,1	100,0	
Missing	System	80	4,9		
Total		1619	100,0		

11_9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	94	5,8	5,9	5,9
	2	176	10,9	11,1	17,0
	3	432	26,7	27,2	44,2
	4	193	11,9	12,2	56,4
	5	301	18,6	19,0	75,4
	6	391	24,2	24,6	100,0
	Total	1587	98,0	100,0	
Missing	System	32	2,0		
Total		1619	100,0		

12_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	127	7,8	7,9	7,9
	2	105	6,5	6,5	14,4
	3	138	8,5	8,6	23,0
	4	37	2,3	2,3	25,3
	5	275	17,0	17,1	42,4
	6	926	57,2	57,6	100,0
	Total	1608	99,3	100,0	
Missing	System	11	,7		
Total		1619	100,0		

12_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	677	41,8	43,5	43,5
	2	168	10,4	10,8	54,3
	3	121	7,5	7,8	62,1
	4	51	3,2	3,3	65,4
	5	311	19,2	20,0	85,4
	6	227	14,0	14,6	100,0
	Total	1555	96,0	100,0	
Missing	System	64	4,0		
Total		1619	100,0		

12_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	131	8,1	8,3	8,3
	2	123	7,6	7,8	16,0
	3	238	14,7	15,0	31,1
	4	76	4,7	4,8	35,9
	5	243	15,0	15,3	51,2
	6	773	47,7	48,8	100,0
	Total	1584	97,8	100,0	
Missing	System	35	2,2		
Total		1619	100,0		

12_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	652	40,3	41,7	41,7
	2	200	12,4	12,8	54,5
	3	59	3,6	3,8	58,2
	4	206	12,7	13,2	71,4
	5	178	11,0	11,4	82,8
	6	269	16,6	17,2	100,0
	Total	1564	96,6	100,0	
Missing	System	55	3,4		
Total		1619	100,0		

12_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1010	62,4	67,1	67,1
	2	206	12,7	13,7	80,8
	3	41	2,5	2,7	83,5
	4	27	1,7	1,8	85,3
	5	102	6,3	6,8	92,1
	6	119	7,4	7,9	100,0
	Total	1505	93,0	100,0	
Missing	System	114	7,0		
Total		1619	100,0		

12_6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	772	47,7	49,3	49,3
	2	326	20,1	20,8	70,1
	3	100	6,2	6,4	76,5
	4	71	4,4	4,5	81,0
	5	157	9,7	10,0	91,0
	6	141	8,7	9,0	100,0
	Total	1567	96,8	100,0	
Missing	System	52	3,2		
Total		1619	100,0		

12_7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	974	60,2	63,0	63,0
	2	202	12,5	13,1	76,1
	3	82	5,1	5,3	81,4
	4	67	4,1	4,3	85,8
	5	126	7,8	8,2	93,9
	6	94	5,8	6,1	100,0
	Total	1545	95,4	100,0	
Missing	System	74	4,6		
Total		1619	100,0		

13_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	313	19,3	19,5	19,5
	2	219	13,5	13,6	33,1
	3	112	6,9	7,0	40,1
	4	209	12,9	13,0	53,1
	5	205	12,7	12,8	65,8
	6	549	33,9	34,2	100,0
	Total	1607	99,3	100,0	
Missing	System	12	,7		
Total		1619	100,0		

13_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	143	8,8	8,9	8,9
	2	266	16,4	16,6	25,5
	3	186	11,5	11,6	37,1
	4	182	11,2	11,3	48,4
	5	150	9,3	9,3	57,8
	6	678	41,9	42,2	100,0
	Total	1605	99,1	100,0	
Missing	System	14	,9		
Total		1619	100,0		

13_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	491	30,3	31,7	31,7
	2	142	8,8	9,2	40,8
	3	150	9,3	9,7	50,5
	4	197	12,2	12,7	63,2
	5	189	11,7	12,2	75,4
	6	382	23,6	24,6	100,0
	Total	1551	95,8	100,0	
Missing	System	68	4,2		
Total		1619	100,0		

13_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	601	37,1	38,9	38,9
	2	238	14,7	15,4	54,3
	3	356	22,0	23,1	77,4
	4	133	8,2	8,6	86,0
	5	90	5,6	5,8	91,8
	6	126	7,8	8,2	100,0
	Total	1544	95,4	100,0	
Missing	System	75	4,6		
Total		1619	100,0		

13_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	554	34,2	35,6	35,6
	2	258	15,9	16,6	52,2
	3	329	20,3	21,2	73,4
	4	144	8,9	9,3	82,6
	5	121	7,5	7,8	90,4
	6	149	9,2	9,6	100,0
	Total	1555	96,0	100,0	
Missing	System	64	4,0		
Total		1619	100,0		

14_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	425	26,3	26,7	26,7
	2	250	15,4	15,7	42,4
	3	257	15,9	16,2	58,6
	4	250	15,4	15,7	74,3
	5	50	3,1	3,1	77,4
	6	359	22,2	22,6	100,0
	Total	1591	98,3	100,0	
Missing	System	28	1,7		
Total		1619	100,0		

14_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	362	22,4	23,4	23,4
	2	180	11,1	11,6	35,0
	3	262	16,2	16,9	51,9
	4	262	16,2	16,9	68,9
	5	153	9,5	9,9	78,7
	6	329	20,3	21,3	100,0
	Total	1548	95,6	100,0	
Missing	System	71	4,4		
Total		1619	100,0		

14_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	184	11,4	11,7	11,7
	2	279	17,2	17,8	29,5
	3	91	5,6	5,8	35,3
	4	148	9,1	9,4	44,8
	5	243	15,0	15,5	60,3
	6	623	38,5	39,7	100,0
	Total	1568	96,8	100,0	
Missing	System	51	3,2		
Total		1619	100,0		

14_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	699	43,2	45,1	45,1
	2	90	5,6	5,8	50,9
	3	129	8,0	8,3	59,2
	4	267	16,5	17,2	76,4
	5	162	10,0	10,4	86,8
	6	204	12,6	13,2	100,0
	Total	1551	95,8	100,0	
Missing	System	68	4,2		
Total		1619	100,0		

15_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	640	39,5	41,1	41,1
	2	348	21,5	22,4	63,5
	3	94	5,8	6,0	69,5
	4	105	6,5	6,7	76,2
	5	84	5,2	5,4	81,6
	6	286	17,7	18,4	100,0
	Total	1557	96,2	100,0	
Missing	System	62	3,8		
Total		1619	100,0		

15_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	69	4,3	4,3	4,3
	2	9	,6	,6	4,9
	3	90	5,6	5,6	10,5
	4	94	5,8	5,9	16,3
	5	344	21,2	21,5	37,8
	6	997	61,6	62,2	100,0
	Total	1603	99,0	100,0	
Missing	System	16	1,0		
Total		1619	100,0		

15_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1011	62,4	69,5	69,5
	2	141	8,7	9,7	79,2
	3	100	6,2	6,9	86,1
	4	46	2,8	3,2	89,3
	5	104	6,4	7,2	96,4
	6	52	3,2	3,6	100,0
	Total	1454	89,8	100,0	
Missing	System	165	10,2		
Total		1619	100,0		

15b

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	304	18,8	18,8	18,8
	1	75	4,6	4,6	23,4
	2	72	4,4	4,4	27,9
	3	978	60,4	60,4	88,3
	4	77	4,8	4,8	93,0
	5	92	5,7	5,7	98,7
	6	12	,7	,7	99,4
	8	5	,3	,3	99,8
	10	4	,2	,2	100,0
	Total	1619	100,0	100,0	

16_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	208	12,8	13,1	13,1
	2	222	13,7	14,0	27,1
	3	160	9,9	10,1	37,2
	4	187	11,6	11,8	49,1
	5	170	10,5	10,7	59,8
	6	637	39,3	40,2	100,0
	Total	1584	97,8	100,0	
Missing	System	35	2,2		
Total		1619	100,0		

16_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	554	34,2	36,9	36,9
	2	308	19,0	20,5	57,4
	3	236	14,6	15,7	73,2
	4	11	,7	,7	73,9
	5	232	14,3	15,5	89,3
	6	160	9,9	10,7	100,0
	Total	1501	92,7	100,0	
Missing	System	118	7,3		
Total		1619	100,0		

16_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	952	58,8	62,6	62,6
	2	248	15,3	16,3	78,9
	3	65	4,0	4,3	83,2
	4	41	2,5	2,7	85,9
	5	90	5,6	5,9	91,8
	6	125	7,7	8,2	100,0
	Total	1521	93,9	100,0	
Missing	System	98	6,1		
Total		1619	100,0		

16_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	202	12,5	13,0	13,0
	2	106	6,5	6,8	19,9
	3	208	12,8	13,4	33,3
	4	211	13,0	13,6	46,9
	5	405	25,0	26,1	73,0
	6	419	25,9	27,0	100,0
	Total	1551	95,8	100,0	
Missing	System	68	4,2		
Total		1619	100,0		

16_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	917	56,6	61,2	61,2
	2	186	11,5	12,4	73,6
	3	88	5,4	5,9	79,5
	4	121	7,5	8,1	87,5
	5	11	,7	,7	88,3
	6	176	10,9	11,7	100,0
	Total	1499	92,6	100,0	
Missing	System	120	7,4		
Total		1619	100,0		

16_6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	893	55,2	64,7	64,7
	2	112	6,9	8,1	72,8
	3	119	7,4	8,6	81,4
	4	31	1,9	2,2	83,6
	5	133	8,2	9,6	93,3
	6	93	5,7	6,7	100,0
	Total	1381	85,3	100,0	
Missing	System	238	14,7		
Total		1619	100,0		

16_7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	337	20,8	23,4	23,4
	2	108	6,7	7,5	30,9
	3	72	4,4	5,0	36,0
	4	19	1,2	1,3	37,3
	5	159	9,8	11,1	48,3
	6	743	45,9	51,7	100,0
	Total	1438	88,8	100,0	
Missing	System	181	11,2		
Total		1619	100,0		

17_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	57	3,5	3,7	3,7
	2	124	7,7	8,0	11,6
	3	163	10,1	10,5	22,1
	4	284	17,5	18,3	40,4
	5	186	11,5	12,0	52,3
	6	741	45,8	47,7	100,0
	Total	1555	96,0	100,0	
Missing	System	64	4,0		
Total		1619	100,0		

17_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	55	3,4	3,4	3,4
	2	76	4,7	4,8	8,2
	3	69	4,3	4,3	12,5
	4	58	3,6	3,6	16,2
	5	531	32,8	33,2	49,4
	6	808	49,9	50,6	100,0
	Total	1597	98,6	100,0	
Missing	System	22	1,4		
Total		1619	100,0		

17_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	,1	,1	,1
	2	219	13,5	14,0	14,1
	3	217	13,4	13,9	27,9
	4	202	12,5	12,9	40,8
	5	213	13,2	13,6	54,4
	6	713	44,0	45,6	100,0
	Total	1565	96,7	100,0	
Missing	System	54	3,3		
Total		1619	100,0		

17_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	310	19,1	20,0	20,0
	2	420	25,9	27,1	47,2
	3	186	11,5	12,0	59,2
	4	218	13,5	14,1	73,3
	5	206	12,7	13,3	86,6
	6	208	12,8	13,4	100,0
	Total	1548	95,6	100,0	
Missing	System	71	4,4		
Total		1619	100,0		

18_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	,1	,1	,1
	2	69	4,3	4,4	4,4
	3	191	11,8	12,0	16,5
	4	201	12,4	12,7	29,1
	5	292	18,0	18,4	47,5
	6	832	51,4	52,5	100,0
	Total	1586	98,0	100,0	
Missing	System	33	2,0		
Total		1619	100,0		

18_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	53	3,3	3,3	3,3
	3	147	9,1	9,1	12,4
	4	296	18,3	18,4	30,8
	5	273	16,9	16,9	47,7
	6	842	52,0	52,3	100,0
	Total	1611	99,5	100,0	
Missing	System	8	,5		
Total		1619	100,0		

18_3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	23	1,4	1,4	1,4
	2	76	4,7	4,8	6,2
	3	185	11,4	11,6	17,8
	4	202	12,5	12,6	30,4
	5	302	18,7	18,9	49,3
	6	812	50,2	50,8	100,0
	Total	1600	98,8	100,0	
Missing	System	19	1,2		
Total		1619	100,0		

18_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	,1	,1	,1
	2	65	4,0	4,1	4,2
	3	232	14,3	14,8	19,0
	4	232	14,3	14,8	33,8
	5	269	16,6	17,2	51,0
	6	769	47,5	49,0	100,0
	Total	1568	96,8	100,0	
Missing	System	51	3,2		
Total		1619	100,0		

18_5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1147	70,8	81,1	81,1
	2	139	8,6	9,8	90,9
	3	33	2,0	2,3	93,2
	4	92	5,7	6,5	99,7
	5	4	,2	,3	100,0
	Total	1415	87,4	100,0	
Missing	System	204	12,6		
Total		1619	100,0		

19_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1008	62,3	71,3	71,3
	2	130	8,0	9,2	80,5
	3	102	6,3	7,2	87,7
	4	18	1,1	1,3	89,0
	5	59	3,6	4,2	93,1
	6	97	6,0	6,9	100,0
	Total	1414	87,3	100,0	
Missing	System	205	12,7		
Total		1619	100,0		

19_2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	161	9,9	10,4	10,4
	2	52	3,2	3,4	13,7
	3	129	8,0	8,3	22,1
	4	338	20,9	21,8	43,8
	5	233	14,4	15,0	58,9
	6	638	39,4	41,1	100,0
	Total	1551	95,8	100,0	
Missing	System	68	4,2		
Total		1619	100,0		

19_1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	485	30,0	33,6	33,6
	2	122	7,5	8,4	42,0
	3	106	6,5	7,3	49,3
	4	82	5,1	5,7	55,0
	5	407	25,1	28,2	83,2
	6	243	15,0	16,8	100,0
	Total	1445	89,3	100,0	
Missing	System	174	10,7		
Total		1619	100,0		

19_4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	474	29,3	33,5	33,5
	2	35	2,2	2,5	35,9
	3	113	7,0	8,0	43,9
	4	157	9,7	11,1	55,0
	5	164	10,1	11,6	66,5
	6	474	29,3	33,5	100,0
	Total	1417	87,5	100,0	
Missing	System	202	12,5		
Total		1619	100,0		

Appendix 5 – The statistics of Hypothesis H_1

Methods and tools used X organisational form

Audit manual/ use of MKVK publications / application of audit software

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
8_1_Uses a handbook* 1_Indiv	728[a]	45,0%	891	55,0%	1619	100,0%
8_1_Uses a handbook* 1_Indiv_assist	148[a]	9,1%	1471	90,9%	1619	100,0%
8_1_Uses a handbook* 1_Small_audit_firm	489[a]	30,2%	1130	69,8%	1619	100,0%
8_1_Uses a handbook* 1_Big5_10	84[a]	5,2%	1535	94,8%	1619	100,0%
8_1_Uses a handbook* 1_Big4	173[a]	10,7%	1446	89,3%	1619	100,0%

a. Number of valid cases is different from the total count in the crosstabulation table because the cell counts have been rounded.

8_1_Uses a handbook* 1_Indiv Crosstabulation

			1_Indiv	Total
			Individually without assistants	
8_1_Uses a handbook	1	Count	305	305
		% of Total	41,9%	41,9%
	2	Count	88	88
		% of Total	12,1%	12,1%
	3	Count	95	95
		% of Total	13,0%	13,0%
	4	Count	23	23
		% of Total	3,2%	3,2%
	5	Count	55	55
		% of Total	7,6%	7,6%
	6	Count	162	162
		% of Total	22,3%	22,3%
Total		Count	728	728
		% of Total	100,0%	100,0%

8_1_Uses a handbook* 1_Indiv_assist Crosstabulation

			1_Indiv_assist Individually with assistants	Total
8_1_Uses a handbook	1	Count	81	81
		% of Total	54,7%	54,7%
	2	Count	22	22
		% of Total	14,9%	14,9%
	3	Count	24	24
		% of Total	16,2%	16,2%
	5	Count	21	21
		% of Total	14,2%	14,2%
Total		Count	148	148
		% of Total	100,0%	100,0%

8_1_Uses a handbook* 1_Small_audit_firm Crosstabulation

			1_Small_audit_firm Smaller audit firm	Total
8_1_Uses a handbook	1	Count	193	193
		% of Total	39,5%	39,5%
	2	Count	6	6
		% of Total	1,2%	1,2%
	3	Count	80	80
		% of Total	16,4%	16,4%
	4	Count	24	24
		% of Total	4,9%	4,9%
	5	Count	28	28
		% of Total	5,7%	5,7%
	6	Count	158	158
		% of Total	32,3%	32,3%
Total		Count	489	489
		% of Total	100,0%	100,0%
		% of Total	100,0%	100,0%

8_1_Uses a handbook* 1_Big5_10 Crosstabulation

			1_Big5_10	Total
			Mid tier (Big5-10)	
8_1_Uses a handbook	1	Count	19	19
		% of Total	22,6%	22,6%
	6	Count	65	65
		% of Total	77,4%	77,4%
Total		Count	84	84

8_1_Uses a handbook* 1_Big4 Crosstabulation

			1_Big4	Total
			At Big 4	
8_1_Uses a handbook	6	Count	173	173
		% of Total	100,0%	100,0%
Total		Count	173	173
		% of Total	100,0%	100,0%

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
8_4_Uses MKVK publications* 1_Indiv	722[a]	44,6%	897	55,4%	1619	100,0%
8_4_Uses MKVK publications* 1_Indiv_assist	148[a]	9,1%	1471	90,9%	1619	100,0%
8_4_Uses MKVK publications* 1_Small_audit_firm	499[a]	30,8%	1120	69,2%	1619	100,0%
8_4_Uses MKVK publications* 1_Big5_10	84[a]	5,2%	1535	94,8%	1619	100,0%
8_4_Uses MKVK publications* 1_Big4	173[a]	10,7%	1446	89,3%	1619	100,0%

8_4_Uses MKVK publications* 1_Indiv Crosstabulation

			1_Indiv Individually without assistants	Total
8_4_Uses MKVK publications	1	Count	3	3
		% of Total	0,4%	0,4%
	3	Count	51	51
		% of Total	7,1%	7,1%
	4	Count	122	122
		% of Total	16,9%	16,9%
	5	Count	176	176
		% of Total	24,4%	24,4%
	6	Count	370	370
		% of Total	51,2%	51,2%
Total		Count	722	722
		% of Total	100,0%	100,0%

8_4_Uses MKVK publications* 1_Indiv_assist Crosstabulation

			1_Indiv_assist Individually with assistants	Total
8_4_Uses MKVK publications	4	Count	25	25
		% of Total	16,9%	16,9%
	6	Count	123	123
		% of Total	83,1%	83,1%
Total		Count	148	148
		% of Total	100,0%	100,0%

8_4_Uses MKVK publications* 1_Small_audit_firm Crosstabulation

			1_Small_audit_firm	Total
			Smaller audit firm	
8_4_Uses MKVK publications	1	Count	30	30
		% of Total	6,0%	6,0%
	3	Count	8	8
		% of Total	1,6%	1,6%
	4	Count	262	262
		% of Total	52,5%	52,5%
	5	Count	45	45
		% of Total	9,0%	9,0%
	6	Count	154	154
		% of Total	30,9%	30,9%
Total		Count	499	499
		% of Total	100,0%	100,0%

8_4_Uses MKVK publications* 1_Big5_10 Crosstabulation

			1_Big5_10	Total
			Mid tier (Big5-10)	
8_4_Uses MKVK publications	2	Count	9	9
		% of Total	10,7%	10,7%
	4	Count	21	21
		% of Total	25,0%	25,0%
	6	Count	54	54
		% of Total	64,3%	64,3%
Total		Count	84	84
		% of Total	100,0%	100,0%

8_4_Uses MKVK publications* 1_Big4 Crosstabulation

			1_Big4	Total
			At Big 4	
8_4_Uses MKVK publications	1	Count	150	150
		% of Total	86,7%	86,7%
	2	Count	20	20
		% of Total	11,6%	11,6%
	6	Count	3	3
		% of Total	1,7%	1,7%
Total		Count	173	173
		% of Total	100,0%	100,0%

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
9_Uses audit software* 1_Indiv	853[a]	52,7%	766	47,3%	1619	100,0%
9_Uses audit software* 1_Indiv_assist	148[a]	9,1%	1471	90,9%	1619	100,0%
9_Uses audit software* 1_Small_audit_firm	499[a]	30,8%	1120	69,2%	1619	100,0%
9_Uses audit software* 1_Big5_10	84[a]	5,2%	1535	94,8%	1619	100,0%
9_Uses audit software* 1_Big4	173[a]	10,7%	1446	89,3%	1619	100,0%

a. Number of valid cases is different from the total count in the crosstabulation table because the cell counts have been rounded.

