

Full Length Research Paper

CPA's perception(s) regarding the Covid-19 crisis: A questionnaire development and validation

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The purpose of this study is to develop a valid and reliable questionnaire concerning the Certified Public Accountants' (CPA) perception(s) regarding the Covid-19 pandemic and to provide insights into this issue. A questionnaire was developed combining the key aspects of professional guidelines, prior literature, and experts' opinions. Our study focuses on the perceptions of Greek CPAs, ensuring the validity and reliability of the instrument used through a robust methodology incorporating techniques from classical test theory and factor analysis. The final questionnaire has 18 questions and 4 main subsections (Work and organizational environment, Audit planning, Field work and Audit report). All subsections of the questionnaire achieved an acceptable internal reliability value. Construct validity was confirmed via factor analysis. Insights from the data analysis illustrate that Work and organizational environment and Audit planning explain the greatest variance during the first wave of the pandemic in Greece. The results have important implications for CPAs, practitioners, audit firms and regulators who wish to enhance the effectiveness of the auditing profession and the quality of financial information. To the best of our knowledge, this is the first study that reflects the Covid-19 crisis for the perspective of CPAs. This instrument can be used, if properly modified, as a measurement tool on CPAs perceptions on future crisis.

Key words: Covid-19, Certified Public Accountants, auditors, questionnaires, crisis, stressful events.

INTRODUCTION

The