9_Uses audit software* 1_Indiv Crosstabulation

			1_Indiv	Total
			Individually without assistants	
9_Uses audit software	1	Count	151	151
		% of Total	17,7%	17,7%
	2	Count	51	51
		% of Total	6,0%	6,0%
	3	Count	20	20
		% of Total	2,3%	2,3%
	4	Count	4	4
		% of Total	0,5%	0,5%
	5	Count	166	166
		% of Total	19,5%	19,5%
	6	Count	461	461
		% of Total	54,0%	54,0%
Total		Count	853	853
		% of Total	100,0%	100,0%

9_Uses audit software* 1_Indiv_assist Crosstabulation

			1_Indiv_assist Individually with assistants	Total
9_Uses audit software	1	Count	1	1
		% of Total	0,7%	0,7%
	5	Count	24	24
		% of Total	16,2%	16,2%
	6	Count	123	123
		% of Total	83,1%	83,1%
Total		Count	148	148
		% of Total	100,0%	100,0%

9_Uses audit software* 1_Small_audit_firm Crosstabulation

			1_Small_audit_firm Smaller audit firm	Total
9_Uses audit software	1	Count	107	107
		% of Total	21,4%	21,4%
	2	Count	11	11
		% of Total	2,2%	2,2%
	3	Count	90	90
		% of Total	18,0%	18,0%
	5	Count	128	128
		% of Total	25,7%	25,7%
	6	Count	163	163
		% of Total	32,7%	32,7%
Total		Count	499	499
		% of Total	100,0%	100,0%

9_Uses audit software* 1_Big5_10 Crosstabulation

			1_Big5_10	Total
			Mid tier (Big5-10)	
9_Uses audit software	2	Count	9	9
		% of Total	10,7%	10,7%
	5	Count	54	54
		% of Total	64,3%	64,3%
	6	Count	21	21
		% of Total	25,0%	25,0%
Total		Count	84	84
		% of Total	100,0%	100,0%

9_Uses audit software* 1_Big4 Crosstabulation

			1_Big4	Total
			At Big 4	
9_Uses audit software	6	Count	173	173
		% of Total	100,0%	100,0%
Total		Count	173	173
		% of Total	100,0%	100,0%

Confirmation of the frequency of working method by Friedman test and Wilcoxon signed ranks test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories defined by 8_1_Kézi könyvet használ <=3,50 and >3,50 occur with probabilities 0,5 and 0,5.	One-Sample Binomial Test	,000	Reject the null hypothesis.
2	The categories defined by 8_2_Kapott munkapapírokkal dolgozik <=3,50 and >3,50 occur with probabilities 0,5 and 0,5.	One-Sample Binomial Test	,000	Reject the null hypothesis.
3	The categories defined by 8_3_Testreszabott munkapapírokkal dolgozik <=3,50 and >3,50 occur with probabilities 0,5 and 0,5.	One-Sample Binomial Test	,000	Reject the null hypothesis.
4	The categories defined by 8_4_Használja az MKVK segédanyagait <=3,50 and >3,50 occur with probabilities 0,5 and 0,5.	One-Sample Binomial Test	,000	Reject the null hypothesis.
5	The categories defined by 9_Könyvvizsgálati szoftvert használ <=3,50 and >3,50 occur with probabilities 0,5 and 0,5.	One-Sample Binomial Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

Descriptive Statistics

	N	Percentiles		
		25th	50th (Median)	75th
8_1	1346	1,00	3,00	6,00
8_2	1346	1,00	1,00	3,00
8_3	1346	1,00	4,00	6,00
8_4	1346	4,00	5,00	6,00
9	1346	3,00	6,00	6,00

Friedman Test

Ranks

	Mean Rank
8_1	2,72
8_2	2,15
8_3	2,90
8_4	3,57
9	3,66

Test Statistics[a]

N	1346
Chi-Square	1024,868
df	4
Asymp. Sig.	,000

a. Friedman Test

Descriptive Statistics

	N	Percentiles		
		25th	50th (Median)	75th
8_1	1484	1,00	3,00	6,00
8_2	1501	1,00	2,00	4,50
8_3	1384	1,00	4,00	6,00
8_4	1488	4,00	5,00	6,00
9	1619	5,00	6,00	6,00

Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
8_2 - 8_1	Negative Ranks	614[a]	523,62	321500,50
	Positive Ranks	365[b]	433,45	158209,50
	Ties	411[c]		
	Total	1390		
8_3 - 8_1	Negative Ranks	465[d]	488,98	227373,50
	Positive Ranks	542[e]	516,89	280154,50
	Ties	360[f]		
	Total	1367		
8_4 - 8_1	Negative Ranks	407[g]	567,22	230859,00
	Positive Ranks	853[h]	660,69	563571,00
	Ties	203[i]		
	Total	1463		
9 - 8_1	Negative Ranks	278[j]	521,63	145013,50
	Positive Ranks	814[k]	554,99	451764,50
	Ties	392[l]		
	Total	1484		
8_3 - 8_2	Negative Ranks	259[m]	385,44	99828,00
	Positive Ranks	660[n]	489,26	322912,00
	Ties	448[o]		
	Total	1367		
8_4 - 8_2	Negative Ranks	113[p]	305,20	34488,00
	Positive Ranks	908[q]	536,61	487243,00
	Ties	352[r]		
	Total	1373		
9 - 8_2	Negative Ranks	108[s]	365,11	39431,50
	Positive Ranks	917[t]	530,42	486393,50
	Ties	476[u]		
	Total	1501		
8_4 - 8_3	Negative Ranks	233[v]	269,08	62695,00
	Positive Ranks	570[w]	456,34	260111,00
	Ties	557[x]		
	Total	1360		
9 - 8_3	Negative Ranks	284[y]	441,29	125327,50
	Positive Ranks	721[z]	527,31	380187,50
	Ties	379[aa]		
	Total	1384		
9 - 8_4	Negative Ranks	453[ab]	509,35	230734,00
	Positive Ranks	544[ac]	490,38	266769,00
	Ties	491[ad]		
	Total	1488		

a. 8_2_Uses off-the-shelf working paper packages< 8_1_Uses audit manual
b. 8_2_Uses off-the-shelf working paper packages> 8_1_Uses audit manual
c. 8_2_Uses off-the-shelf working paper packages= 8_1_Uses audit manual
d. 8_3_Uses customised working papers< 8_1_Uses audit manual
e. 8_3_Uses customised working papers> 8_1_Uses audit manual
f. 8_3_Uses customised working papers= 8_1_Uses audit manual
g. 8_4_Uses MKVK publications< 8_1_Uses audit manual
h. 8_4_Uses MKVK publications> 8_1_Uses audit manual
i. 8_4_Uses MKVK publications= 8_1_Uses audit manual
j. 9_Uses audit software< 8_1_Uses audit manual
k. 9_Uses audit software> 8_1_Uses audit manual
l. 9_Uses audit software= 8_1_Uses audit manual
m. 8_3_Uses customised working papers< 8_2_Uses off-the-shelf working paper packages
n. 8_3_Uses customised working papers> 8_2_Uses off-the-shelf working paper packages
o. 8_3_Uses customised working papers= 8_2_Uses off-the-shelf working paper packages
p. 8_4_Uses MKVK publications< 8_2_Uses off-the-shelf working paper packages
q. 8_4_Uses MKVK publications> 8_2_Uses off-the-shelf working paper packages
r. 8_4_Uses MKVK publications= 8_2_Uses off-the-shelf working paper packages
s. 9_Uses audit software< 8_2_Uses off-the-shelf working paper packages
t. 9_Uses audit software> 8_2_Uses off-the-shelf working paper packages
u. 9_Uses audit software= 8_2_Uses off-the-shelf working paper packages
v. 8_4_Uses MKVK publications< 8_3_Uses customised working papers
w. 8_4_Uses MKVK publications> 8_3_Uses customised working papers
x. 8_4_Uses MKVK publications= 8_3_Uses customised working papers
y. 9_Uses audit software< 8_3_Uses customised working papers
z. 9_Uses audit software> 8_3_Uses customised working papers
aa. 9_Uses audit software= 8_3_Uses customised working papers
ab. 9_Uses audit software< 8_4_Uses MKVK publications
ac. 9_Uses audit software> 8_4_Uses MKVK publications
ad. 9_Uses audit software= 8_4_Uses MKVK publications

Test Statistics[a]

	Z	Asymp. Sig. (2-tailed)
8_2_Uses off-the-shelf working paper packages- 8_1_Uses audit manual	-9,349[b]	,000
8_3_Uses customised working papers- 8_1_Uses audit manual	-2,886[c]	,004
8_4_Uses MKVK publications- 8_1_Uses audit manual	-13,006[c]	,000
9_Uses audit software- 8_1_Uses audit manual	-14,854[c]	,000
8_3_Uses customised working papers- 8_2_Uses off-the-shelf working paper packages	-13,985[c]	,000
8_4_Uses MKVK publications- 8_2_Uses off-the-shelf working paper packages	-24,289[c]	,000
9_Uses audit software- 8_2_Uses off-the-shelf working paper packages	-23,892[c]	,000
8_4_Uses MKVK publications- 8_3_Uses customised working papers	-15,142[c]	,000
9_Uses audit software- 8_3_Uses customised working papers	-13,969[c]	,000
9_Uses audit software- 8_4_Uses MKVK publications	-2,002[c]	,045

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. Based on negative ranks.

Correlation between the general methods of audit and the methods of risk assessment (1)

			8_1_Uses a handbook	8_2_Uses off-the-shelf working paper packages	8_3_Uses customised working papers	8_4_Uses MKVK publications	9_Uses audit software
Spearman's rho	8_1_Uses a handbook	Correlation Coefficient	1,000	-,145**	-,115**	-,403**	,013
		Sig. (2-tailed)	.	,000	,000	,000	,621
		N	1484	1390	1367	1463	1484
	8_2_Uses off-the-shelf working paper packages	Correlation Coefficient	-,145**	1,000	-,021	-,020	,079**
		Sig. (2-tailed)	,000	.	,432	,464	,002
		N	1390	1501	1367	1373	1501
	8_3_Uses customised working papers	Correlation Coefficient	-,115**	-,021	1,000	,237**	,016
		Sig. (2-tailed)	,000	,432	.	,000	,545
		N	1367	1367	1384	1360	1384
	8_4_Uses MKVK publications	Correlation Coefficient	-,403**	-,020	,237**	1,000	,045
		Sig. (2-tailed)	,000	,464	,000	.	,080
		N	1463	1373	1360	1488	1488
	9_Uses audit software	Correlation Coefficient	,013	,079**	,016	,045	1,000
		Sig. (2-tailed)	,621	,002	,545	,080	.
		N	1484	1501	1384	1488	1619
	10_1_For risk assessment Uses a handbook	Correlation Coefficient	,947**	-,159**	-,106**	-,330**	,018
		Sig. (2-tailed)	,000	,000	,000	,000	,495
		N	1422	1347	1328	1405	1426
	10_2_For risk assessment Uses	Correlation Coefficient	-,125**	,769**	-,050	-,024	-,042

	off-the-shelf working paper packages	Sig. (2-tailed)	,000	,000	,070	,388	,128
		N	1343	1343	1329	1322	1343
	10_3_For risk assessment Uses customised working papers	Correlation Coefficient	,066*	,070*	,684**	,119**	-,159**
		Sig. (2-tailed)	,016	,012	,000	,000	,000
		N	1332	1312	1316	1315	1336
	10_4_For risk assessment Uses MKVK publications	Correlation Coefficient	-,357**	,144**	,124**	,856**	-,014
		Sig. (2-tailed)	,000	,000	,000	,000	,597
		N	1448	1373	1364	1445	1466
	10_5_For risk assessment Uses audit software	Correlation Coefficient	-,055*	,220**	-,073**	-,004	,864**
		Sig. (2-tailed)	,037	,000	,007	,887	,000
		N	1441	1469	1341	1425	1555

Correlation is significant at the 0.01 level (2-tailed).**

Correlation is significant at the 0.05 level (2-tailed).*

Correlation between the general methods of audit and the methods of risk assessment (2)

			10_1_For risk assessment Uses a handbook	10_2_For risk assessment Uses off-the-shelf working paper packages	10_3_For risk assessment Uses customised working papers	10_4_For risk assessment Uses MKVK publications	10_5_For risk assessment Uses audit software
Spearman's rho	8_1_Uses a handbook	Correlation Coefficient	,947**	-,125**	,066*	-,357**	-,055*
		Sig. (2-tailed)	,000	,000	,016	,000	,037
		N	1422	1343	1332	1448	1441
	8_2_Uses off-the-shelf working paper packages	Correlation Coefficient	-,159**	,769**	,070*	,144**	,220**
		Sig. (2-tailed)	,000	,000	,012	,000	,000
		N	1347	1343	1312	1373	1469
	8_3_Uses customised working papers	Correlation Coefficient	-,106**	-,050	,684**	,124**	-,073**
		Sig. (2-tailed)	,000	,070	,000	,000	,007
		N	1328	1329	1316	1364	1341
	8_4_Uses MKVK publications	Correlation Coefficient	-,330**	-,024	,119**	,856**	-,004
		Sig. (2-tailed)	,000	,388	,000	,000	,887
		N	1405	1322	1315	1445	1425
	9_Uses audit software	Correlation Coefficient	,018	-,042	-,159**	-,014	,864**
		Sig. (2-tailed)	,495	,128	,000	,597	,000

	N	1426	1343	1336	1466	1555
10_1_For risk assessment Uses a handbook	Correlation Coefficient	1,000	-,036	,146**	-,277**	-,016
	Sig. (2-tailed)	.	,192	,000	,000	,538
	N	1426	1338	1334	1426	1400
10_2_For risk assessment Uses off-the-shelf working paper packages	Correlation Coefficient	-,036	1,000	,130**	,192**	,128**
	Sig. (2-tailed)	,192	.	,000	,000	,000
	N	1338	1343	1310	1343	1336
10_3_For risk assessment Uses customised working papers	Correlation Coefficient	,146**	,130**	1,000	,099**	-,276**
	Sig. (2-tailed)	,000	,000	.	,000	,000
	N	1334	1310	1336	1336	1323
10_4_For risk assessment Uses MKVK publications	Correlation Coefficient	-,277**	,192**	,099**	1,000	,088**
	Sig. (2-tailed)	,000	,000	,000	.	,001
	N	1426	1343	1336	1466	1409
10_5_For risk assessment Uses audit software	Correlation Coefficient	-,016	,128**	-,276**	,088**	1,000
	Sig. (2-tailed)	,538	,000	,000	,001	.
	N	1400	1336	1323	1409	1555

Correlation is significant at the 0.01 level (2-tailed).**

Correlation is significant at the 0.05 level (2-tailed).*

Component matrix of the factor analysis of working methods

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
8_1_Uses a handbook	,950	,009	,018	-,087	-,004
10_1_For risk assessment Uses a handbook	,949	-,042	,129	-,009	,099
9_Uses audit software	-,036	,953	-,054	,030	-,009
10_5_For risk assessment Uses audit software	,006	,940	,032	,151	-,044
8_3_Uses customised working papers	-,061	,029	,940	-,049	,012
10_3_For risk assessment Uses customised working papers	,238	-,058	,884	,062	,143
10_2_For risk assessment Uses off-the-shelf working paper packages	,023	,031	,101	,920	,082
8_2_Uses off-the-shelf working paper packages	-,126	,157	-,104	,888	-,124
8_4_Uses MKVK publications	-,063	-,010	-,029	-,149	,928
10_4_For risk assessment Uses MKVK publications	,175	-,046	,194	,128	,888

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Correlation between audit software use and intuitiveness

Correlations

			9_Uses audit software	10_5_For risk assessment Uses audit software	10_6_For risk assessment intuition is used	10_7_For risk assessment intuition or written methodology is used
Spearman's rho	9_Uses audit software	Correlation Coefficient	1,000	,864**	-,604**	-,492**
		Sig. (2-tailed)	.	,000	,000	,000
		N	1619	1555	1359	1407
	10_5_For risk assessment Uses audit software	Correlation Coefficient	,864**	1,000	-,512**	-,470**
		Sig. (2-tailed)	,000	.	,000	,000
		N	1555	1555	1349	1367
	10_6_For risk assessment intuition is used	Correlation Coefficient	-,604**	-,512**	1,000	,709**
		Sig. (2-tailed)	,000	,000	.	,000
		N	1359	1349	1359	1356
	10_7_For risk assessment intuition or written methodology is used	Correlation Coefficient	-,492**	-,470**	,709**	1,000
		Sig. (2-tailed)	,000	,000	,000	.
		N	1407	1367	1356	1407

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation between the use of off-the-shelf working papers and the level of intuition applied for risk assessment

Correlations

			8_2_Uses off-the-shelf working paper packages	10_2_For risk assessment Uses off-the-shelf working paper packages	10_6_For risk assessment intuition is used	10_7_For risk assessment intuition or written methodology is used
Spearman's rho	8_2_Uses off-the-shelf working paper packages	Correlation Coefficient	1,000	,769**	,104**	,163**
		Sig. (2-tailed)	.	,000	,000	,000
		N	1501	1343	1329	1370
	10_2_For risk assessment Uses off-the-shelf working paper packages	Correlation Coefficient	,769**	1,000	,187**	,315**
		Sig. (2-tailed)	,000	.	,000	,000
		N	1343	1343	1320	1338
	10_6_For risk assessment intuition is used	Correlation Coefficient	,104**	,187**	1,000	,709**
		Sig. (2-tailed)	,000	,000	.	,000
		N	1329	1320	1359	1356
	10_7_For risk assessment intuition or written methodology is used	Correlation Coefficient	,163**	,315**	,709**	1,000
		Sig. (2-tailed)	,000	,000	,000	.
		N	1370	1338	1356	1407

**. Correlation is significant at the 0.01 level (2-tailed).

Cross tables for the examination of organisational form and intuition

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
10_6_For risk assessment intuition is used * 1_Indiv	645[a]	39,8%	974	60,2%	1619	100,0%
10_6_For risk assessment intuition is used * 1_Indiv_assist	128[a]	7,9%	1491	92,1%	1619	100,0%
10_6_For risk assessment intuition is used * 1_Small_audit_firm	461[a]	28,5%	1158	71,5%	1619	100,0%
10_6_For risk assessment intuition is used * 1_Big5_10	65[a]	4,0%	1554	96,0%	1619	100,0%
10_6_For risk assessment intuition is used * 1_Big4	173[a]	10,7%	1446	89,3%	1619	100,0%
10_7_For risk assessment intuition or written methodology is used * 1_Indiv	683[a]	42,2%	936	57,8%	1619	100,0%
10_7_For risk assessment intuition or written methodology is used * 1_Indiv_assist	128[a]	7,9%	1491	92,1%	1619	100,0%
10_7_For risk assessment intuition or written methodology is used * 1_Small_audit_firm	471[a]	29,1%	1148	70,9%	1619	100,0%
10_7_For risk assessment intuition or written methodology is used * 1_Big5_10	84[a]	5,2%	1535	94,8%	1619	100,0%
10_7_For risk assessment intuition or written methodology is used * 1_Big4	173[a]	10,7%	1446	89,3%	1619	100,0%

a. Number of valid cases is different from the total count in the crosstabulation table because the cell counts have been rounded.

10_6_For risk assessment intuition is used * 1_Indiv Crosstabulation

			1_Indiv Individually without assistants	Total
10_6_For risk assessment intuition is used	1	Count	223	223
		% of Total	34,6%	34,6%
	2	Count	154	154
		% of Total	23,9%	23,9%
	3	Count	27	27
		% of Total	4,2%	4,2%
	4	Count	49	49
		% of Total	7,6%	7,6%
	5	Count	111	111
		% of Total	17,2%	17,2%
	6	Count	81	81
		% of Total	12,6%	12,6%
Total		Count	645	645
		% of Total	100,0%	100,0%

10_6_For risk assessment intuition is used * 1_Indiv_assist Crosstabulation

			1_Indiv_assist Individually with assistants	Total
10_6_For risk assessment intuition is used	1	Count	81	81
		% of Total	63,3%	63,3%
	2	Count	23	23
		% of Total	18,0%	18,0%
	3	Count	24	24
		% of Total	18,8%	18,8%
Total		Count	128	128
		% of Total	100,0%	100,0%

10_6_For risk assessment intuition is used * 1_Small_audit_firm Crosstabulation

			1_Small_audit_firm	Total
			Smaller audit firm	
10_6_For risk assessment intuition is used	1	Count	175	175
		% of Total	38,0%	38,0%
	2	Count	42	42
		% of Total	9,1%	9,1%
	3	Count	41	41
		% of Total	8,9%	8,9%
	4	Count	100	100
		% of Total	21,7%	21,7%
	5	Count	69	69
		% of Total	15,0%	15,0%
	6	Count	34	34
		% of Total	7,4%	7,4%
Total		Count	461	461
		% of Total	100,0%	100,0%

10_6_For risk assessment intuition is used * 1_Big5_10 Crosstabulation

			1_Big5_10	Total
			Mid tier (Big5-10)	
10_6_For risk assessment intuition is used	2	Count	56	56
		% of Total	86,2%	86,2%
	6	Count	9	9
		% of Total	13,8%	13,8%
Total		Count	65	65
		% of Total	100,0%	100,0%

10_6_For risk assessment intuition is used * 1_Big4 Crosstabulation

			1_Big4	Total
			At Big 4	
10_6_For risk assessment intuition is used	1	Count	173	173
		% of Total	100,0%	100,0%
Total		Count	173	173
		% of Total	100,0%	100,0%

10_7_For risk assessment intuition or written methodology is used * 1_Indiv Crosstabulation

			1_Indiv Individually without assistants	Total
10_7_For risk assessment intuition or written methodology is used	1	Count	208	208
		% of Total	30,5%	30,5%
	2	Count	68	68
		% of Total	10,0%	10,0%
	3	Count	11	11
		% of Total	1,6%	1,6%
	4	Count	127	127
		% of Total	18,6%	18,6%
	5	Count	122	122
		% of Total	17,9%	17,9%
	6	Count	147	147
		% of Total	21,5%	21,5%
Total		Count	683	683
		% of Total	100,0%	100,0%

10_7_For risk assessment intuition or written methodology is used * 1_Indiv_assist Crosstabulation

			1_Indiv_assist	Total
			Individually with assistants	
10_7_For risk assessment intuition or written methodology is used	1	Count	81	81
		% of Total	63,3%	63,3%
	2	Count	46	46
		% of Total	35,9%	35,9%
	3	Count	1	1
		% of Total	0,8%	0,8%
Total		Count	128	128
		% of Total	100,0%	100,0%

10_7_For risk assessment intuition or written methodology is used * 1_Small_audit_firm Crosstabulation

			1_Small_audit_firm	Total
			Smaller audit firm	
10_7_For risk assessment intuition or written methodology is used	1	Count	122	122
		% of Total	25,9%	25,9%
	2	Count	28	28
		% of Total	5,9%	5,9%
	3	Count	163	163
		% of Total	34,6%	34,6%
	4	Count	44	44
		% of Total	9,3%	9,3%
	6	Count	114	114
		% of Total	24,2%	24,2%
Total		Count	471	471
		% of Total	100,0%	100,0%

10_7_For risk assessment intuition or written methodology is used * 1_Big5_10 Crosstabulation

			1_Big5_10	Total
			Mid tier (Big5-10)	
10_7_For risk assessment intuition or written methodology is used	1	Count	9	9
		% of Total	10,7%	10,7%
	2	Count	21	21
		% of Total	25,0%	25,0%
	6	Count	54	54
		% of Total	64,3%	64,3%
Total		Count	84	84
		% of Total	100,0%	100,0%

10_7_For risk assessment intuition or written methodology is used * 1_Big4 Crosstabulation

			1_Big4	Total
			At Big 4	
10_7_For risk assessment intuition or written methodology is used	1	Count	173	173
		% of Total	100,0%	100,0%
Total		Count	173	173
		% of Total	100,0%	100,0%

Network membership and intuition

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
10_6_For risk assessment intuition is used * 2_Network	1359[a]	83,9%	260	16,1%	1619	100,0%
10_7_For risk assessment intuition or written methodology is used * 2_Network	1407[a]	86,9%	212	13,1%	1619	100,0%

a. Number of valid cases is different from the total count in the crosstabulation table because the cell counts have been rounded.

10_6_For risk assessment intuition is used * 2_Network Crosstabulation

			2_Network		Total
			YES	NO	
10_6_For risk assessment intuition is used	1	Count	226	414	640
		% of Total	16,6%	30,5%	47,1%
	2	Count	81	159	240
		% of Total	6,0%	11,7%	17,7%
	3	Count	0	60	60
		% of Total	0,0%	4,4%	4,4%
	4	Count	8	141	149
		% of Total	0,6%	10,4%	11,0%
	5	Count	0	180	180
		% of Total	0,0%	13,2%	13,2%
	6	Count	9	81	90
		% of Total	0,7%	6,0%	6,6%
Total		Count	324	1035	1359
		% of Total	23,8%	76,2%	100,0%

10_7_For risk assessment intuition or written methodology is used * 2_Network Crosstabulation

			2_Network		Total
			YES	NO	
10_7_For risk assessment intuition or written methodology is used	1	Count	213	368	581
		% of Total	15,1%	26,2%	41,3%
	2	Count	46	93	139
		% of Total	3,3%	6,6%	9,9%
	3	Count	22	153	175
		% of Total	1,6%	10,9%	12,4%
	4	Count	8	163	171
		% of Total	0,6%	11,6%	12,2%
	5	Count	0	122	122
		% of Total	0,0%	8,7%	8,7%
	6	Count	54	165	219
		% of Total	3,8%	11,7%	15,6%
Total		Count	343	1064	1407
		% of Total	24,4%	75,6%	100,0%

Cross table analysis to examine the occurrence of intuition

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
2_Network * Risk_int_new	1359[a]	83,9%	260	16,1%	1619	100,0%

a. Number of valid cases is different from the total count in the crosstabulation table because the cell counts have been rounded.

2_Network * Risk_int_new Crosstabulation

Count

		Risk_int_new		Total
		1	2	
2_Network	YES	307	17	324
	NO	633	402	1035
Total		940	419	1359

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	130,580[a]	1	,000		
Continuity Correction[b]	129,010	1	,000		
Likelihood Ratio	162,904	1	,000		
Fisher's Exact Test				,000	,000
N of Valid Cases	1359				

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 99,89.

b. Computed only for a 2x2 table

Symmetric Measures[c]

		Value	Approx. Sig.
Nominal by Nominal	Phi	,310	,000
	Cramer's V	,310	,000
N of Valid Cases		1359	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Correlation statistics are available for numeric data only.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Org_code_new* Risk_int_new	1359[a]	83,9%	260	16,1%	1619	100,0%

a. Number of valid cases is different from the total count in the crosstabulation table because the cell counts have been rounded.

Org_code_new* Risk_int_new Crosstabulation

Count

		Risk_int_new		Total
		1	2	
Org_code_new	1	349	207	556
	2	104	0	104
	3	258	203	461
	4	56	9	65
	5	173	0	173
Total		940	419	1359

Explanation of Org_code_new variable:

1: Individually without assistants

2: Individually with assistants

3:Smaller audit firm (+also individually)

4: Big5-10 (+ also individually)

5:Big4

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	180,624[a]	4	,000
Likelihood Ratio	260,139	4	,000
Linear-by-Linear Association	44,174	1	,000
N of Valid Cases	1359		

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 20,04.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Nominal by Nominal	Phi	,365			,000
	Cramer's V	,365			,000
Interval by Interval	Pearson's R	-,180	,022	-6,755	,000[c]
Ordinal by Ordinal	Spearman Correlation	-,155	,025	-5,782	,000[c]
N of Valid Cases		1359			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

Discriminant analysis – Auditee's sales revenue vs intuition in audit procedures

Group Statistics

10_AudRisk_intuit		Mean	Std. Deviation	Valid N (listwise) Unweighted	Valid N (listwise) Weighted
1	NoXbelow200mio	6,1977	7,81234	33	33,000
	NoX200_500	3,6708	5,00224	33	33,000
	NoX500_1bn	2,2436	3,01989	33	33,000
	NoX1_2bn	1,4471	2,84845	33	33,000
	NoX2bn	3,3120	11,97189	33	33,000
2	NoXbelow200mio	5,4893	4,33236	18	18,000
	NoX200_500	3,0501	2,64196	18	18,000
	NoX500_1bn	2,9590	3,20051	18	18,000
	NoX1_2bn	,4194	,77904	18	18,000
	NoX2bn	1,1849	2,10859	18	18,000
3	NoXbelow200mio	2,0083	1,55284	6	6,000
	NoX200_500	3,6842	3,31272	6	6,000
	NoX500_1bn	1,1000	1,63951	6	6,000
	NoX1_2bn	,1400	,34293	6	6,000
	NoX2bn	,3842	,60945	6	6,000
4	NoXbelow200mio	7,4889	9,33695	9	9,000
	NoX200_500	4,2778	5,68634	9	9,000
	NoX500_1bn	3,2222	3,07806	9	9,000
	NoX1_2bn	,5667	1,04403	9	9,000
	NoX2bn	,7778	,81206	9	9,000
5	NoXbelow200mio	11,5493	7,70106	7	7,000
	NoX200_500	5,0389	3,57356	7	7,000
	NoX500_1bn	2,5675	3,15524	7	7,000
	NoX1_2bn	2,9389	3,07507	7	7,000
	NoX2bn	2,3554	4,98719	7	7,000
6	NoXbelow200mio	3,9786	5,35089	9	9,000
	NoX200_500	2,1681	2,35715	9	9,000
	NoX500_1bn	,9844	1,75986	9	9,000
	NoX1_2bn	,9553	2,22652	9	9,000
	NoX2bn	,6136	1,37468	9	9,000
Total	NoXbelow200mio	6,0907	6,97411	82	82,000
	NoX200_500	3,5540	4,15227	82	82,000
	NoX500_1bn	2,3138	2,89740	82	82,000
	NoX1_2bn	1,1026	2,27688	82	82,000
	NoX2bn	1,9749	7,81698	82	82,000

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
NoXbelow200mio	,905	1,591	5	76	,173
NoX200_500	,970	,478	5	76	,792
NoX500_1bn	,941	,957	5	76	,450
NoX1_2bn	,895	1,791	5	76	,125
NoX2bn	,977	,365	5	76	,871

Appendix 6 – The statistics of Hypothesis H_2

Correlation between the quantifiability and qualitative characteristics of audit risk

Correlations

			11_6_Audit risk quantifiable	11_7_Audit risk qualitative category
Spearman's rho	11_6_Audit risk quantifiable	Correlation Coefficient	1,000	-,033
		Sig. (2-tailed)	.	,188
		N	1564	1558
	11_7_Audit risk qualitative category	Correlation Coefficient	-,033	1,000
		Sig. (2-tailed)	,188	.
		N	1558	1580

Correlation between the responses related to the objective and subjective nature of audit risk

Correlations

			11_8_Risk assessment objective	11_9_Risk assessment subjective
Spearman's rho	11_8_Risk assessment objective	Correlation Coefficient	1,000	-,439**
		Sig. (2-tailed)	.	,000
		N	1539	1539
	11_9_Risk assessment subjective	Correlation Coefficient	-,439**	1,000
		Sig. (2-tailed)	,000	.
		N	1539	1587

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations: subjectivity, objectivity, quantifiability, qualitative categories

Correlations

			11_8_Risk assessment objective	11_9_Risk assessment subjective	11_6_Audit risk quantifiable	11_7_Audit risk qualitative category
Spearman's rho	11_8_Risk assessment objective	Correlation Coefficient	1,000	-,439**	,531**	,172**
		Sig. (2-tailed)	.	,000	,000	,000
		N	1539	1539	1530	1539
	11_9_Risk assessment subjective	Correlation Coefficient	-,439**	1,000	-,161**	,234**
		Sig. (2-tailed)	,000	.	,000	,000
		N	1539	1587	1564	1574
	11_6_Audit risk quantifiable	Correlation Coefficient	,531**	-,161**	1,000	-,033
		Sig. (2-tailed)	,000	,000	.	,188
		N	1530	1564	1564	1558
	11_7_Audit risk qualitative category	Correlation Coefficient	,172**	,234**	-,033	1,000
		Sig. (2-tailed)	,000	,000	,188	.
		N	1539	1574	1558	1580

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation between the perceptions of audit risk and the actual risk assessment

Correlations

			11_6_Audit risk quantifiable	11_7_Audit risk qualitative category	15_1_Risk calculated	15_2_Risk described by qualitative categories
Spearman's rho	11_6_Audit risk quantifiable	Correlation Coefficient	1,000	-,033	,503**	-,047
		Sig. (2-tailed)	.	,188	,000	,066
		N	1564	1558	1532	1554
	11_7_Audit risk qualitative category	Correlation Coefficient	-,033	1,000	,021	,080**
		Sig. (2-tailed)	,188	.	,412	,001
		N	1558	1580	1542	1570
	15_1_Risk calculated	Correlation Coefficient	,503**	,021	1,000	-,304**
		Sig. (2-tailed)	,000	,412	.	,000
		N	1532	1542	1557	1555
	15_2_Risk described by qualitative categories	Correlation Coefficient	-,047	,080**	-,304**	1,000
		Sig. (2-tailed)	,066	,001	,000	.
		N	1554	1570	1555	1603

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation between the risk assessment of first and subsequent audits

Correlations

			12_1_Written risk assessment in case of 1st audits	12_2_No written risk assessment in case of 1st audits	12_3_Written risk assessment in case of subsequent audits	12_4_No written risk assessment in case of subsequent audits	12_5_No risk assessment in case of subsequent audits
Spearman's rho	12_1_Written risk assessment in case of 1st audits	Correlation Coefficient	1,000	-,591**	,754**	-,500**	-,219**
		Sig. (2-tailed)	.	,000	,000	,000	,000
		N	1608	1547	1581	1556	1505
	12_2_No written risk assessment in case of 1st audits	Correlation Coefficient	-,591**	1,000	-,555**	,859**	,615**
		Sig. (2-tailed)	,000	.	,000	,000	,000
		N	1547	1555	1547	1544	1505
	12_3_Written risk assessment in case of subsequent audits	Correlation Coefficient	,754**	-,555**	1,000	-,652**	-,289**
		Sig. (2-tailed)	,000	,000	.	,000	,000
		N	1581	1547	1584	1536	1505
	12_4_No written risk assessment in case of subsequent audits	Correlation Coefficient	-,500**	,859**	-,652**	1,000	,564**
		Sig. (2-tailed)	,000	,000	,000	.	,000
		N	1556	1544	1536	1564	1496
	12_5_No risk assessment in case of subsequent audits	Correlation Coefficient	-,219**	,615**	-,289**	,564**	1,000
		Sig. (2-tailed)	,000	,000	,000	,000	.
		N	1505	1505	1505	1496	1505

**. Correlation is significant at the 0.01 level (2-tailed).

Form of organisation and the documentation of risk assessment

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
12_1_Written risk assessment in case of 1st audits * Org_form_unified	1608[a]	99,3%	11	0,7%	1619	100,0%
12_2_No written risk assessment in case of 1st audits * Org_form_unified	1555[a]	96,0%	64	4,0%	1619	100,0%
12_3_Written risk assessment in case of subsequent audits * Org_form_unified	1584[a]	97,8%	35	2,2%	1619	100,0%
12_4_No written risk assessment in case of subsequent audits * Org_form_unified	1564[a]	96,6%	55	3,4%	1619	100,0%
12_5_No risk assessment in case of subsequent audits * Org_form_unified	1505[a]	93,0%	114	7,0%	1619	100,0%
12_6_Written risk assessment in case of significant engagements* Org_form_unified	1567[a]	96,8%	52	3,2%	1619	100,0%
12_7_Risk assessment in case of significant engagements only but not written* Org_form_unified	1545[a]	95,4%	74	4,6%	1619	100,0%

a. Number of valid cases is different from the total count in the crosstabulation table because the cell counts have been rounded.

12_1_Written risk assessment in case of 1st audits * Org_form_unified

Crosstab

			Org_form_unified								Total
			1	2	3	4	5	6	7	8	
12_1_Written risk assessment in case of 1st audits	1	Count	61	0	58	0	0	8	0	0	127
		% of Total	3,8%	0,0%	3,6%	0,0%	0,0%	0,5%	0,0%	0,0%	7,9%
	2	Count	13	0	92	0	0	0	0	0	105
		% of Total	0,8%	0,0%	5,7%	0,0%	0,0%	0,0%	0,0%	0,0%	6,5%
	3	Count	89	0	25	0	0	0	24	0	138
		% of Total	5,5%	0,0%	1,6%	0,0%	0,0%	0,0%	1,5%	0,0%	8,6%
	4	Count	16	0	21	0	0	0	0	0	37
		% of Total	1,0%	0,0%	1,3%	0,0%	0,0%	0,0%	0,0%	0,0%	2,3%
	5	Count	135	23	77	0	0	40	0	0	275
		% of Total	8,4%	1,4%	4,8%	0,0%	0,0%	2,5%	0,0%	0,0%	17,1%
	6	Count	414	101	142	30	173	12	0	54	926
		% of Total	25,7%	6,3%	8,8%	1,9%	10,8%	0,7%	0,0%	3,4%	57,6%
Total		Count	728	124	415	30	173	60	24	54	1608
		% of Total	45,3%	7,7%	25,8%	1,9%	10,8%	3,7%	1,5%	3,4%	100,0%

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,736	,000
	Cramer's V	,329	,000
	Contingency Coefficient	,593	,000
N of Valid Cases		1608	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

12_2_No written risk assessment in case of 1st audits * Org_form_unified

Crosstab

			Org_form_unified								Total
			1	2	3	4	5	6	7	8	
12_2_No written risk assessment in case of 1st audits	1	Count	207	81	120	30	173	12	0	54	677
		% of Total	13,3%	5,2%	7,7%	1,9%	11,1%	0,8%	0,0%	3,5%	43,5%
	2	Count	106	0	30	0	0	8	24	0	168
		% of Total	6,8%	0,0%	1,9%	0,0%	0,0%	0,5%	1,5%	0,0%	10,8%
	3	Count	58	1	60	0	0	2	0	0	121
		% of Total	3,7%	0,1%	3,9%	0,0%	0,0%	0,1%	0,0%	0,0%	7,8%
	4	Count	51	0	0	0	0	0	0	0	51
		% of Total	3,3%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	3,3%
	5	Count	109	22	148	0	0	32	0	0	311
		% of Total	7,0%	1,4%	9,5%	0,0%	0,0%	2,1%	0,0%	0,0%	20,0%
	6	Count	186	0	35	0	0	6	0	0	227
		% of Total	12,0%	0,0%	2,3%	0,0%	0,0%	0,4%	0,0%	0,0%	14,6%
Total		Count	717	104	393	30	173	60	24	54	1555
		% of Total	46,1%	6,7%	25,3%	1,9%	11,1%	3,9%	1,5%	3,5%	100,0%

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,770	,000
	Cramer's V	,344	,000
	Contingency Coefficient	,610	,000
N of Valid Cases		1555	

a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis.

12_3_Written risk assessment in case of subsequent audits * Org_form_unified

Crosstab

			Org_form_unified								Total
			1	2	3	4	5	6	7	8	
12_3_Written risk assessment in case of subsequent audits	1	Count	45	0	80	0	0	6	0	0	131
		% of Total	2,8%	0,0%	5,1%	0,0%	0,0%	0,4%	0,0%	0,0%	8,3%
	2	Count	105	0	18	0	0	0	0	0	123
		% of Total	6,6%	0,0%	1,1%	0,0%	0,0%	0,0%	0,0%	0,0%	7,8%
	3	Count	109	0	71	0	0	34	24	0	238
		% of Total	6,9%	0,0%	4,5%	0,0%	0,0%	2,1%	1,5%	0,0%	15,0%
	4	Count	48	0	20	0	0	8	0	0	76
		% of Total	3,0%	0,0%	1,3%	0,0%	0,0%	0,5%	0,0%	0,0%	4,8%
	5	Count	131	23	54	0	0	0	0	35	243
		% of Total	8,3%	1,5%	3,4%	0,0%	0,0%	0,0%	0,0%	2,2%	15,3%
	6	Count	293	81	165	30	173	12	0	19	773
		% of Total	18,5%	5,1%	10,4%	1,9%	10,9%	0,8%	0,0%	1,2%	48,8%
Total		Count	731	104	408	30	173	60	24	54	1584
		% of Total	46,1%	6,6%	25,8%	1,9%	10,9%	3,8%	1,5%	3,4%	100,0%

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,692	,000
	Cramer's V	,310	,000
	Contingency Coefficient	,569	,000
N of Valid Cases		1584	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

12_4_No written risk assessment in case of subsequent audits * Org_form_unified

Crosstab

			Org_form_unified								Total
			1	2	3	4	5	6	7	8	
12_4_No written risk assessment in case of subsequent audits	1	Count	186	82	150	30	173	12	0	19	652
		% of Total	11,9%	5,2%	9,6%	1,9%	11,1%	0,8%	0,0%	1,2%	41,7%
	2	Count	87	0	54	0	0	0	24	35	200
		% of Total	5,6%	0,0%	3,5%	0,0%	0,0%	0,0%	1,5%	2,2%	12,8%
	3	Count	53	0	6	0	0	0	0	0	59
		% of Total	3,4%	0,0%	0,4%	0,0%	0,0%	0,0%	0,0%	0,0%	3,8%
	4	Count	84	22	68	0	0	32	0	0	206
		% of Total	5,4%	1,4%	4,3%	0,0%	0,0%	2,0%	0,0%	0,0%	13,2%
	5	Count	128	0	50	0	0	0	0	0	178
		% of Total	8,2%	0,0%	3,2%	0,0%	0,0%	0,0%	0,0%	0,0%	11,4%
	6	Count	179	20	56	0	0	14	0	0	269
		% of Total	11,4%	1,3%	3,6%	0,0%	0,0%	0,9%	0,0%	0,0%	17,2%
Total		Count	717	124	384	30	173	58	24	54	1564
		% of Total	45,8%	7,9%	24,6%	1,9%	11,1%	3,7%	1,5%	3,5%	100,0%

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,749	,000
	Cramer's V	,335	,000
	Contingency Coefficient	,600	,000
N of Valid Cases		1564	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

12_5_No risk assessment in case of subsequent audits * Org_form_unified

Crosstab

			Org_form_unified								Total
			1	2	3	4	5	6	7	8	
12_5_No risk assessment in case of subsequent audits	1	Count	381	82	240	30	173	26	24	54	1010
		% of Total	25,3%	5,4%	15,9%	2,0%	11,5%	1,7%	1,6%	3,6%	67,1%
	2	Count	84	22	100	0	0	0	0	0	206
		% of Total	5,6%	1,5%	6,6%	0,0%	0,0%	0,0%	0,0%	0,0%	13,7%
	3	Count	31	0	10	0	0	0	0	0	41
		% of Total	2,1%	0,0%	0,7%	0,0%	0,0%	0,0%	0,0%	0,0%	2,7%
	4	Count	24	0	3	0	0	0	0	0	27
		% of Total	1,6%	0,0%	0,2%	0,0%	0,0%	0,0%	0,0%	0,0%	1,8%
	5	Count	30	0	40	0	0	32	0	0	102
		% of Total	2,0%	0,0%	2,7%	0,0%	0,0%	2,1%	0,0%	0,0%	6,8%
	6	Count	119	0	0	0	0	0	0	0	119
		% of Total	7,9%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	7,9%
Total		Count	669	104	393	30	173	58	24	54	1505
		% of Total	44,5%	6,9%	26,1%	2,0%	11,5%	3,9%	1,6%	3,6%	100,0%

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,624	,000
	Cramer's V	,279	,000
	Contingency Coefficient	,529	,000
N of Valid Cases		1505	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

12_6_Written risk assessment in case of significant engagements* Org_form_unified

Crosstab

			Org_form_unified								Total
			1	2	3	4	5	6	7	8	
12_6_Kockázatbecslés csak jelentős megbízásnál írásos	1	Count	273	82	163	9	173	18	0	54	772
		% of Total	17,4%	5,2%	10,4%	0,6%	11,0%	1,1%	0,0%	3,4%	49,3%
	2	Count	144	22	136	0	0	0	24	0	326
		% of Total	9,2%	1,4%	8,7%	0,0%	0,0%	0,0%	1,5%	0,0%	20,8%
	3	Count	91	0	9	0	0	0	0	0	100
		% of Total	5,8%	0,0%	0,6%	0,0%	0,0%	0,0%	0,0%	0,0%	6,4%
	4	Count	8	0	23	0	0	40	0	0	71
		% of Total	0,5%	0,0%	1,5%	0,0%	0,0%	2,6%	0,0%	0,0%	4,5%
	5	Count	74	0	62	21	0	0	0	0	157
		% of Total	4,7%	0,0%	4,0%	1,3%	0,0%	0,0%	0,0%	0,0%	10,0%
	6	Count	119	20	0	0	0	2	0	0	141
		% of Total	7,6%	1,3%	0,0%	0,0%	0,0%	0,1%	0,0%	0,0%	9,0%
Total		Count	709	124	393	30	173	60	24	54	1567
		% of Total	45,2%	7,9%	25,1%	1,9%	11,0%	3,8%	1,5%	3,4%	100,0%

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,896	,000
	Cramer's V	,401	,000
	Contingency Coefficient	,667	,000
N of Valid Cases		1567	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

12_7_Risk assessment in case of significant engagements only but not written* Org_form_unified

Crosstab

			Org_form_unified								Total
			1	2	3	4	5	6	7	8	
12_7_Risk assessment in case of significant engagements only but not written	1	Count	365	104	233	30	173	26	24	19	974
		% of Total	23,6%	6,7%	15,1%	1,9%	11,2%	1,7%	1,6%	1,2%	63,0%
	2	Count	123	0	44	0	0	0	0	35	202
		% of Total	8,0%	0,0%	2,8%	0,0%	0,0%	0,0%	0,0%	2,3%	13,1%
	3	Count	70	0	12	0	0	0	0	0	82
		% of Total	4,5%	0,0%	0,8%	0,0%	0,0%	0,0%	0,0%	0,0%	5,3%
	4	Count	25	0	42	0	0	0	0	0	67
		% of Total	1,6%	0,0%	2,7%	0,0%	0,0%	0,0%	0,0%	0,0%	4,3%
	5	Count	32	0	62	0	0	32	0	0	126
		% of Total	2,1%	0,0%	4,0%	0,0%	0,0%	2,1%	0,0%	0,0%	8,2%
	6	Count	94	0	0	0	0	0	0	0	94
		% of Total	6,1%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	6,1%
Total		Count	709	104	393	30	173	58	24	54	1545
		% of Total	45,9%	6,7%	25,4%	1,9%	11,2%	3,8%	1,6%	3,5%	100,0%

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,683	,000
	Cramer's V	,305	,000
	Contingency Coefficient	,564	,000
N of Valid Cases		1545	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Cluster analysis to separate attitudes towards audit risk

Cluster Membership

Case		5 Clusters	4 Clusters	3 Clusters	2 Clusters
1:	1	1	1	1	1
2:	2	2	2	2	2
3:	3	1	1	1	1
4:	4	1	1	1	1
5:	5	1	1	1	1
6:	6	1	1	1	1
7:	7	2	2	2	2
8:	8	1	1	1	1
9:	9	2	2	2	2
10:	10	1	1	1	1
11:	11	2	2	2	2
12:	12	1	1	1	1
13:	13	3	3	3	2
14:	14	1	1	1	1
15:	15	1	1	1	1
16:	16	2	2	2	2
17:	17	2	2	2	2
18:	18	1	1	1	1
19:	19	1	1	1	1
20:	20	2	2	2	2
21:	21	1	1	1	1
22:	22	1	1	1	1
23:	23	2	2	2	2
24:	24	1	1	1	1
25:	25	1	1	1	1
26:	26	1	1	1	1
27:	27	4	4	2	2
28:	28	1	1	1	1
29:	29	1	1	1	1
30:	30	2	2	2	2
31:	31	1	1	1	1
32:	32	1	1	1	1
33:	33	2	2	2	2
34:	34	1	1	1	1
35:	35	2	2	2	2
36:	36	1	1	1	1
37:	37	1	1	1	1
38:	38	2	2	2	2
39:	39	1	1	1	1
40:	40	4	4	2	2
41:	41	1	1	1	1
42:	42	1	1	1	1
43:	43	1	1	1	1
44:	44	1	1	1	1
45:	45	5	4	2	2
46:	46	2	2	2	2
47:	47	2	2	2	2
48:	48	1	1	1	1
49:	49	2	2	2	2
50:	50	1	1	1	1
51:	51	2	2	2	2
52:	52	1	1	1	1
53:	53	1	1	1	1
54:	54	2	2	2	2
55:	55	1	1	1	1
56:	56	2	2	2	2
57:	57	1	1	1	1
58:	58	2	2	2	2
59:	59	2	2	2	2
60:	60	2	2	2	2
61:	61	2	2	2	2
62:	62	1	1	1	1

63:	63	1	1	1	1
64:	64	1	1	1	1
65:	65	1	1	1	1
66:	66	1	1	1	1
67:	67	1	1	1	1
68:	68	2	2	2	2
69:	69	1	1	1	1
70:	70	2	2	2	2
71:	71	2	2	2	2
72:	72	1	1	1	1
73:	73	1	1	1	1
74:	74	2	2	2	2
75:	75	1	1	1	1
76:	76	1	1	1	1
77:	77	1	1	1	1
78:	78	2	2	2	2
79:	79	1	1	1	1
80:	80	1	1	1	1
81:	81	1	1	1	1
82:	82	1	1	1	1
83:	83	1	1	1	1
84:	84	1	1	1	1
85:	85	2	2	2	2
86:	86	2	2	2	2
87:	87	1	1	1	1
88:	88	1	1	1	1
89:	89	2	2	2	2
90:	90	2	2	2	2
91:	91	1	1	1	1
92:	92	1	1	1	1
93:	93	1	1	1	1
94:	94	1	1	1	1
95:	95	1	1	1	1
96:	96	1	1	1	1
97:	97	1	1	1	1
98:	98	1	1	1	1
99:	99	1	1	1	1
100:	100	2	2	2	2
101:	101	2	2	2	2
102:	102	1	1	1	1
103:	103	1	1	1	1
104:	104	1	1	1	1

Frequency of answers within the clusters

10_AudRisk_intuit

K1		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	18	26,9	26,9	26,9
	1	28	41,8	41,8	68,7
	2	8	11,9	11,9	80,6
	3	3	4,5	4,5	85,1
	4	2	3,0	3,0	88,1
	5	3	4,5	4,5	92,5
	6	5	7,5	7,5	100,0
	Total	67	100,0	100,0	

10_AudRisk_intuit

K2		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	10,8	10,8	10,8
	1	5	13,5	13,5	24,3
	2	10	27,0	27,0	51,4
	3	3	8,1	8,1	59,5
	4	7	18,9	18,9	78,4
	5	4	10,8	10,8	89,2
	6	4	10,8	10,8	100,0
	Total	37	100,0	100,0	

11_Risk_asses_admin_burden

K1		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6	9,0	9,0	9,0
	1	19	28,4	28,4	37,3
	2	15	22,4	22,4	59,7
	3	10	14,9	14,9	74,6
	4	10	14,9	14,9	89,6
	5	3	4,5	4,5	94,0
	6	4	6,0	6,0	100,0
	Total	67	100,0	100,0	

11_Risk_asses_admin_burden

K2		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	2,7	2,7	2,7
	1	2	5,4	5,4	8,1
	2	2	5,4	5,4	13,5
	3	5	13,5	13,5	27,0
	4	11	29,7	29,7	56,8
	5	8	21,6	21,6	78,4
	6	8	21,6	21,6	100,0
	Total	37	100,0	100,0	

12_1st_risk_asses_not_written

K1		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	8	11,9	11,9	11,9
	1	42	62,7	62,7	74,6
	2	10	14,9	14,9	89,6
	3	6	9,0	9,0	98,5
	5	1	1,5	1,5	100,0
	Total	67	100,0	100,0	

12_1st_risk_asses_not_written

K2		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	3	8,1	8,1	8,1
	4	6	16,2	16,2	24,3
	5	15	40,5	40,5	64,9
	6	13	35,1	35,1	100,0
	Total	37	100,0	100,0	

12_Subseq_risk_asses_not_written

K1		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	8	11,9	11,9	11,9
	1	38	56,7	56,7	68,7
	2	7	10,4	10,4	79,1
	3	2	3,0	3,0	82,1
	4	5	7,5	7,5	89,6
	5	3	4,5	4,5	94,0
	6	4	6,0	6,0	100,0
	Total	67	100,0	100,0	

12_Subseq_risk_asses_not_written

K2		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	2,7	2,7	2,7
	2	3	8,1	8,1	10,8
	3	3	8,1	8,1	18,9
	4	9	24,3	24,3	43,2
	5	8	21,6	21,6	64,9
	6	13	35,1	35,1	100,0
	Total	37	100,0	100,0	

12_Subseq_risk_asses_no

K1		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	11	16,4	16,4	16,4
	1	49	73,1	73,1	89,6
	2	2	3,0	3,0	92,5
	3	2	3,0	3,0	95,5
	4	1	1,5	1,5	97,0
	5	2	3,0	3,0	100,0
	Total	67	100,0	100,0	

12_Subseq_risk_asses_no

K2		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	2,7	2,7	2,7
	1	14	37,8	37,8	40,5
	2	8	21,6	21,6	62,2
	3	4	10,8	10,8	73,0
	4	2	5,4	5,4	78,4
	5	4	10,8	10,8	89,2
	6	4	10,8	10,8	100,0
	Total	37	100,0	100,0	

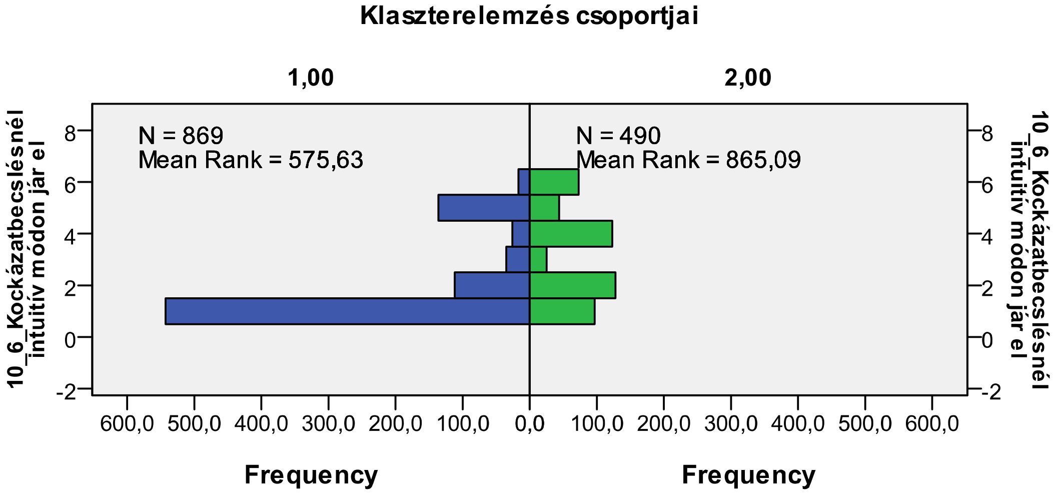
Mann-Whitney U tests to check the differences between the clusters

Hypothesis Test Summary

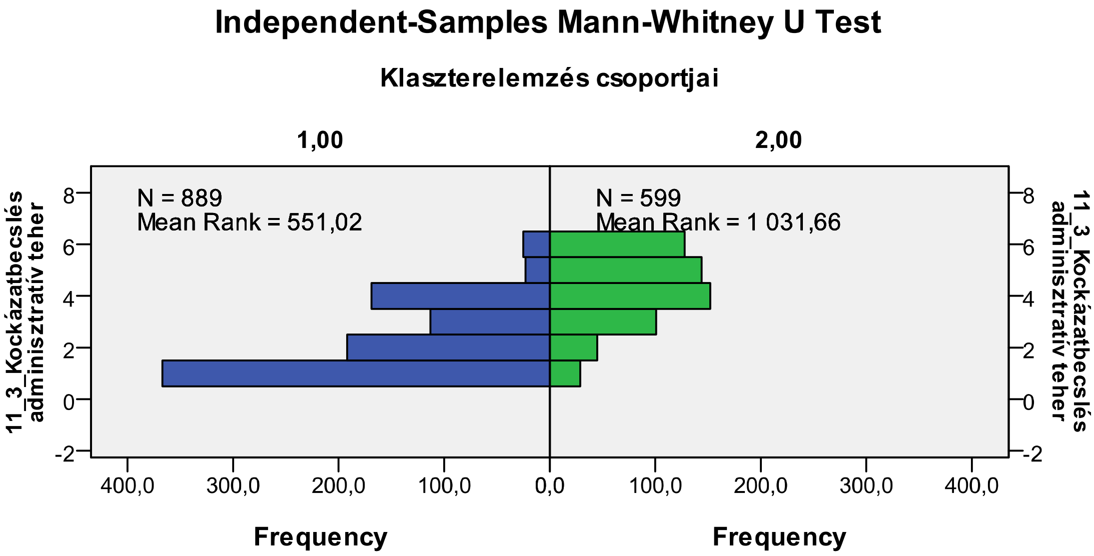
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of 10_6_Kockázatbecslésnél intuitív módon jár el is the same across categories of Klaszterelemzés csoportjai.	Independent-Samples Mann-Whitney U Test	,000	Reject the null hypothesis.
2	The distribution of 11_3_Kockázatbecslés adminisztratív teher is the same across categories of Klaszterelemzés csoportjai.	Independent-Samples Mann-Whitney U Test	,000	Reject the null hypothesis.
3	The distribution of 12_2_Kockázatbecslés nem írásos első megbízásnál is the same across categories of Klaszterelemzés csoportjai.	Independent-Samples Mann-Whitney U Test	,000	Reject the null hypothesis.
4	The distribution of 12_4_Kockázatbecslés nem írásos követő megbízásnál is the same across categories of Klaszterelemzés csoportjai.	Independent-Samples Mann-Whitney U Test	,000	Reject the null hypothesis.
5	The distribution of 12_5_Kockázatbecslés nem kell követő megbízásoknál is the same across categories of Klaszterelemzés csoportjai.	Independent-Samples Mann-Whitney U Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

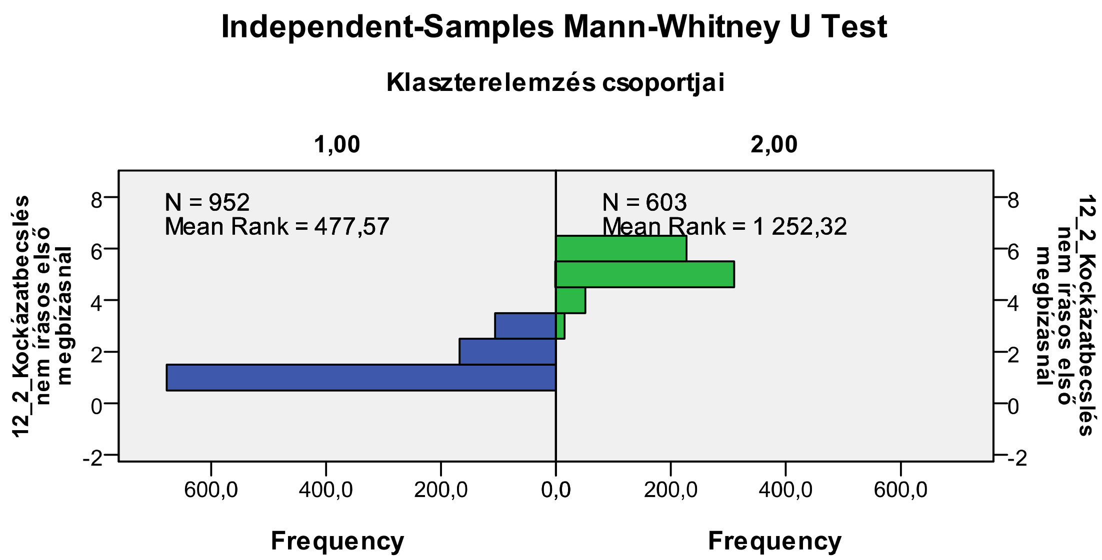
Independent-Samples Mann-Whitney U Test



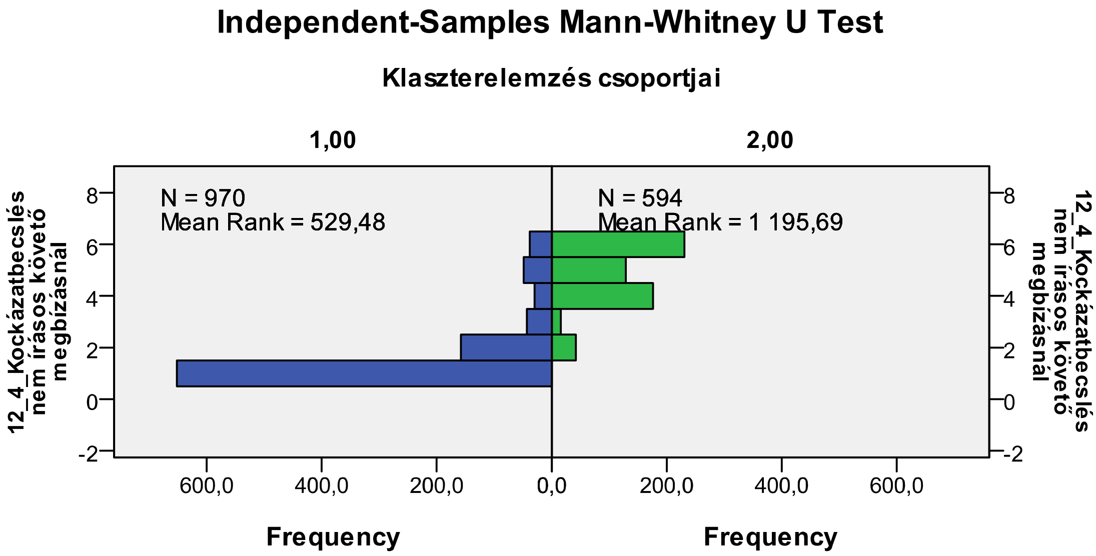
Total N	1 359
Mann-Whitney U	303 601,500
Wilcoxon W	423 896,500
Test Statistic	303 601,500
Standard Error	6 538,999
Standardized Test Statistic	13,870
Asymptotic Sig. (2-sided test)	,000



Total N	1 488
Mann-Whitney U	438 262,000
Wilcoxon W	617 962,000
Test Statistic	438 262,000
Standard Error	7 971,086
Standardized Test Statistic	21,579
Asymptotic Sig. (2-sided test)	,000

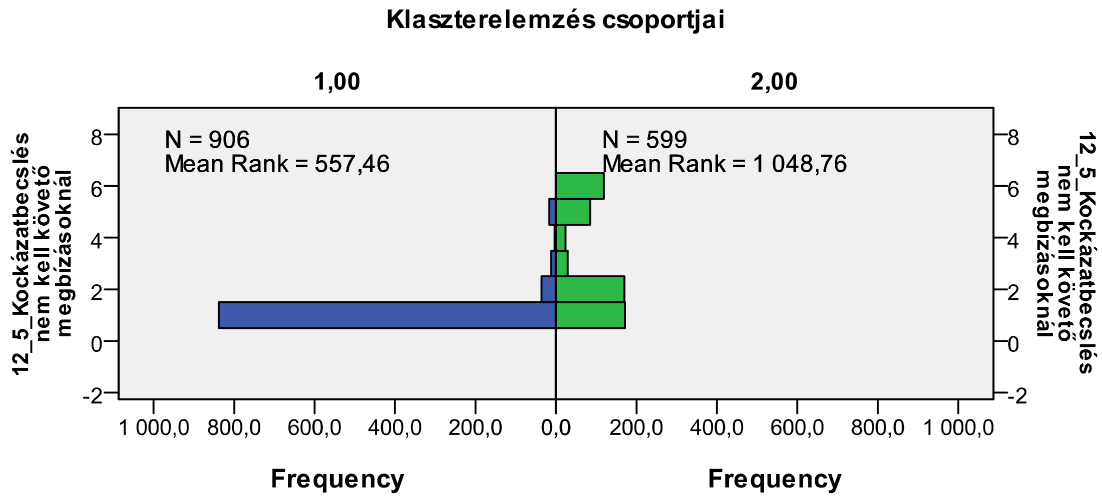


Total N	1 555
Mann-Whitney U	573 040,000
Wilcoxon W	755 146,000
Test Statistic	573 040,000
Standard Error	8 205,770
Standardized Test Statistic	34,855
Asymptotic Sig. (2-sided test)	,000



Total N	1 564
Mann-Whitney U	533 522,500
Wilcoxon W	710 237,500
Test Statistic	533 522,500
Standard Error	8 299,003
Standardized Test Statistic	29,574
Asymptotic Sig. (2-sided test)	,000

Independent-Samples Mann-Whitney U Test



Total N	1 505
Mann-Whitney U	448 509,500
Wilcoxon W	628 209,500
Test Statistic	448 509,500
Standard Error	6 876,896
Standardized Test Statistic	25,762
Asymptotic Sig. (2-sided test)	,000

Correlation between the acceptance and rejection of risk assessment by components

Correlations

			13_1_Risk_asses_by_components	13_4_Risk_asses_NOT_by_components
Spearman's rho	13_1_Risk_asses_by_components	Correlation Coefficient	1,000	-,262**
		Sig. (2-tailed)	.	,000
		N	1607	1538
	13_4_Risk_asses_NOT_by_components	Correlation Coefficient	-,262**	1,000
		Sig. (2-tailed)	,000	.
		N	1538	1544

**. Correlation is significant at the 0.01 level (2-tailed).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories defined by 13_1_Kockázatbecslés komponensenként <=3,00 and >3,00 occur with probabilities 0,5 and 0,5.	One-Sample Binomial Test	,000	Reject the null hypothesis.
2	The categories defined by 13_2_Kockázatbecslésnél eredendő és ellenőrzési kockázat külön <=3,00 and >3,00 occur with probabilities 0,5 and 0,5.	One-Sample Binomial Test	,000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

Appendix 7 – The statistics of Hypothesis H_3

Correlation between risk assessment by components and the use of audit softwares

Correlations

			13_1_Risk_asses_by_components	10_5_For risk assessment Uses audit software
Spearman's rho	13_1_Risk_asses_by_components	Correlation Coefficient	1,000	-,086**
		Sig. (2-tailed)	.	,001
		N	1607	1551
	10_5_For risk assessment Uses audit software	Correlation Coefficient	-,086**	1,000
		Sig. (2-tailed)	,001	.
		N	1551	1555

**. Correlation is significant at the 0.01 level (2-tailed).

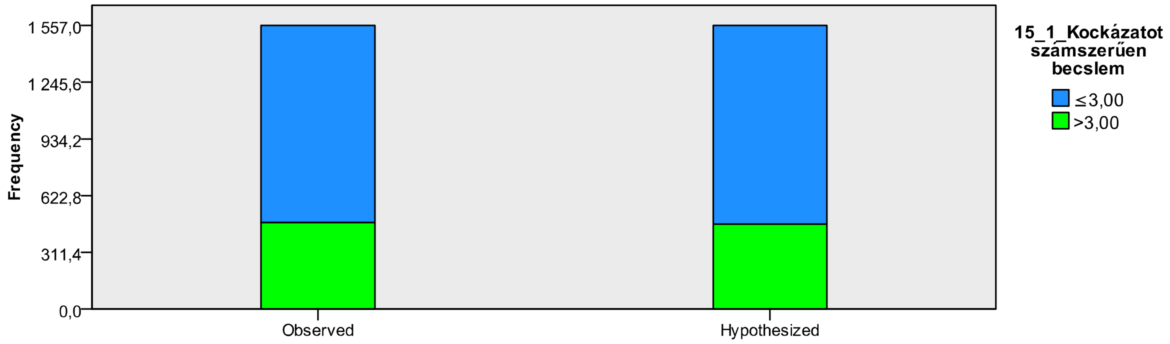
Binomial test: calculation of risks

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories defined by 15_1_Kockázatot számszerűen becslem <=3,00 and >3,00 occur with probabilities 0,7 and 0,3.	One-Sample Binomial Test	,341	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.

One-Sample Binomial Test



Total N	1 557
Test Statistic	1 082,000
Standard Error	18,082
Standardized Test Statistic	-,409
Asymptotic Sig. (1-sided test)	,341

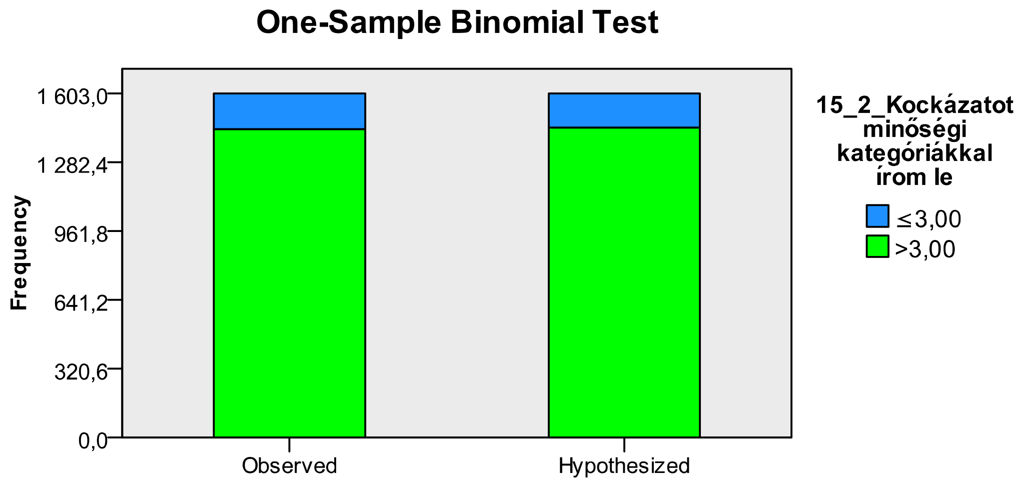
1. The alternative hypothesis is that the proportion of records in the success group is less than the hypothesized success probability.

Binomial test: risk described by qualitative categories

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories defined by 15_2_Kockázatot minőségi kategóriákkal írom le <=3,00 and >3,00 occur with probabilities 0,1 and 0,9.	One-Sample Binomial Test	,274	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is ,05.



Total N	1 603
Test Statistic	168,000
Standard Error	12,011
Standardized Test Statistic	,599
Asymptotic Sig. (1-sided test)	,274

Descriptives of the applied qualitative categories

	N	Minimum	Maximum	Mean	Std. Deviation
15b_Risk_categ_num	1619	0	10	2,52	1,492
Valid N (listwise)	1619				

Appendix 8 – The statistics of Hypothesis H_4

Correlations

			16_1_Risk_derived_from_components	16_3_Risk_always_same
Spearman's rho	16_1_Risk_derived_from_components	Correlation Coefficient	1,000	,009
		Sig. (2-tailed)	.	,717
		N	1584	1508
	16_3_Risk_always_same	Correlation Coefficient	,009	1,000
		Sig. (2-tailed)	,717	.
		N	1508	1521

Correlations between certain subquestions of Question 14 and 16

Correlations

			16_1_Risk_derived_from_components	16_2_Risk_determined	14_3_Detection_risk_calculated	14_4_Detection_risk_estimated
Spearman's rho	16_1_Risk_derived_from_components	Correlation Coefficient	1,000	,052*	,329**	-,063*
		Sig. (2-tailed)	.	,043	,000	,014
		N	1584	1501	1554	1533
	16_2_Risk_determined	Correlation Coefficient	,052*	1,000	-,091**	,015
		Sig. (2-tailed)	,043	.	,000	,552
		N	1501	1501	1501	1497
	14_3_Detection_risk_calculated	Correlation Coefficient	,329**	-,091**	1,000	-,592**
		Sig. (2-tailed)	,000	,000	.	,000
		N	1554	1501	1568	1545
	14_4_Detection_risk_estimated	Correlation Coefficient	-,063*	,015	-,592**	1,000
		Sig. (2-tailed)	,014	,552	,000	.
		N	1533	1497	1545	1551

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			16_2_Risk_determined	16_3_Risk_always_same
Spearman's rho	16_2_Risk_determined	Correlation Coefficient	1,000	,349**
		Sig. (2-tailed)	.	,000
		N	1501	1501
	16_3_Risk_always_same	Correlation Coefficient	,349**	1,000
		Sig. (2-tailed)	,000	.
		N	1501	1521

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			17_1_Business_risk_approach_applied	17_2_Transaction_based_approach_applied
Spearman's rho	17_1_Business_risk_approach_applied	Correlation Coefficient	1,000	,430**
		Sig. (2-tailed)	.	,000
		N	1555	1540
	17_2_Transaction_based_approach_applied	Correlation Coefficient	,430**	1,000
		Sig. (2-tailed)	,000	.
		N	1540	1597

**. Correlation is significant at the 0.01 level (2-tailed).

Risk assessment approaches in Cluster K1

Statistics

		17_1_Business_risk_approach_applied	17_2_Transaction_based_approach_applied
N	Valid	985	998
	Missing	31	18

17_1_Business_risk_approach_applied

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	38	3,7	3,9	3,9
	2	74	7,3	7,5	11,4
	3	80	7,9	8,1	19,5
	4	234	23,0	23,8	43,2
	5	135	13,3	13,7	57,0
	6	424	41,7	43,0	100,0
	Total	985	96,9	100,0	
Missing	System	31	3,1		
Total		1016	100,0		

17_2_Transaction_based_approach_applied

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	36	3,5	3,6	3,6
	2	51	5,0	5,1	8,7
	3	63	6,2	6,3	15,0
	4	29	2,9	2,9	17,9
	5	279	27,5	28,0	45,9
	6	540	53,1	54,1	100,0
	Total	998	98,2	100,0	
Missing	System	18	1,8		
Total		1016	100,0		

Frequency tables and correlations of approaches applied without weighting

Statistics

		17_1_Business_risk_approach_applied	17_2_Transaction_based_approach_applied
N	Valid	94	99
	Missing	10	5

17_1_Business_risk_approach_applied

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	4,8	5,3	5,3
	2	6	5,8	6,4	11,7
	3	14	13,5	14,9	26,6
	4	16	15,4	17,0	43,6
	5	17	16,3	18,1	61,7
	6	36	34,6	38,3	100,0
	Total	94	90,4	100,0	
Missing	System	10	9,6		
Total		104	100,0		

17_2_Transaction_based_approach_applied

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	3,8	4,0	4,0
	2	3	2,9	3,0	7,1
	3	4	3,8	4,0	11,1
	4	8	7,7	8,1	19,2
	5	37	35,6	37,4	56,6
	6	43	41,3	43,4	100,0
	Total	99	95,2	100,0	
Missing	System	5	4,8		
Total		104	100,0		

Correlations

			17_1_Business_risk_approach_applied	17_2_Transaction_based_approach_applied
Spearman's rho	17_1_Business_risk_approach_applied	Correlation Coefficient	1,000	,423**
		Sig. (2-tailed)	.	,000
		N	94	92
	17_2_Transaction_based_approach_applied	Correlation Coefficient	,423**	1,000
		Sig. (2-tailed)	,000	.
		N	92	99

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation between the applied approach and the use of its results

Correlations

			17_1_Business_risk_approach_applied	17_2_Transaction_based_approach_applied	17_3_Risk_assess_results_used
Spearman's rho	17_1_Business_risk_approach_applied	Correlation Coefficient	1,000	,430**	,259**
		Sig. (2-tailed)	.	,000	,000
		N	1555	1540	1542
	17_2_Transaction_based_approach_applied	Correlation Coefficient	,430**	1,000	,238**
		Sig. (2-tailed)	,000	.	,000
		N	1540	1597	1560
	17_3_Risk_assess_results_used	Correlation Coefficient	,259**	,238**	1,000
		Sig. (2-tailed)	,000	,000	.
		N	1542	1560	1565

**. Correlation is significant at the 0.01 level (2-tailed).

Factor analysis of applied approaches

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,836
Bartlett's Test of Sphericity	Approx. Chi-Square	8372,171
	df	21
	Sig.	,000

Communalities

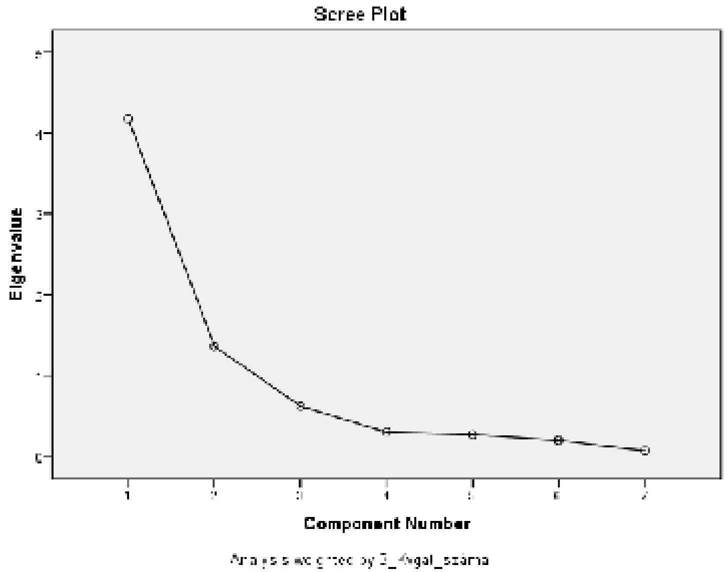
	Initial	Extraction
17_1_Business_risk_approach_applied	1,000	,694
17_2_Transaction_based_approach_applied	1,000	,727
17_3_Risk_assess_results_used	1,000	,738
18_1_Risk_assess_results_used_planning	1,000	,778
18_2_Risk_assess_results_used_implementation	1,000	,920
18_3_Risk_assess_results_used_evaluation	1,000	,845
18_4_Risk_assess_results_used_next_year	1,000	,834

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,171	59,588	59,588	4,171	59,588	59,588	4,089	58,415	58,415
2	1,366	19,513	79,101	1,366	19,513	79,101	1,448	20,686	79,101
3	,619	8,848	87,950						
4	,303	4,326	92,276						
5	,270	3,858	96,134						
6	,199	2,838	98,972						
7	,072	1,028	100,000						

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component	
	1	2
18_2_Risk_assess_results_used_implementation	,956	-,080
18_3_Risk_assess_results_used_evaluation	,913	-,109
18_4_Risk_assess_results_used_next_year	,913	,030
18_1_Risk_assess_results_used_planning	,874	-,116
17_3_Risk_assess_results_used	,852	-,108
17_2_Transaction_based_approach_applied	,144	,841
17_1_Business_risk_approach_applied	,282	,784

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Rotated Component Matrix[a]

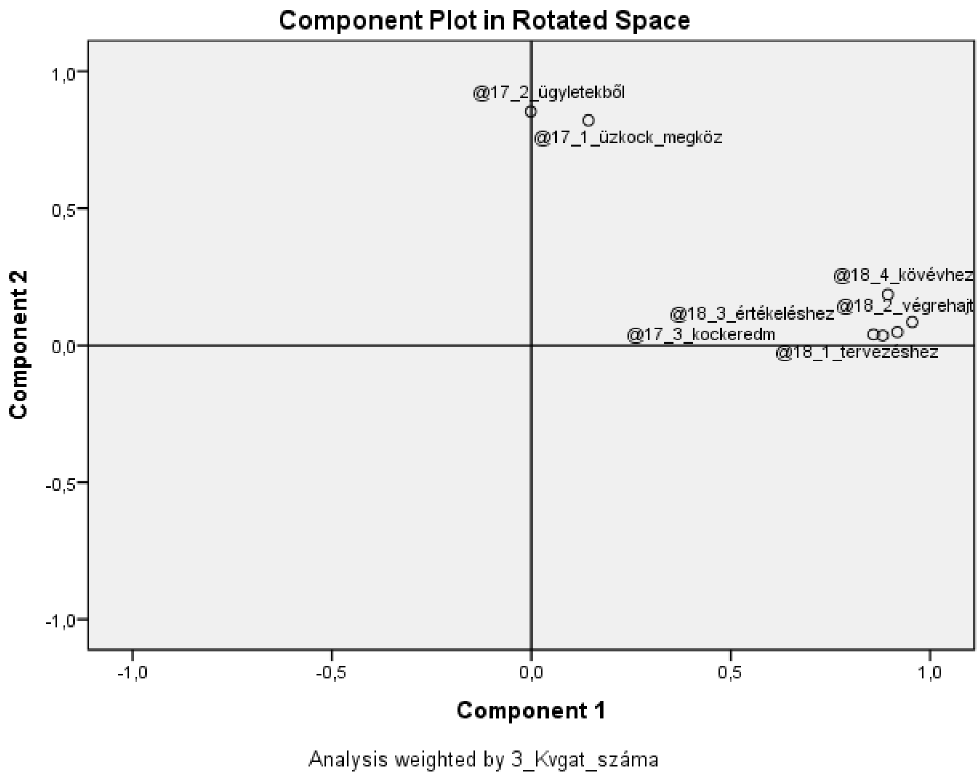
	Component	
	1	2
18_2_Risk_assess_results_used_implementation	,955	,085
18_3_Risk_assess_results_used_evaluation	,918	,049
18_4_Risk_assess_results_used_next_year	,894	,185
18_1_Risk_assess_results_used_planning	,881	,035
17_3_Risk_assess_results_used	,858	,040
17_2_Transaction_based_approach_applied	-,002	,853
17_1_Business_risk_approach_applied	,143	,821

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Component Transformation Matrix

Component	1	2
1	,985	,171
2	-,171	,985

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.



Component Score Coefficient Matrix

	Component	
	1	2
17_1_Business_risk_approach_applied	-,032	,577
17_2_Transaction_based_approach_applied	-,071	,612
17_3_Risk_assess_results_used	,215	-,043
18_1_Risk_assess_results_used_planning	,221	-,048
18_2_Risk_assess_results_used_implementation	,236	-,018
18_3_Risk_assess_results_used_evaluation	,229	-,041
18_4_Risk_assess_results_used_next_year	,212	,059

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Score Covariance Matrix

Component	1	2
1	1,000	,000
2	,000	1,000

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Friedman test

Descriptive Statistics

	N	Percentiles		
		25th	50th (Median)	75th
17_1_Business_risk_appr	59	3,00	5,00	6,00
17_2_Transactions	59	5,00	5,00	6,00

Ranks

	Mean Rank
17_1_Business_risk_appr	1,36
17_2_Transactions	1,64

Test Statistics[a]

N	59
Chi-Square	8,000
df	1
Asymp. Sig.	,005

a. Friedman Test

Wilcoxon signed ranks test

Ranks

		N	Mean Rank	Sum of Ranks
17_2_Transactions - 17_1_Business_risk_appr	Negative Ranks	8[a]	16,94	135,50
	Positive Ranks	24[b]	16,35	392,50
	Ties	27[c]		
	Total	59		

a. 17_2_Transactions < 17_1_Business_risk_appr

b. 17_2_Transactions > 17_1_Business_risk_appr

c. 17_2_Transactions = 17_1_Business_risk_appr

Test Statistics[a]

	17_2_Transactions - 17_1_Business_risk_appr
Z	-2,432[b]
Asymp. Sig. (2-tailed)	,015

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Appendix 9 – The statistics of Hypothesis H_5

The utilization of the results of risk assessment – Cluster K1

Statistics

		18_1_Risk_assess_results_used_planning	18_2_Risk_assess_results_used_implementation	18_3_Risk_assess_results_used_evaluation	18_4_Risk_assess_results_used_next_year	18_5_Risk_assess_results_not_used
N	Valid	1006	1008	1011	979	942
	Missing	10	8	5	37	74

18_1_Risk_assess_results_used_planning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	,2	,2	,2
	3	29	2,9	2,9	3,1
	4	72	7,1	7,2	10,2
	5	221	21,8	22,0	32,2
	6	682	67,1	67,8	100,0
	Total	1006	99,0	100,0	
Missing	System	10	1,0		
Total		1016	100,0		

18_2_Risk_assess_results_used_implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	8	,8	,8	,8
	3	19	1,9	1,9	2,7
	4	138	13,6	13,7	16,4
	5	182	17,9	18,1	34,4
	6	661	65,1	65,6	100,0
	Total	1008	99,2	100,0	
Missing	System	8	,8		
Total		1016	100,0		

18_3_Risk_assess_results_used_evaluation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	22	2,2	2,2	2,2
	2	46	4,5	4,5	6,7
	3	36	3,5	3,6	10,3
	4	91	9,0	9,0	19,3
	5	153	15,1	15,1	34,4
	6	663	65,3	65,6	100,0
	Total	1011	99,5	100,0	
Missing	System	5	,5		
Total		1016	100,0		

18_4_Risk_assess_results_used_next_year

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	,1	,1	,1
	2	7	,7	,7	,8
	3	111	10,9	11,3	12,2
	4	94	9,3	9,6	21,8
	5	154	15,2	15,7	37,5
	6	612	60,2	62,5	100,0
	Total	979	96,4	100,0	
Missing	System	37	3,6		
Total		1016	100,0		

18_5_Risk_assess_results_not_used

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	854	84,1	90,7	90,7
	2	88	8,7	9,3	100,0
	Total	942	92,7	100,0	
Missing	System	74	7,3		
Total		1016	100,0		

Correlation between the utilization of the results of risk assessment and the control question

Correlations

Spearman's rho		11_2_Risk_assess_influence_audit_process	18_1_Risk_assess_results_used_planning	18_2_Risk_assess_results_used_implementation	18_3_Risk_assess_results_used_evaluation	18_4_Risk_assess_results_used_next_year	18_5_Risk_asse s_results_not_us d
11_2_Risk_assess_influence_audit_process	Correlation Coefficient	1,000	,448**	,591**	,635**	,528**	-,366
	Sig. (2-tailed)	.	,000	,000	,000	,000	,00
	N	989	985	987	985	966	94
18_1_Risk_assess_results_used_planning	Correlation Coefficient	,448**	1,000	,770**	,761**	,750**	-,373
	Sig. (2-tailed)	,000	.	,000	,000	,000	,00
	N	985	1006	1006	1005	977	94
18_2_Risk_assess_results_used_implementation	Correlation Coefficient	,591**	,770**	1,000	,948**	,820**	-,308
	Sig. (2-tailed)	,000	,000	.	,000	,000	,00
	N	987	1006	1008	1005	979	94
18_3_Risk_assess_results_used_evaluation	Correlation Coefficient	,635**	,761**	,948**	1,000	,825**	-,287
	Sig. (2-tailed)	,000	,000	,000	.	,000	,00
	N	985	1005	1005	1011	977	94
18_4_Risk_assess_results_used_next_year	Correlation Coefficient	,528**	,750**	,820**	,825**	1,000	-,256
	Sig. (2-tailed)	,000	,000	,000	,000	.	,00
	N	966	977	979	977	979	94
18_5_Risk_assess_results_not_used	Correlation Coefficient	-,366**	-,373**	-,308**	-,287**	-,256**	1,00
	Sig. (2-tailed)	,000	,000	,000	,000	,000	
	N	942	942	942	942	942	94

**. Correlation is significant at the 0.01 level (2-tailed).

Signed test to verify the results of the utilization of risk assessment

Binomial Test

		Category	N	Observed Prop.	Test Prop.	Exact Sig. (1-tailed)
18_1_Risk_assess_results_used_planning	Group 1	<= 3	31	,0	,2	,000[a]
	Group 2	> 3	975	1,0		
	Total		1006	1,0		
18_2_Risk_assess_results_used_implementation	Group 1	<= 3	27	,0	,2	,000[a]
	Group 2	> 3	981	1,0		
	Total		1008	1,0		
18_3_Risk_assess_results_used_evaluation	Group 1	<= 3	104	,1	,2	,000[a]
	Group 2	> 3	907	,9		
	Total		1011	1,0		
18_4_Risk_assess_results_used_next_year	Group 1	<= 3	119	,1	,2	,000[a]
	Group 2	> 3	860	,9		
	Total		979	1,0		

a. Alternative hypothesis states that the proportion of cases in the first group < ,2.

The impact of the previous year's audit on the risk assessment of the next year

Statistics

		19_1_Prev_opinion_no_impact_next_risk_assess	19_2_Prev_opinion_always_impact_next_risk_assess	19_1_Only_prev_modif_opinion_impact_next_risk_assess	19_4_Fraud_impact_next_risk_assess
N	Valid	931	952	958	930
	Missing	85	64	58	86

19_1_Prev_opinion_no_impact_next_risk_assess

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	809	79,6	86,9	86,9
	3	54	5,3	5,8	92,7
	4	18	1,8	1,9	94,6
	5	35	3,4	3,8	98,4
	6	15	1,5	1,6	100,0
	Total	931	91,6	100,0	
Missing	System	85	8,4		
Total		1016	100,0		

19_2_Prev_opinion_always_impact_next_risk_assess

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	65	6,4	6,8	6,8
	2	28	2,8	2,9	9,8
	3	52	5,1	5,5	15,2
	4	248	24,4	26,1	41,3
	5	181	17,8	19,0	60,3
	6	378	37,2	39,7	100,0
	Total	952	93,7	100,0	
Missing	System	64	6,3		
Total		1016	100,0		

19_1_Only_prev_modif_opinion_impact_next_risk_assess

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	306	30,1	31,9	31,9
	2	117	11,5	12,2	44,2
	3	78	7,7	8,1	52,3
	4	40	3,9	4,2	56,5
	5	291	28,6	30,4	86,8
	6	126	12,4	13,2	100,0
	Total	958	94,3	100,0	
Missing	System	58	5,7		
Total		1016	100,0		

19_4_Fraud_impact_next_risk_assess

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	301	29,6	32,4	32,4
	2	30	3,0	3,2	35,6
	3	57	5,6	6,1	41,7
	4	128	12,6	13,8	55,5
	5	100	9,8	10,8	66,2
	6	314	30,9	33,8	100,0
	Total	930	91,5	100,0	
Missing	System	86	8,5		
Total		1016	100,0		

Correlation between the impacts of the previous year's auditor's opinion and fraud

Correlations

			19_2_Prev_opinion_always_impact_next_risk_assess	19_4_Fraud_impact_next_risk_assess
Spearman's rho	19_2_Prev_opinion_always_impact_next_risk_assess	Correlation Coefficient	1,000	-,162**
		Sig. (2-tailed)	.	,000
		N	952	896
	19_4_Fraud_impact_next_risk_assess	Correlation Coefficient	-,162**	1,000
		Sig. (2-tailed)	,000	.
		N	896	930

**. Correlation is significant at the 0.01 level (2-tailed).

Utilization of the results of risk assessment – Friedman test

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
18_1_Risk_assess_results_used_planning	942	5,52	,767	3	6
18_2_Risk_assess_results_used_implementation	942	5,43	,865	2	6
18_3_Risk_assess_results_used_evaluation	942	5,23	1,283	1	6
18_4_Risk_assess_results_used_next_year	942	5,26	1,089	1	6
18_5_Risk_assess_results_not_used	942	1,09	,291	1	2

Ranks

	Mean Rank
18_1_Risk_assess_results_used_planning	3,68
18_2_Risk_assess_results_used_implementation	3,58
18_3_Risk_assess_results_used_evaluation	3,41
18_4_Risk_assess_results_used_next_year	3,32
18_5_Risk_assess_results_not_used	1,01

Test Statistics[a]

N	942
Chi-Square	3057,004
df	4
Asymp. Sig.	,000

a. Friedman Test

Utilization of the results of risk assessment – Wilcoxon signed ranks test

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
18_1_Risk_assess_results_used_planning	1006	5,54	,767	2	6
18_2_Risk_assess_results_used_implementation	1008	5,46	,855	2	6
18_3_Risk_assess_results_used_evaluation	1011	5,27	1,255	1	6
18_4_Risk_assess_results_used_next_year	979	5,28	1,086	1	6
18_5_Risk_assess_results_not_used	942	1,09	,291	1	2

Ranks

		N	Mean Rank	Sum of Ranks
18_2_Risk_assess_results_used_implementation - 18_1_Risk_assess_results_used_planning	Negative Ranks	120[a]	86,98	10437,50
	Positive Ranks	59[b]	96,14	5672,50
	Ties	827[c]		
	Total	1006		
18_3_Risk_assess_results_used_evaluation - 18_1_Risk_assess_results_used_planning	Negative Ranks	152[d]	92,20	14014,50
	Positive Ranks	31[e]	91,02	2821,50
	Ties	822[f]		
	Total	1005		
18_4_Risk_assess_results_used_next_year - 18_1_Risk_assess_results_used_planning	Negative Ranks	197[g]	116,17	22885,00
	Positive Ranks	48[h]	151,04	7250,00
	Ties	732[i]		
	Total	977		
18_5_Risk_assess_results_not_used - 18_1_Risk_assess_results_used_planning	Negative Ranks	942[j]	471,50	444153,00
	Positive Ranks	0[k]	,00	,00
	Ties	0[l]		
	Total	942		
18_3_Risk_assess_results_used_evaluation - 18_2_Risk_assess_results_used_implementation	Negative Ranks	99[m]	57,98	5740,00
	Positive Ranks	10[n]	25,50	255,00
	Ties	896[o]		
	Total	1005		
18_4_Risk_assess_results_used_next_year - 18_2_Risk_assess_results_used_implementation	Negative Ranks	185[p]	121,51	22480,00
	Positive Ranks	61[q]	129,52	7901,00
	Ties	733[r]		
	Total	979		

18_5_Risk_assess_results_not	Negative Ranks	942[s]	471,50	444153,00
_used -	Positive Ranks	0[t]	,00	,00
18_2_Risk_assess_results_use	Ties	0[u]		
d_implementation	Total	942		
18_4_Risk_assess_results_use	Negative Ranks	156[v]	92,22	14386,00
d_next_year -	Positive Ranks	89[w]	176,96	15749,00
18_3_Risk_assess_results_use	Ties	732[x]		
d_evaluation	Total	977		
18_5_Risk_assess_results_not	Negative Ranks	920[y]	460,50	423660,00
_used -	Positive Ranks	0[z]	,00	,00
18_3_Risk_assess_results_use	Ties	22[aa]		
d_evaluation	Total	942		
18_5_Risk_assess_results_not	Negative Ranks	941[ab]	471,00	443211,00
_used -	Positive Ranks	0[ac]	,00	,00
18_4_Risk_assess_results_use	Ties	1[ad]		
d_next_year	Total	942		

a. 18_2_Risk_assess_results_used_implementation < 18_1_Risk_assess_results_used_planning

b. 18_2_Risk_assess_results_used_implementation > 18_1_Risk_assess_results_used_planning

c. 18_2_Risk_assess_results_used_implementation = 18_1_Risk_assess_results_used_planning

d. 18_3_Risk_assess_results_used_evaluation < 18_1_Risk_assess_results_used_planning

e. 18_3_Risk_assess_results_used_evaluation > 18_1_Risk_assess_results_used_planning

f. 18_3_Risk_assess_results_used_evaluation = 18_1_Risk_assess_results_used_planning

g. 18_4_Risk_assess_results_used_next_year < 18_1_Risk_assess_results_used_planning

h. 18_4_Risk_assess_results_used_next_year > 18_1_Risk_assess_results_used_planning

i. 18_4_Risk_assess_results_used_next_year = 18_1_Risk_assess_results_used_planning

j. 18_5_Risk_assess_results_not_used < 18_1_Risk_assess_results_used_planning

k. 18_5_Risk_assess_results_not_used > 18_1_Risk_assess_results_used_planning

l. 18_5_Risk_assess_results_not_used = 18_1_Risk_assess_results_used_planning

m. 18_3_Risk_assess_results_used_evaluation < 18_2_Risk_assess_results_used_implementation

n. 18_3_Risk_assess_results_used_evaluation > 18_2_Risk_assess_results_used_implementation

o. 18_3_Risk_assess_results_used_evaluation = 18_2_Risk_assess_results_used_implementation

p. 18_4_Risk_assess_results_used_next_year < 18_2_Risk_assess_results_used_implementation

q. 18_4_Risk_assess_results_used_next_year > 18_2_Risk_assess_results_used_implementation

r. 18_4_Risk_assess_results_used_next_year = 18_2_Risk_assess_results_used_implementation

s. 18_5_Risk_assess_results_not_used < 18_2_Risk_assess_results_used_implementation

t. 18_5_Risk_assess_results_not_used > 18_2_Risk_assess_results_used_implementation

u. 18_5_Risk_assess_results_not_used = 18_2_Risk_assess_results_used_implementation

v. 18_4_Risk_assess_results_used_next_year < 18_3_Risk_assess_results_used_evaluation

w. 18_4_Risk_assess_results_used_next_year > 18_3_Risk_assess_results_used_evaluation

x. 18_4_Risk_assess_results_used_next_year = 18_3_Risk_assess_results_used_evaluation

y. 18_5_Risk_assess_results_not_used < 18_3_Risk_assess_results_used_evaluation

z. 18_5_Risk_assess_results_not_used > 18_3_Risk_assess_results_used_evaluation

aa. 18_5_Risk_assess_results_not_used = 18_3_Risk_assess_results_used_evaluation ab. 18_5_Risk_assess_results_not_used < 18_4_Risk_assess_results_used_next_year

ac. 18_5_Risk_assess_results_not_used > 18_4_Risk_assess_results_used_next_year

ad. 18_5_Risk_assess_results_not_used = 18_4_Risk_assess_results_used_next_year

Test Statistics[a]

	Z	Asymp. Sig. (2-tailed)
18_2_Risk_assess_results_used_implementation - 18_1_Risk_assess_results_used_planning	-3,564[b]	,000
18_3_Risk_assess_results_used_evaluation - 18_1_Risk_assess_results_used_planning	-7,920[b]	,000
18_4_Risk_assess_results_used_next_year - 18_1_Risk_assess_results_used_planning	-7,243[b]	,000
18_5_Risk_assess_results_not_used - 18_1_Risk_assess_results_used_planning	-27,614[b]	,000
18_3_Risk_assess_results_used_evaluation - 18_2_Risk_assess_results_used_implementation	-8,424[b]	,000
18_4_Risk_assess_results_used_next_year - 18_2_Risk_assess_results_used_implementation	-6,884[b]	,000
18_5_Risk_assess_results_not_used - 18_2_Risk_assess_results_used_implementation	-27,534[b]	,000
18_4_Risk_assess_results_used_next_year - 18_3_Risk_assess_results_used_evaluation	-,628[c]	,530

18_5_Risk_assess_results_ not_used - 18_3_Risk_assess_results_ used_evaluation	-27,259[b]	,000
18_5_Risk_assess_results_ not_used - 18_4_Risk_assess_results_ used_next_year	-27,412[b]	,000

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. Based on negative ranks.

Appendix 10 – Basic statistics of Hypothesis H_6

	N		Median	Mode	Variance	Range
	Valid	Missing				
Riskiness of intangibles in general	1539	80	2,00	1	,998	5
Riskiness of the cost of intangibles	1534	85	2,00	2	1,683	5
Riskiness of the amortization of intangibles	1541	78	2,00	1	1,455	5
Riskiness of the impairment of intangibles	1530	89	2,00	1	2,098	5
Riskiness of the revaluation of intangibles	1523	96	2,00	1	2,023	5
Riskiness of goodwill	1492	127	1,00	1	2,652	5
Riskiness of tangibles in general	1524	95	3,00	1	1,993	5
Riskiness of the cost of tangibles	1505	114	2,00	2	2,159	5
Riskiness of the depreciation of tangibles	1510	109	3,00	4	1,967	5
Riskiness of the impairment of tangibles	1510	109	3,00	2	2,299	5
Riskiness of the revaluation of tangibles	1497	122	3,00	3	1,871	5
Riskiness of inventories in general	1472	147	4,00	5	1,877	5
Riskiness of the write down of inventories	1546	73	5,00	5	2,623	5
Riskiness of intangibles in general - ERROR	973	646	1,00	1	1,476	5
Riskiness of intangibles in general - FRAUD	973	646	1,00	1	1,476	5
Riskiness of the cost of intangibles - ERROR	1541	78	2,00	1	3,410	5
Riskiness of the cost of intangibles - FRAUD	1001	618	1,00	1	1,366	5
Riskiness of the amortization of intangibles - ERROR	1524	95	2,00	2	3,063	5
Riskiness of the amortization of intangibles - FRAUD	995	624	1,00	1	1,496	5

Riskiness of the impairment of intangibles - ERROR	1501	118	3,00	1	3,004	5
Riskiness of the impairment of intangibles - FRAUD	1010	609	1,00	1	1,658	5
Riskiness of the revaluation of intangibles - ERROR	1475	144	2,00	1	2,551	5
Riskiness of the revaluation of intangibles - FRAUD	1020	599	1,00	1	2,099	5
Riskiness of goodwill - ERROR	1493	126	2,00	1	3,268	5
Riskiness of goodwill - FRAUD	1032	587	1,00	1	2,390	5
Riskiness of tangibles in general - ERROR	1297	322	3,00	3	2,943	5
Riskiness of tangibles in general - FRAUD	1025	594	1,00	1	1,582	5
Riskiness of the cost of tangibles - ERROR	1464	155	3,00	3[a]	2,823	5
Riskiness of the cost of tangibles - FRAUD	997	622	1,00	1	1,821	5
Riskiness of the depreciation of tangibles - ERROR	1518	101	3,00	3	2,865	5
Riskiness of the depreciation of tangibles - FRAUD	989	630	1,00	1	1,721	5
Riskiness of the impairment of tangibles - ERROR	1473	146	3,00	3	2,828	5
Riskiness of the impairment of tangibles - FRAUD	1043	576	1,00	1	1,965	5
Riskiness of the revaluation of tangibles - TEVEDÉS	1448	171	3,00	3	2,736	5
Riskiness of the revaluation of tangibles - FRAUD	1012	607	1,00	1	2,089	5
Riskiness of inventories in general - ERROR	1422	197	4,00	4	1,728	5
Riskiness of inventories in general - FRAUD	1063	556	3,00	1	2,889	5
Riskiness of the write down of inventories - ERROR	1480	139	4,00	4	1,621	5
Riskiness of the write down of inventories - FRAUD	1053	566	3,00	1	3,160	5
Riskiness of receivables in general	1524	95	4,00	4	1,758	5
Riskiness of the valuation of bad and doubtful debts	1564	55	5,00	3	1,744	5

Riskiness of investments in general	1488	131	2,00	2	1,863	5
Riskiness of the revaluation of investments	1503	116	2,00	1	2,541	5
Riskiness of the write down of investments	1524	95	3,00	3	2,538	5
Riskiness of the fair valuation of investments	1450	169	3,00	1	2,900	5
Riskiness of cash in general	1504	115	2,00	1	2,454	5
Riskiness of the valuation of cash	1543	76	2,00	1	2,003	5
Riskiness of accruals and prepayments in general	1407	212	3,00	3	1,836	5
Riskiness of the valuation of accruals and prepayments	1562	57	3,00	3	2,084	5
Riskiness of owners' equity in general	1576	43	2,00	1	2,126	5
Riskiness of provisions in general	1564	55	3,00	3	2,204	5
Riskiness of the valuation of provisions	1528	91	3,00	2	2,364	5
Riskiness of liabilities in general	1485	134	4,00	4	1,307	5
Riskiness of the valuation of liabilities	1545	74	4,00	4	1,748	5
Riskiness of taxation	1548	71	4,00	5	1,581	5
Riskiness of the going concern principle	1592	27	3,00	3	1,868	5
Riskiness of receivables in general - ERROR	1487	132	4,00	3	2,428	5
Riskiness of receivables in general - FRAUD	1102	517	2,00	1	2,107	5
Riskiness of the valuation of bad and doubtful debts - ERROR	1518	101	4,00	2	2,613	5
Riskiness of the valuation of bad and doubtful debts - FRAUD	1041	578	2,00	1	2,725	5
Riskiness of investments in general - ERROR	1488	131	3,00	1	3,364	5
Riskiness of investments in general - FRAUD	1045	574	1,00	1	1,541	5

Riskiness of the revaluation of investments - ERROR	1486	133	2,00	1	2,629	5
Riskiness of the revaluation of investments - FRAUD	1017	602	1,00	1	1,672	5
Riskiness of the write down of investments - ERROR	1528	91	2,00	2	2,852	5
Riskiness of the write down of investments - FRAUD	1035	584	1,00	1	2,507	5
Riskiness of the fair valuation of investments - ERROR	1467	152	2,00	1	2,804	5
Riskiness of the fair valuation of investments - FRAUD	1008	611	1,00	1	1,753	5
Riskiness of cash in general - ERROR	1462	157	2,00	2	3,300	5
Riskiness of cash in general - FRAUD	1117	502	1,00	1	2,647	5
Riskiness of the valuation of cash - ERROR	1537	82	2,00	1	2,909	5
Riskiness of the valuation of cash - FRAUD	1042	577	1,00	1	1,695	5
Riskiness of accruals and prepayments in general - ERROR	1449	170	3,00	3	2,303	5
Riskiness of accruals and prepayments in general - FRAUD	1088	531	2,00	1	1,958	5
Riskiness of the valuation of accruals and prepayments - ERROR	1486	133	3,00	2	2,268	5
Riskiness of the valuation of accruals and prepayments - FRAUD	1064	555	1,00	1	2,169	5
Riskiness of owners' equity in general - ERROR	1578	41	2,00	2	3,497	5
Riskiness of owners' equity in general - FRAUD	997	622	1,00	1	1,395	5
Riskiness of provisions in general - ERROR	1419	200	3,00	2	2,406	5
Riskiness of provisions in general - FRAUD	1095	524	2,00	1	2,043	5
Riskiness of the valuation of provisions - ERROR	1495	124	3,00	2	2,306	5

Riskiness of the valuation of provisions - FRAUD	1060	559	1,00	1	2,118	5
Riskiness of liabilities in general - ERROR	1521	98	3,00	3	1,919	5
Riskiness of liabilities in general - FRAUD	1055	564	2,00	1	2,167	5
Riskiness of the valuation of liabilities - ERROR	1532	87	3,00	2	2,033	5
Riskiness of the valuation of liabilities - FRAUD	1025	594	2,00	1	2,052	5
Riskiness of taxation - ERROR	1516	103	4,00	4	1,569	5
Riskiness of taxation - FRAUD	1099	520	3,00	1	2,703	5
Riskiness of the going concern principle - ERROR	1561	58	3,00	2	2,103	5
Riskiness of the going concern principle - FRAUD	1086	533	2,00	1	2,644	5

Frequency tables of the subquestions of Hypothesis H_6

Riskiness of intangibles in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	667	41,2	43,3	43,3
	2	573	35,4	37,2	80,6
	3	185	11,4	12,0	92,6
	4	66	4,1	4,3	96,9
	5	46	2,8	3,0	99,9
	6	2	,1	,1	100,0
	Total	1539	95,1	100,0	
Missing	System	80	4,9		
Total		1619	100,0		

Riskiness of the cost of intangibles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	531	32,8	34,6	34,6
	2	559	34,5	36,4	71,1
	3	164	10,1	10,7	81,7
	4	153	9,5	10,0	91,7
	5	97	6,0	6,3	98,0
	6	30	1,9	2,0	100,0
	Total	1534	94,7	100,0	
Missing	System	85	5,3		
Total		1619	100,0		

Riskiness of the amortization of intangibles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	694	42,9	45,0	45,0
	2	304	18,8	19,7	64,8
	3	375	23,2	24,3	89,1
	4	96	5,9	6,2	95,3
	5	51	3,2	3,3	98,6
	6	21	1,3	1,4	100,0
	Total	1541	95,2	100,0	
Missing	System	78	4,8		
Total		1619	100,0		

Riskiness of the impairment of intangibles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	498	30,8	32,5	32,5
	2	449	27,7	29,3	61,9
	3	284	17,5	18,6	80,5
	4	93	5,7	6,1	86,5
	5	137	8,5	9,0	95,5
	6	69	4,3	4,5	100,0
	Total	1530	94,5	100,0	
Missing	System	89	5,5		
Total		1619	100,0		

Riskiness of the revaluation of intangibles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	714	44,1	46,9	46,9
	2	165	10,2	10,8	57,7
	3	392	24,2	25,7	83,5
	4	141	8,7	9,3	92,7
	5	40	2,5	2,6	95,3
	6	71	4,4	4,7	100,0
	Total	1523	94,1	100,0	
Missing	System	96	5,9		
Total		1619	100,0		

Riskiness of goodwill

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	786	48,5	52,7	52,7
	2	119	7,4	8,0	60,7
	3	301	18,6	20,2	80,8
	4	93	5,7	6,2	87,1
	5	69	4,3	4,6	91,7
	6	124	7,7	8,3	100,0
	Total	1492	92,2	100,0	
Missing	System	127	7,8		
Total		1619	100,0		

Riskiness of tangibles in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	420	25,9	27,6	27,6
	2	226	14,0	14,8	42,4
	3	353	21,8	23,2	65,6
	4	376	23,2	24,7	90,2
	5	102	6,3	6,7	96,9
	6	47	2,9	3,1	100,0
	Total	1524	94,1	100,0	
Missing	System	95	5,9		
Total		1619	100,0		

Riskiness of the cost of tangibles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	351	21,7	23,3	23,3
	2	421	26,0	28,0	51,3
	3	216	13,3	14,4	65,6
	4	297	18,3	19,7	85,4
	5	157	9,7	10,4	95,8
	6	63	3,9	4,2	100,0
	Total	1505	93,0	100,0	
Missing	System	114	7,0		
Total		1619	100,0		

Riskiness of the depreciation of tangibles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	416	25,7	27,5	27,5
	2	330	20,4	21,9	49,4
	3	203	12,5	13,4	62,8
	4	463	28,6	30,7	93,5
	5	47	2,9	3,1	96,6
	6	51	3,2	3,4	100,0
	Total	1510	93,3	100,0	
Missing	System	109	6,7		
Total		1619	100,0		

Riskiness of the impairment of tangibles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	283	17,5	18,7	18,7
	2	377	23,3	25,0	43,7
	3	255	15,8	16,9	60,6
	4	291	18,0	19,3	79,9
	5	213	13,2	14,1	94,0
	6	91	5,6	6,0	100,0
	Total	1510	93,3	100,0	
Missing	System	109	6,7		
Total		1619	100,0		

Riskiness of the revaluation of tangibles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	336	20,8	22,4	22,4
	2	327	20,2	21,8	44,3
	3	433	26,7	28,9	73,2
	4	268	16,6	17,9	91,1
	5	48	3,0	3,2	94,3
	6	85	5,3	5,7	100,0
	Total	1497	92,5	100,0	
Missing	System	122	7,5		
Total		1619	100,0		

Riskiness of inventories in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	114	7,0	7,7	7,7
	2	35	2,2	2,4	10,1
	3	213	13,2	14,5	24,6
	4	399	24,6	27,1	51,7
	5	462	28,5	31,4	83,1
	6	249	15,4	16,9	100,0
	Total	1472	90,9	100,0	
Missing	System	147	9,1		
Total		1619	100,0		

Riskiness of the write down of inventories

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	185	11,4	12,0	12,0
	2	74	4,6	4,8	16,8
	3	302	18,7	19,5	36,3
	4	159	9,8	10,3	46,6
	5	500	30,9	32,3	78,9
	6	326	20,1	21,1	100,0
	Total	1546	95,5	100,0	
Missing	System	73	4,5		
Total		1619	100,0		

Riskiness of intangibles in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	702	43,4	72,1	72,1
	2	120	7,4	12,3	84,5
	3	74	4,6	7,6	92,1
	4	21	1,3	2,2	94,2
	5	24	1,5	2,5	96,7
	6	32	2,0	3,3	100,0
	Total	973	60,1	100,0	
Missing	System	646	39,9		
Total		1619	100,0		

Riskiness of intangibles in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	702	43,4	72,1	72,1
	2	120	7,4	12,3	84,5
	3	74	4,6	7,6	92,1
	4	21	1,3	2,2	94,2
	5	24	1,5	2,5	96,7
	6	32	2,0	3,3	100,0
	Total	973	60,1	100,0	
Missing	System	646	39,9		
Total		1619	100,0		

Riskiness of the cost of intangibles - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	411	25,4	26,7	26,7
	2	394	24,3	25,6	52,2
	3	132	8,2	8,6	60,8
	4	198	12,2	12,8	73,7
	5	127	7,8	8,2	81,9
	6	279	17,2	18,1	100,0
	Total	1541	95,2	100,0	
Missing	System	78	4,8		
Total		1619	100,0		

Riskiness of the cost of intangibles - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	739	45,6	73,8	73,8
	2	123	7,6	12,3	86,1
	3	77	4,8	7,7	93,8
	4	6	,4	,6	94,4
	5	24	1,5	2,4	96,8
	6	32	2,0	3,2	100,0
	Total	1001	61,8	100,0	
Missing	System	618	38,2		
Total		1619	100,0		

Riskiness of the amortization of intangibles - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	372	23,0	24,4	24,4
	2	450	27,8	29,5	53,9
	3	192	11,9	12,6	66,5
	4	190	11,7	12,5	79,0
	5	67	4,1	4,4	83,4
	6	253	15,6	16,6	100,0
	Total	1524	94,1	100,0	
Missing	System	95	5,9		
Total		1619	100,0		

Riskiness of the amortization of intangibles - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	702	43,4	70,6	70,6
	2	162	10,0	16,3	86,8
	3	53	3,3	5,3	92,2
	4	8	,5	,8	93,0
	5	38	2,3	3,8	96,8
	6	32	2,0	3,2	100,0
	Total	995	61,5	100,0	
Missing	System	624	38,5		
Total		1619	100,0		

Riskiness of the impairment of intangibles - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	414	25,6	27,6	27,6
	2	321	19,8	21,4	49,0
	3	277	17,1	18,5	67,4
	4	156	9,6	10,4	77,8
	5	123	7,6	8,2	86,0
	6	210	13,0	14,0	100,0
	Total	1501	92,7	100,0	
Missing	System	118	7,3		
Total		1619	100,0		

Riskiness of the impairment of intangibles - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	706	43,6	69,9	69,9
	2	157	9,7	15,5	85,4
	3	36	2,2	3,6	89,0
	4	49	3,0	4,9	93,9
	5	20	1,2	2,0	95,8
	6	42	2,6	4,2	100,0
	Total	1010	62,4	100,0	
Missing	System	609	37,6		
Total		1619	100,0		

Riskiness of the revaluation of intangibles - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	476	29,4	32,3	32,3
	2	277	17,1	18,8	51,1
	3	380	23,5	25,8	76,8
	4	95	5,9	6,4	83,3
	5	113	7,0	7,7	90,9
	6	134	8,3	9,1	100,0
	Total	1475	91,1	100,0	
Missing	System	144	8,9		
Total		1619	100,0		

Riskiness of the revaluation of intangibles - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	721	44,5	70,7	70,7
	2	121	7,5	11,9	82,5
	3	63	3,9	6,2	88,7
	5	60	3,7	5,9	94,6
	6	55	3,4	5,4	100,0
	Total	1020	63,0	100,0	
Missing	System	599	37,0		
Total		1619	100,0		

Riskiness of goodwill - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	584	36,1	39,1	39,1
	2	190	11,7	12,7	51,8
	3	302	18,7	20,2	72,1
	4	82	5,1	5,5	77,6
	5	128	7,9	8,6	86,1
	6	207	12,8	13,9	100,0
	Total	1493	92,2	100,0	
Missing	System	126	7,8		
Total		1619	100,0		

Riskiness of goodwill - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	742	45,8	71,9	71,9
	2	90	5,6	8,7	80,6
	3	41	2,5	4,0	84,6
	4	16	1,0	1,6	86,1
	5	91	5,6	8,8	95,0
	6	52	3,2	5,0	100,0
	Total	1032	63,7	100,0	
Missing	System	587	36,3		
Total		1619	100,0		

Riskiness of tangibles in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	213	13,2	16,4	16,4
	2	156	9,6	12,0	28,5
	3	322	19,9	24,8	53,3
	4	213	13,2	16,4	69,7
	5	114	7,0	8,8	78,5
	6	279	17,2	21,5	100,0
	Total	1297	80,1	100,0	
Missing	System	322	19,9		
Total		1619	100,0		

Riskiness of tangibles in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	729	45,0	71,1	71,1
	2	112	6,9	10,9	82,0
	3	58	3,6	5,7	87,7
	4	82	5,1	8,0	95,7
	5	12	,7	1,2	96,9
	6	32	2,0	3,1	100,0
	Total	1025	63,3	100,0	
Missing	System	594	36,7		
Total		1619	100,0		

Riskiness of the cost of tangibles - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	201	12,4	13,7	13,7
	2	285	17,6	19,5	33,2
	3	306	18,9	20,9	54,1
	4	289	17,9	19,7	73,8
	5	77	4,8	5,3	79,1
	6	306	18,9	20,9	100,0
	Total	1464	90,4	100,0	
Missing	System	155	9,6		
Total		1619	100,0		

Riskiness of the cost of tangibles - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	716	44,2	71,8	71,8
	2	85	5,3	8,5	80,3
	3	68	4,2	6,8	87,2
	4	53	3,3	5,3	92,5
	5	43	2,7	4,3	96,8
	6	32	2,0	3,2	100,0
	Total	997	61,6	100,0	
Missing	System	622	38,4		
Total		1619	100,0		

Riskiness of the depreciation of tangibles - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	172	10,6	11,3	11,3
	2	346	21,4	22,8	34,1
	3	364	22,5	24,0	58,1
	4	220	13,6	14,5	72,6
	5	63	3,9	4,2	76,7
	6	353	21,8	23,3	100,0
	Total	1518	93,8	100,0	
Missing	System	101	6,2		
Total		1619	100,0		

Riskiness of the depreciation of tangibles - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	664	41,0	67,1	67,1
	2	120	7,4	12,1	79,3
	3	98	6,1	9,9	89,2
	4	37	2,3	3,7	92,9
	5	38	2,3	3,8	96,8
	6	32	2,0	3,2	100,0
	Total	989	61,1	100,0	
Missing	System	630	38,9		
Total		1619	100,0		

Riskiness of the impairment of tangibles - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	198	12,2	13,4	13,4
	2	225	13,9	15,3	28,7
	3	416	25,7	28,2	57,0
	4	199	12,3	13,5	70,5
	5	113	7,0	7,7	78,1
	6	322	19,9	21,9	100,0
	Total	1473	91,0	100,0	
Missing	System	146	9,0		
Total		1619	100,0		

Riskiness of the impairment of tangibles - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	652	40,3	62,5	62,5
	2	101	6,2	9,7	72,2
	3	135	8,3	12,9	85,1
	4	84	5,2	8,1	93,2
	5	29	1,8	2,8	96,0
	6	42	2,6	4,0	100,0
	Total	1043	64,4	100,0	
Missing	System	576	35,6		
Total		1619	100,0		

Riskiness of the revaluation of tangibles - TEVEDÉS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	292	18,0	20,2	20,2
	2	265	16,4	18,3	38,5
	3	449	27,7	31,0	69,5
	4	111	6,9	7,7	77,1
	5	110	6,8	7,6	84,7
	6	221	13,7	15,3	100,0
	Total	1448	89,4	100,0	
Missing	System	171	10,6		
Total		1619	100,0		

Riskiness of the revaluation of tangibles - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	557	34,4	55,0	55,0
	2	93	5,7	9,2	64,2
	3	229	14,1	22,6	86,9
	4	50	3,1	4,9	91,8
	5	28	1,7	2,8	94,6
	6	55	3,4	5,4	100,0
	Total	1012	62,5	100,0	
Missing	System	607	37,5		
Total		1619	100,0		

Riskiness of inventories in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	32	2,0	2,3	2,3
	2	161	9,9	11,3	13,6
	3	129	8,0	9,1	22,6
	4	476	29,4	33,5	56,1
	5	336	20,8	23,6	79,7
	6	288	17,8	20,3	100,0
	Total	1422	87,8	100,0	
Missing	System	197	12,2		
Total		1619	100,0		

Riskiness of inventories in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	391	24,2	36,8	36,8
	2	120	7,4	11,3	48,1
	3	218	13,5	20,5	68,6
	4	88	5,4	8,3	76,9
	5	172	10,6	16,2	93,0
	6	74	4,6	7,0	100,0
	Total	1063	65,7	100,0	
Missing	System	556	34,3		
Total		1619	100,0		

Riskiness of the write down of inventories - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	49	3,0	3,3	3,3
	2	80	4,9	5,4	8,7
	3	419	25,9	28,3	37,0
	4	459	28,4	31,0	68,0
	5	225	13,9	15,2	83,2
	6	248	15,3	16,8	100,0
	Total	1480	91,4	100,0	
Missing	System	139	8,6		
Total		1619	100,0		

Riskiness of the write down of inventories - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	353	21,8	33,5	33,5
	2	85	5,3	8,1	41,6
	3	96	5,9	9,1	50,7
	4	207	12,8	19,7	70,4
	5	235	14,5	22,3	92,7
	6	77	4,8	7,3	100,0
	Total	1053	65,0	100,0	
Missing	System	566	35,0		
Total		1619	100,0		

Riskiness of receivables in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	,7	,8	,8
	2	255	15,8	16,7	17,5
	3	252	15,6	16,5	34,1
	4	397	24,5	26,0	60,1
	5	378	23,3	24,8	84,9
	6	230	14,2	15,1	100,0
	Total	1524	94,1	100,0	
Missing	System	95	5,9		
Total		1619	100,0		

Riskiness of the valuation of bad and doubtful debts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	1,1	1,1	1,1
	2	42	2,6	2,7	3,8
	3	514	31,7	32,9	36,6
	4	202	12,5	12,9	49,6
	5	350	21,6	22,4	71,9
	6	439	27,1	28,1	100,0
	Total	1564	96,6	100,0	
Missing	System	55	3,4		
Total		1619	100,0		

Riskiness of investments in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	281	17,4	18,9	18,9
	2	486	30,0	32,7	51,5
	3	204	12,6	13,7	65,3
	4	340	21,0	22,8	88,1
	5	141	8,7	9,5	97,6
	6	36	2,2	2,4	100,0
	Total	1488	91,9	100,0	
Missing	System	131	8,1		
Total		1619	100,0		

Riskiness of the revaluation of investments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	490	30,3	32,6	32,6
	2	286	17,7	19,0	51,6
	3	399	24,6	26,5	78,2
	4	77	4,8	5,1	83,3
	5	113	7,0	7,5	90,8
	6	138	8,5	9,2	100,0
	Total	1503	92,8	100,0	
Missing	System	116	7,2		
Total		1619	100,0		

Riskiness of the write down of investments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	245	15,1	16,1	16,1
	2	167	10,3	11,0	27,0
	3	515	31,8	33,8	60,8
	4	196	12,1	12,9	73,7
	5	175	10,8	11,5	85,2
	6	226	14,0	14,8	100,0
	Total	1524	94,1	100,0	
Missing	System	95	5,9		
Total		1619	100,0		

Riskiness of the fair valuation of investments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	666	41,1	45,9	45,9
	2	52	3,2	3,6	49,5
	3	394	24,3	27,2	76,7
	4	115	7,1	7,9	84,6
	5	66	4,1	4,6	89,2
	6	157	9,7	10,8	100,0
	Total	1450	89,6	100,0	
Missing	System	169	10,4		
Total		1619	100,0		

Riskiness of cash in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	449	27,7	29,9	29,9
	2	388	24,0	25,8	55,7
	3	298	18,4	19,8	75,5
	4	114	7,0	7,6	83,0
	5	141	8,7	9,4	92,4
	6	114	7,0	7,6	100,0
	Total	1504	92,9	100,0	
Missing	System	115	7,1		
Total		1619	100,0		

Riskiness of the valuation of cash

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	608	37,6	39,4	39,4
	2	454	28,0	29,4	68,8
	3	188	11,6	12,2	81,0
	4	93	5,7	6,0	87,0
	5	168	10,4	10,9	97,9
	6	32	2,0	2,1	100,0
	Total	1543	95,3	100,0	
Missing	System	76	4,7		
Total		1619	100,0		

Riskiness of accruals and prepayments in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	211	13,0	15,0	15,0
	2	289	17,9	20,5	35,5
	3	388	24,0	27,6	63,1
	4	284	17,5	20,2	83,3
	5	189	11,7	13,4	96,7
	6	46	2,8	3,3	100,0
	Total	1407	86,9	100,0	
Missing	System	212	13,1		
Total		1619	100,0		

Riskiness of the valuation of accruals and prepayments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	317	19,6	20,3	20,3
	2	221	13,7	14,1	34,4
	3	468	28,9	30,0	64,4
	4	271	16,7	17,3	81,8
	5	214	13,2	13,7	95,5
	6	71	4,4	4,5	100,0
	Total	1562	96,5	100,0	
Missing	System	57	3,5		
Total		1619	100,0		

Riskiness of owners' equity in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	612	37,8	38,8	38,8
	2	410	25,3	26,0	64,8
	3	230	14,2	14,6	79,4
	4	174	10,7	11,0	90,5
	5	61	3,8	3,9	94,4
	6	89	5,5	5,6	100,0
	Total	1576	97,3	100,0	
Missing	System	43	2,7		
Total		1619	100,0		

Riskiness of provisions in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	144	8,9	9,2	9,2
	2	417	25,8	26,7	35,9
	3	423	26,1	27,0	62,9
	4	293	18,1	18,7	81,6
	5	66	4,1	4,2	85,9
	6	221	13,7	14,1	100,0
	Total	1564	96,6	100,0	
Missing	System	55	3,4		
Total		1619	100,0		

Riskiness of the valuation of provisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	168	10,4	11,0	11,0
	2	386	23,8	25,3	36,3
	3	381	23,5	24,9	61,2
	4	291	18,0	19,0	80,2
	5	70	4,3	4,6	84,8
	6	232	14,3	15,2	100,0
	Total	1528	94,4	100,0	
Missing	System	91	5,6		
Total		1619	100,0		

Riskiness of liabilities in general

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	34	2,1	2,3	2,3
	2	265	16,4	17,8	20,1
	3	260	16,1	17,5	37,6
	4	590	36,4	39,7	77,4
	5	286	17,7	19,3	96,6
	6	50	3,1	3,4	100,0
	Total	1485	91,7	100,0	
Missing	System	134	8,3		
Total		1619	100,0		

Riskiness of the valuation of liabilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	57	3,5	3,7	3,7
	2	350	21,6	22,7	26,3
	3	335	20,7	21,7	48,0
	4	420	25,9	27,2	75,2
	5	256	15,8	16,6	91,8
	6	127	7,8	8,2	100,0
	Total	1545	95,4	100,0	
Missing	System	74	4,6		
Total		1619	100,0		

Riskiness of taxation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	,6	,6	,6
	2	167	10,3	10,8	11,4
	3	304	18,8	19,6	31,0
	4	384	23,7	24,8	55,8
	5	432	26,7	27,9	83,7
	6	252	15,6	16,3	100,0
	Total	1548	95,6	100,0	
Missing	System	71	4,4		
Total		1619	100,0		

Riskiness of the going concern principle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	52	3,2	3,3	3,3
	2	240	14,8	15,1	18,3
	3	505	31,2	31,7	50,1
	4	340	21,0	21,4	71,4
	5	218	13,5	13,7	85,1
	6	237	14,6	14,9	100,0
	Total	1592	98,3	100,0	
Missing	System	27	1,7		
Total		1619	100,0		

Riskiness of receivables in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	175	10,8	11,8	11,8
	2	98	6,1	6,6	18,4
	3	415	25,6	27,9	46,3
	4	267	16,5	18,0	64,2
	5	274	16,9	18,4	82,6
	6	258	15,9	17,4	100,0
	Total	1487	91,8	100,0	
Missing	System	132	8,2		
Total		1619	100,0		

Riskiness of receivables in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	506	31,3	45,9	45,9
	2	255	15,8	23,1	69,1
	3	180	11,1	16,3	85,4
	4	23	1,4	2,1	87,5
	5	91	5,6	8,3	95,7
	6	47	2,9	4,3	100,0
	Total	1102	68,1	100,0	
Missing	System	517	31,9		
Total		1619	100,0		

Riskiness of the valuation of bad and doubtful debts - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	33	2,0	2,2	2,2
	2	444	27,4	29,2	31,4
	3	235	14,5	15,5	46,9
	4	237	14,6	15,6	62,5
	5	190	11,7	12,5	75,0
	6	379	23,4	25,0	100,0
	Total	1518	93,8	100,0	
Missing	System	101	6,2		
Total		1619	100,0		

Riskiness of the valuation of bad and doubtful debts - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	488	30,1	46,9	46,9
	2	147	9,1	14,1	61,0
	3	82	5,1	7,9	68,9
	4	153	9,5	14,7	83,6
	5	126	7,8	12,1	95,7
	6	45	2,8	4,3	100,0
	Total	1041	64,3	100,0	
Missing	System	578	35,7		
Total		1619	100,0		

Riskiness of investments in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	369	22,8	24,8	24,8
	2	366	22,6	24,6	49,4
	3	224	13,8	15,1	64,4
	4	105	6,5	7,1	71,5
	5	150	9,3	10,1	81,6
	6	274	16,9	18,4	100,0
	Total	1488	91,9	100,0	
Missing	System	131	8,1		
Total		1619	100,0		

Riskiness of investments in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	706	43,6	67,6	67,6
	2	124	7,7	11,9	79,4
	3	129	8,0	12,3	91,8
	4	26	1,6	2,5	94,3
	5	28	1,7	2,7	96,9
	6	32	2,0	3,1	100,0
	Total	1045	64,5	100,0	
Missing	System	574	35,5		
Total		1619	100,0		

Riskiness of the revaluation of investments - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	506	31,3	34,1	34,1
	2	493	30,5	33,2	67,2
	3	156	9,6	10,5	77,7
	4	103	6,4	6,9	84,7
	5	70	4,3	4,7	89,4
	6	158	9,8	10,6	100,0
	Total	1486	91,8	100,0	
Missing	System	133	8,2		
Total		1619	100,0		

Riskiness of the revaluation of investments - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	748	46,2	73,5	73,5
	2	87	5,4	8,6	82,1
	3	96	5,9	9,4	91,5
	4	16	1,0	1,6	93,1
	5	28	1,7	2,8	95,9
	6	42	2,6	4,1	100,0
	Total	1017	62,8	100,0	
Missing	System	602	37,2		
Total		1619	100,0		

Riskiness of the write down of investments - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	257	15,9	16,8	16,8
	2	564	34,8	36,9	53,7
	3	152	9,4	9,9	63,7
	4	200	12,4	13,1	76,8
	5	126	7,8	8,2	85,0
	6	229	14,1	15,0	100,0
	Total	1528	94,4	100,0	
Missing	System	91	5,6		
Total		1619	100,0		

Riskiness of the write down of investments - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	533	32,9	51,5	51,5
	2	74	4,6	7,1	58,6
	3	179	11,1	17,3	75,9
	4	115	7,1	11,1	87,1
	5	89	5,5	8,6	95,7
	6	45	2,8	4,3	100,0
	Total	1035	63,9	100,0	
Missing	System	584	36,1		
Total		1619	100,0		

Riskiness of the fair valuation of investments - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	723	44,7	49,3	49,3
	2	320	19,8	21,8	71,1
	3	106	6,5	7,2	78,3
	4	105	6,5	7,2	85,5
	5	64	4,0	4,4	89,8
	6	149	9,2	10,2	100,0
	Total	1467	90,6	100,0	
Missing	System	152	9,4		
Total		1619	100,0		

Riskiness of the fair valuation of investments - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	746	46,1	74,0	74,0
	2	128	7,9	12,7	86,7
	3	38	2,3	3,8	90,5
	4	6	,4	,6	91,1
	5	48	3,0	4,8	95,8
	6	42	2,6	4,2	100,0
	Total	1008	62,3	100,0	
Missing	System	611	37,7		
Total		1619	100,0		

Riskiness of cash in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	394	24,3	26,9	26,9
	2	437	27,0	29,9	56,8
	3	113	7,0	7,7	64,6
	4	131	8,1	9,0	73,5
	5	160	9,9	10,9	84,5
	6	227	14,0	15,5	100,0
	Total	1462	90,3	100,0	
Missing	System	157	9,7		
Total		1619	100,0		

Riskiness of cash in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	620	38,3	55,5	55,5
	2	90	5,6	8,1	63,6
	3	203	12,5	18,2	81,7
	4	29	1,8	2,6	84,3
	5	105	6,5	9,4	93,7
	6	70	4,3	6,3	100,0
	Total	1117	69,0	100,0	
Missing	System	502	31,0		
Total		1619	100,0		

Riskiness of the valuation of cash - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	516	31,9	33,6	33,6
	2	372	23,0	24,2	57,8
	3	204	12,6	13,3	71,0
	4	136	8,4	8,8	79,9
	5	146	9,0	9,5	89,4
	6	163	10,1	10,6	100,0
	Total	1537	94,9	100,0	
Missing	System	82	5,1		
Total		1619	100,0		

Riskiness of the valuation of cash - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	667	41,2	64,0	64,0
	2	177	10,9	17,0	81,0
	3	80	4,9	7,7	88,7
	4	56	3,5	5,4	94,0
	5	20	1,2	1,9	96,0
	6	42	2,6	4,0	100,0
	Total	1042	64,4	100,0	
Missing	System	577	35,6		
Total		1619	100,0		

Riskiness of accruals and prepayments in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	189	11,7	13,0	13,0
	2	274	16,9	18,9	32,0
	3	477	29,5	32,9	64,9
	4	178	11,0	12,3	77,2
	5	152	9,4	10,5	87,6
	6	179	11,1	12,4	100,0
	Total	1449	89,5	100,0	
Missing	System	170	10,5		
Total		1619	100,0		

Riskiness of accruals and prepayments in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	516	31,9	47,4	47,4
	2	272	16,8	25,0	72,4
	3	151	9,3	13,9	86,3
	4	53	3,3	4,9	91,2
	5	40	2,5	3,7	94,9
	6	56	3,5	5,1	100,0
	Total	1088	67,2	100,0	
Missing	System	531	32,8		
Total		1619	100,0		

Riskiness of the valuation of accruals and prepayments - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	190	11,7	12,8	12,8
	2	504	31,1	33,9	46,7
	3	319	19,7	21,5	68,2
	4	169	10,4	11,4	79,5
	5	160	9,9	10,8	90,3
	6	144	8,9	9,7	100,0
	Total	1486	91,8	100,0	
Missing	System	133	8,2		
Total		1619	100,0		

Riskiness of the valuation of accruals and prepayments - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	596	36,8	56,0	56,0
	2	212	13,1	19,9	75,9
	3	107	6,6	10,1	86,0
	4	26	1,6	2,4	88,4
	5	67	4,1	6,3	94,7
	6	56	3,5	5,3	100,0
	Total	1064	65,7	100,0	
Missing	System	555	34,3		
Total		1619	100,0		

Riskiness of owners' equity in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	441	27,2	27,9	27,9
	2	494	30,5	31,3	59,3
	3	195	12,0	12,4	71,6
	4	45	2,8	2,9	74,5
	5	78	4,8	4,9	79,4
	6	325	20,1	20,6	100,0
	Total	1578	97,5	100,0	
Missing	System	41	2,5		
Total		1619	100,0		

Riskiness of owners' equity in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	734	45,3	73,6	73,6
	2	148	9,1	14,8	88,5
	3	42	2,6	4,2	92,7
	4	27	1,7	2,7	95,4
	5	3	,2	,3	95,7
	6	43	2,7	4,3	100,0
	Total	997	61,6	100,0	
Missing	System	622	38,4		
Total		1619	100,0		

Riskiness of provisions in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	95	5,9	6,7	6,7
	2	499	30,8	35,2	41,9
	3	312	19,3	22,0	63,8
	4	150	9,3	10,6	74,4
	5	155	9,6	10,9	85,3
	6	208	12,8	14,7	100,0
	Total	1419	87,6	100,0	
Missing	System	200	12,4		
Total		1619	100,0		

Riskiness of provisions in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	513	31,7	46,8	46,8
	2	161	9,9	14,7	61,6
	3	262	16,2	23,9	85,5
	4	64	4,0	5,8	91,3
	5	39	2,4	3,6	94,9
	6	56	3,5	5,1	100,0
	Total	1095	67,6	100,0	
Missing	System	524	32,4		
Total		1619	100,0		

Riskiness of the valuation of provisions - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	134	8,3	9,0	9,0
	2	443	27,4	29,6	38,6
	3	415	25,6	27,8	66,4
	4	151	9,3	10,1	76,5
	5	155	9,6	10,4	86,8
	6	197	12,2	13,2	100,0
	Total	1495	92,3	100,0	
Missing	System	124	7,7		
Total		1619	100,0		

Riskiness of the valuation of provisions - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	600	37,1	56,6	56,6
	2	119	7,4	11,2	67,8
	3	187	11,6	17,6	85,5
	4	64	4,0	6,0	91,5
	5	34	2,1	3,2	94,7
	6	56	3,5	5,3	100,0
	Total	1060	65,5	100,0	
Missing	System	559	34,5		
Total		1619	100,0		

Riskiness of liabilities in general - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	35	2,2	2,3	2,3
	2	347	21,4	22,8	25,1
	3	424	26,2	27,9	53,0
	4	258	15,9	17,0	70,0
	5	272	16,8	17,9	87,8
	6	185	11,4	12,2	100,0
	Total	1521	93,9	100,0	
Missing	System	98	6,1		
Total		1619	100,0		

Riskiness of liabilities in general - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	497	30,7	47,1	47,1
	2	208	12,8	19,7	66,8
	3	172	10,6	16,3	83,1
	4	90	5,6	8,5	91,7
	5	17	1,1	1,6	93,3
	6	71	4,4	6,7	100,0
	Total	1055	65,2	100,0	
Missing	System	564	34,8		
Total		1619	100,0		

Riskiness of the valuation of liabilities - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	35	2,2	2,3	2,3
	2	516	31,9	33,7	36,0
	3	413	25,5	27,0	62,9
	4	217	13,4	14,2	77,1
	5	146	9,0	9,5	86,6
	6	205	12,7	13,4	100,0
	Total	1532	94,6	100,0	
Missing	System	87	5,4		
Total		1619	100,0		

Riskiness of the valuation of liabilities - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	479	29,6	46,7	46,7
	2	214	13,2	20,9	67,6
	3	171	10,6	16,7	84,3
	4	56	3,5	5,5	89,8
	5	61	3,8	6,0	95,7
	6	44	2,7	4,3	100,0
	Total	1025	63,3	100,0	
Missing	System	594	36,7		
Total		1619	100,0		

Riskiness of taxation - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	25	1,5	1,6	1,6
	2	159	9,8	10,5	12,1
	3	314	19,4	20,7	32,8
	4	415	25,6	27,4	60,2
	5	401	24,8	26,5	86,7
	6	202	12,5	13,3	100,0
	Total	1516	93,6	100,0	
Missing	System	103	6,4		
Total		1619	100,0		

Riskiness of taxation - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	348	21,5	31,7	31,7
	2	121	7,5	11,0	42,7
	3	329	20,3	29,9	72,6
	4	101	6,2	9,2	81,8
	5	82	5,1	7,5	89,3
	6	118	7,3	10,7	100,0
	Total	1099	67,9	100,0	
Missing	System	520	32,1		
Total		1619	100,0		

Riskiness of the going concern principle - ERROR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	44	2,7	2,8	2,8
	2	386	23,8	24,7	27,5
	3	363	22,4	23,3	50,8
	4	238	14,7	15,2	66,0
	5	321	19,8	20,6	86,6
	6	209	12,9	13,4	100,0
	Total	1561	96,4	100,0	
Missing	System	58	3,6		
Total		1619	100,0		

Riskiness of the going concern principle - FRAUD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	420	25,9	38,7	38,7
	2	245	15,1	22,6	61,2
	3	196	12,1	18,0	79,3
	4	30	1,9	2,8	82,0
	5	107	6,6	9,9	91,9
	6	88	5,4	8,1	100,0
	Total	1086	67,1	100,0	
Missing	System	533	32,9		
Total		1619	100,0		

Appendix 11 – The statistics of Hypothesis H_6

ERROR and FRAUD as a source of risk – Friedman test

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Riskiness of tangibles in general - ERROR	823	3,26	1,780	1	6
Riskiness of tangibles in general - FRAUD	823	1,68	1,306	1	6
Riskiness of the cost of tangibles - ERROR	823	3,41	1,521	1	6
Riskiness of the depreciation of tangibles - ERROR	823	3,35	1,531	1	6
Riskiness of the depreciation of tangibles - FRAUD	823	1,88	1,396	1	6
Riskiness of the impairment of tangibles - ERROR	823	3,38	1,526	1	6
Riskiness of the impairment of tangibles - FRAUD	823	1,94	1,387	1	6
Riskiness of the revaluation of tangibles - TEVEDÉS	823	2,97	1,540	1	6
Riskiness of the revaluation of tangibles - FRAUD	823	2,12	1,414	1	6
Riskiness of inventories in general - ERROR	823	4,14	1,138	1	6
Riskiness of inventories in general - FRAUD	823	2,50	1,705	1	6
Riskiness of the write down of inventories - ERROR	823	3,86	1,080	1	6
Riskiness of the write down of inventories - FRAUD	823	2,87	1,787	1	6
Riskiness of receivables in general - ERROR	823	3,39	1,623	1	6
Riskiness of receivables in general - FRAUD	823	2,10	1,477	1	6
Riskiness of the valuation of bad and doubtful debts - ERROR	823	3,75	1,606	1	6
Riskiness of the valuation of bad and doubtful debts - FRAUD	823	2,34	1,675	1	6

Riskiness of the write down of investments - ERROR	823	2,91	1,629	1	6
Riskiness of the write down of investments - FRAUD	823	2,21	1,567	1	6
Riskiness of accruals and prepayments in general - ERROR	823	2,94	1,499	1	6
Riskiness of accruals and prepayments in general - FRAUD	823	1,98	1,380	1	6
Riskiness of the valuation of accruals and prepayments - ERROR	823	2,93	1,483	1	6
Riskiness of the valuation of accruals and prepayments - FRAUD	823	1,99	1,424	1	6
Riskiness of provisions in general - ERROR	823	3,14	1,459	1	6
Riskiness of provisions in general - FRAUD	823	2,06	1,387	1	6
Riskiness of the valuation of provisions - ERROR	823	3,27	1,400	1	6
Riskiness of the valuation of provisions - FRAUD	823	2,01	1,391	1	6
Riskiness of liabilities in general - ERROR	823	3,25	1,278	1	6
Riskiness of liabilities in general - FRAUD	823	2,17	1,579	1	6
Riskiness of the valuation of liabilities - ERROR	823	3,25	1,335	1	6
Riskiness of the valuation of liabilities - FRAUD	823	2,09	1,498	1	6
Riskiness of taxation - ERROR	823	4,02	1,185	1	6
Riskiness of taxation - FRAUD	823	2,72	1,677	1	6
Riskiness of the going concern principle - ERROR	823	3,61	1,221	1	6
Riskiness of the going concern principle - FRAUD	823	2,26	1,491	1	6

Ranks

	Mean Rank
Riskiness of tangibles in general - ERROR	20,04
Riskiness of tangibles in general - FRAUD	9,16
Riskiness of the cost of tangibles - ERROR	23,15
Riskiness of the depreciation of tangibles - ERROR	21,96
Riskiness of the depreciation of tangibles - FRAUD	11,09
Riskiness of the impairment of tangibles - ERROR	21,93
Riskiness of the impairment of tangibles - FRAUD	11,68
Riskiness of the revaluation of tangibles - TEVEDÉS	19,30
Riskiness of the revaluation of tangibles - FRAUD	13,08
Riskiness of inventories in general - ERROR	26,75
Riskiness of inventories in general - FRAUD	15,73
Riskiness of the write down of inventories - ERROR	25,74
Riskiness of the write down of inventories - FRAUD	18,72
Riskiness of receivables in general - ERROR	21,71
Riskiness of receivables in general - FRAUD	13,02
Riskiness of the valuation of bad and doubtful debts - ERROR	24,10
Riskiness of the valuation of bad and doubtful debts - FRAUD	14,96
Riskiness of the write down of investments - ERROR	19,29
Riskiness of the write down of investments - FRAUD	13,77

Riskiness of accruals and prepayments in general - ERROR	19,07
Riskiness of accruals and prepayments in general - FRAUD	11,41
Riskiness of the valuation of accruals and prepayments - ERROR	19,00
Riskiness of the valuation of accruals and prepayments - FRAUD	11,46
Riskiness of provisions in general - ERROR	21,98
Riskiness of provisions in general - FRAUD	13,06
Riskiness of the valuation of provisions - ERROR	22,55
Riskiness of the valuation of provisions - FRAUD	12,48
Riskiness of liabilities in general - ERROR	21,63
Riskiness of liabilities in general - FRAUD	13,35
Riskiness of the valuation of liabilities - ERROR	22,30
Riskiness of the valuation of liabilities - FRAUD	12,97
Riskiness of taxation - ERROR	27,44
Riskiness of taxation - FRAUD	17,76
Riskiness of the going concern principle - ERROR	24,21
Riskiness of the going concern principle - FRAUD	14,17

Test Statistics[a]

N	823
Chi-Square	8564,543
df	34
Asymp. Sig.	,000

a. Friedman Test

ERROR and FRAUD as sources of risk – Wilcoxon signed ranks test

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Riskiness of the valuation of provisions - ERROR	1495	3,23	1,519	1	6
Riskiness of tangibles in general - ERROR	1297	3,54	1,716	1	6
Riskiness of the depreciation of tangibles - ERROR	1518	3,47	1,693	1	6
Riskiness of the impairment of tangibles - ERROR	1473	3,52	1,682	1	6
Riskiness of the revaluation of tangibles - TEVEDÉS	1448	3,10	1,654	1	6
Riskiness of inventories in general - ERROR	1422	4,26	1,314	1	6
Riskiness of the write down of inventories - ERROR	1480	4,00	1,273	1	6
Riskiness of receivables in general - ERROR	1487	3,77	1,558	1	6
Riskiness of the valuation of bad and doubtful debts - ERROR	1518	3,82	1,617	1	6
Riskiness of the write down of investments - ERROR	1528	3,04	1,689	1	6
Riskiness of accruals and prepayments in general - ERROR	1449	3,25	1,517	1	6
Riskiness of the valuation of accruals and prepayments - ERROR	1486	3,02	1,506	1	6
Riskiness of provisions in general - ERROR	1419	3,28	1,551	1	6
Riskiness of liabilities in general - ERROR	1521	3,62	1,385	1	6
Riskiness of the valuation of liabilities - ERROR	1532	3,35	1,426	1	6
Riskiness of taxation - ERROR	1516	4,06	1,253	1	6
Riskiness of the going concern principle - ERROR	1561	3,66	1,450	1	6
Riskiness of the valuation of provisions - FRAUD	1060	2,04	1,455	1	6

Riskiness of tangibles in general - FRAUD	1025	1,67	1,258	1	6
Riskiness of the depreciation of tangibles - FRAUD	989	1,75	1,312	1	6
Riskiness of the impairment of tangibles - FRAUD	1043	1,91	1,402	1	6
Riskiness of the revaluation of tangibles - FRAUD	1012	2,08	1,445	1	6
Riskiness of inventories in general - FRAUD	1063	2,77	1,700	1	6
Riskiness of the write down of inventories - FRAUD	1053	3,11	1,778	1	6
Riskiness of receivables in general - FRAUD	1102	2,16	1,451	1	6
Riskiness of the valuation of bad and doubtful debts - FRAUD	1041	2,44	1,651	1	6
Riskiness of the write down of investments - FRAUD	1035	2,31	1,583	1	6
Riskiness of accruals and prepayments in general - FRAUD	1088	2,08	1,399	1	6
Riskiness of the valuation of accruals and prepayments - FRAUD	1064	1,99	1,473	1	6
Riskiness of provisions in general - FRAUD	1095	2,20	1,429	1	6
Riskiness of liabilities in general - FRAUD	1055	2,18	1,472	1	6
Riskiness of the valuation of liabilities - FRAUD	1025	2,16	1,432	1	6
Riskiness of taxation - FRAUD	1099	2,82	1,644	1	6
Riskiness of the going concern principle - FRAUD	1086	2,47	1,626	1	6

Ranks

		N	Mean Rank	Sum of Ranks
Riskiness of the valuation of provisions - FRAUD - Riskiness of the valuation of provisions - ERROR	Negative Ranks	680[a]	347,82	236517,00
	Positive Ranks	21[b]	454,00	9534,00
	Ties	325[c]		
	Total	1026		
Riskiness of tangibles in general - FRAUD - Riskiness of tangibles in general - ERROR	Negative Ranks	562[d]	287,53	161593,00
	Positive Ranks	9[e]	190,33	1713,00
	Ties	343[f]		
	Total	914		
Riskiness of the depreciation of tangibles - FRAUD - Riskiness of the depreciation of tangibles - ERROR	Negative Ranks	702[g]	387,90	272308,50
	Positive Ranks	54[h]	256,25	13837,50
	Ties	227[i]		
	Total	983		
Riskiness of the impairment of tangibles - FRAUD - Riskiness of the impairment of tangibles - ERROR	Negative Ranks	659[j]	403,06	265618,00
	Positive Ranks	83[k]	120,90	10035,00
	Ties	244[l]		
	Total	986		
Riskiness of the revaluation of tangibles - FRAUD - Riskiness of the revaluation of tangibles - TEVEDÉS	Negative Ranks	476[m]	415,29	197676,00
	Positive Ranks	187[n]	120,00	22440,00
	Ties	307[o]		
	Total	970		
Riskiness of inventories in general - FRAUD - Riskiness of inventories in general - ERROR	Negative Ranks	602[p]	382,56	230304,00
	Positive Ranks	130[q]	292,11	37974,00
	Ties	268[r]		
	Total	1000		
Riskiness of the write down of inventories - FRAUD - Riskiness of the write down of inventories - ERROR	Negative Ranks	462[s]	461,27	213106,50
	Positive Ranks	293[t]	246,70	72283,50
	Ties	217[u]		
	Total	972		
Riskiness of receivables in general - FRAUD - Riskiness of receivables in general - ERROR	Negative Ranks	608[v]	349,36	212409,50
	Positive Ranks	63[w]	207,09	13046,50
	Ties	396[x]		
	Total	1067		
Riskiness of the valuation of bad and doubtful debts - FRAUD - Riskiness of the valuation of bad and doubtful debts - ERROR	Negative Ranks	642[y]	473,95	304277,50
	Positive Ranks	261[z]	398,00	103878,50
	Ties	115[aa]		
	Total	1018		
Riskiness of the write down of investments - FRAUD - Riskiness of the write down of investments - ERROR	Negative Ranks	516[ab]	301,61	155632,50
	Positive Ranks	159[ac]	456,08	72517,50
	Ties	350[ad]		
	Total	1025		

Riskiness of accruals and prepayments in general - FRAUD - Riskiness of accruals and prepayments in general - ERROR	Negative Ranks	684[ae]	401,08	274336,00
	Positive Ranks	91[af]	289,71	26364,00
	Ties	279[ag]		
	Total	1054		
Riskiness of the valuation of accruals and prepayments - FRAUD - Riskiness of the valuation of accruals and prepayments - ERROR	Negative Ranks	623[ah]	353,39	220162,50
	Positive Ranks	67[ai]	272,13	18232,50
	Ties	340[aj]		
	Total	1030		
Riskiness of provisions in general - FRAUD - Riskiness of provisions in general - ERROR	Negative Ranks	707[ak]	394,63	279001,00
	Positive Ranks	78[al]	378,26	29504,00
	Ties	276[am]		
	Total	1061		
Riskiness of liabilities in general - FRAUD - Riskiness of liabilities in general - ERROR	Negative Ranks	722[an]	428,26	309200,50
	Positive Ranks	113[ao]	352,47	39829,50
	Ties	219[ap]		
	Total	1054		
Riskiness of the valuation of liabilities - FRAUD - Riskiness of the valuation of liabilities - ERROR	Negative Ranks	691[aq]	464,10	320693,50
	Positive Ranks	194[ar]	367,84	71361,50
	Ties	134[as]		
	Total	1019		
Riskiness of taxation - FRAUD - Riskiness of taxation - ERROR	Negative Ranks	822[at]	472,02	388003,00
	Positive Ranks	117[au]	455,79	53327,00
	Ties	123[av]		
	Total	1062		
Riskiness of the going concern principle - FRAUD - Riskiness of the going concern principle - ERROR	Negative Ranks	609[aw]	415,32	252932,00
	Positive Ranks	145[ax]	218,64	31703,00
	Ties	297[ay]		
	Total	1051		

a. Riskiness of the valuation of provisions - FRAUD < Riskiness of the valuation of provisions - ERROR

b. Riskiness of the valuation of provisions - FRAUD > Riskiness of the valuation of provisions - ERROR

c. Riskiness of the valuation of provisions - FRAUD = Riskiness of the valuation of provisions - ERROR

d. Riskiness of tangibles in general - FRAUD < Riskiness of tangibles in general - ERROR

e. Riskiness of tangibles in general - FRAUD > Riskiness of tangibles in general - ERROR

f. Riskiness of tangibles in general - FRAUD = Riskiness of tangibles in general - ERROR

g. Riskiness of the depreciation of tangibles - FRAUD < Riskiness of the depreciation of tangibles - ERROR

h. Riskiness of the depreciation of tangibles - FRAUD > Riskiness of the depreciation of tangibles - ERROR

i. Riskiness of the depreciation of tangibles - FRAUD = Riskiness of the depreciation of tangibles - ERROR
j. Riskiness of the impairment of tangibles - FRAUD < Riskiness of the impairment of tangibles - ERROR
k. Riskiness of the impairment of tangibles - FRAUD > Riskiness of the impairment of tangibles - ERROR
l. Riskiness of the impairment of tangibles - FRAUD = Riskiness of the impairment of tangibles - ERROR
m. Riskiness of the revaluation of tangibles - FRAUD < Riskiness of the revaluation of tangibles - TEVEDÉS
n. Riskiness of the revaluation of tangibles - FRAUD > Riskiness of the revaluation of tangibles - TEVEDÉS
o. Riskiness of the revaluation of tangibles - FRAUD = Riskiness of the revaluation of tangibles - TEVEDÉS
p. Riskiness of inventories in general - FRAUD < Riskiness of inventories in general - ERROR
q. Riskiness of inventories in general - FRAUD > Riskiness of inventories in general - ERROR
r. Riskiness of inventories in general - FRAUD = Riskiness of inventories in general - ERROR
s. Riskiness of the write down of inventories - FRAUD < Riskiness of the write down of inventories - ERROR
t. Riskiness of the write down of inventories - FRAUD > Riskiness of the write down of inventories - ERROR
u. Riskiness of the write down of inventories - FRAUD = Riskiness of the write down of inventories - ERROR
v. Riskiness of receivables in general - FRAUD < Riskiness of receivables in general - ERROR
w. Riskiness of receivables in general - FRAUD > Riskiness of receivables in general - ERROR
x. Riskiness of receivables in general - FRAUD = Riskiness of receivables in general - ERROR
y. Riskiness of the valuation of bad and doubtful debts - FRAUD < Riskiness of the valuation of bad and doubtful debts - ERROR
z. Riskiness of the valuation of bad and doubtful debts - FRAUD > Riskiness of the valuation of bad and doubtful debts - ERROR
aa. Riskiness of the valuation of bad and doubtful debts - FRAUD = Riskiness of the valuation of bad and doubtful debts - ERROR
ab. Riskiness of the write down of investments - FRAUD < Riskiness of the write down of investments - ERROR
ac. Riskiness of the write down of investments - FRAUD > Riskiness of the write down of investments - ERROR
ad. Riskiness of the write down of investments - FRAUD = Riskiness of the write down of investments - ERROR
ae. Riskiness of accruals and prepayments in general - FRAUD < Riskiness of accruals and prepayments in general - ERROR
af. Riskiness of accruals and prepayments in general - FRAUD > Riskiness of accruals and prepayments in general - ERROR

ag. Riskiness of accruals and prepayments in general - FRAUD = Riskiness of accruals and prepayments in general - ERROR
ah. Riskiness of the valuation of accruals and prepayments - FRAUD < Riskiness of the valuation of accruals and prepayments - ERROR
ai. Riskiness of the valuation of accruals and prepayments - FRAUD > Riskiness of the valuation of accruals and prepayments - ERROR
aj. Riskiness of the valuation of accruals and prepayments - FRAUD = Riskiness of the valuation of accruals and prepayments - ERROR
ak. Riskiness of provisions in general - FRAUD < Riskiness of provisions in general - ERROR
al. Riskiness of provisions in general - FRAUD > Riskiness of provisions in general - ERROR
am. Riskiness of provisions in general - FRAUD = Riskiness of provisions in general - ERROR
an. Riskiness of liabilities in general - FRAUD < Riskiness of liabilities in general - ERROR
ao. Riskiness of liabilities in general - FRAUD > Riskiness of liabilities in general - ERROR
ap. Riskiness of liabilities in general - FRAUD = Riskiness of liabilities in general - ERROR
aq. Riskiness of the valuation of liabilities - FRAUD < Riskiness of the valuation of liabilities - ERROR
ar. Riskiness of the valuation of liabilities - FRAUD > Riskiness of the valuation of liabilities - ERROR
as. Riskiness of the valuation of liabilities - FRAUD = Riskiness of the valuation of liabilities - ERROR
at. Riskiness of taxation - FRAUD < Riskiness of taxation - ERROR
au. Riskiness of taxation - FRAUD > Riskiness of taxation - ERROR
av. Riskiness of taxation - FRAUD = Riskiness of taxation - ERROR
aw. Riskiness of the going concern principle - FRAUD < Riskiness of the going concern principle - ERROR
ax. Riskiness of the going concern principle - FRAUD > Riskiness of the going concern principle - ERROR
ay. Riskiness of the going concern principle - FRAUD = Riskiness of the going concern principle - ERROR

Test Statistics[a]

	Z	Asymp. Sig. (2-tailed)
Riskiness of the valuation of provisions - FRAUD - Riskiness of the valuation of provisions - ERROR	-21,557[b]	,000
Riskiness of tangibles in general - FRAUD - Riskiness of tangibles in general - ERROR	-20,431[b]	,000
Riskiness of the depreciation of tangibles - FRAUD - Riskiness of the depreciation of tangibles - ERROR	-21,756[b]	,000
Riskiness of the impairment of tangibles - FRAUD - Riskiness of the impairment of tangibles - ERROR	-22,092[b]	,000
Riskiness of the revaluation of tangibles - FRAUD - Riskiness of the revaluation of tangibles - TEVEDÉS	-17,950[b]	,000
Riskiness of inventories in general - FRAUD - Riskiness of inventories in general - ERROR	-16,929[b]	,000
Riskiness of the write down of inventories - FRAUD - Riskiness of the write down of inventories - ERROR	-11,866[b]	,000
Riskiness of receivables in general - FRAUD - Riskiness of receivables in general - ERROR	-20,078[b]	,000
Riskiness of the valuation of bad and doubtful debts - FRAUD - Riskiness of the valuation of bad and doubtful debts - ERROR	-12,922[b]	,000

Riskiness of the write down of investments - FRAUD - Riskiness of the write down of investments - ERROR	$-8,408^{b}$	,000
Riskiness of accruals and prepayments in general - FRAUD - Riskiness of accruals and prepayments in general - ERROR	$-20,558^{b}$	,000
Riskiness of the valuation of accruals and prepayments - FRAUD - Riskiness of the valuation of accruals and prepayments - ERROR	$-19,879^{b}$	,000
Riskiness of provisions in general - FRAUD - Riskiness of provisions in general - ERROR	$-20,397^{b}$	,000
Riskiness of liabilities in general - FRAUD - Riskiness of liabilities in general - ERROR	$-19,681^{b}$	,000
Riskiness of the valuation of liabilities - FRAUD - Riskiness of the valuation of liabilities - ERROR	$-17,111^{b}$	,000
Riskiness of taxation - FRAUD - Riskiness of taxation - ERROR	$-20,447^{b}$	,000
Riskiness of the going concern principle - FRAUD - Riskiness of the going concern principle - ERROR	$-18,746^{b}$	,000

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

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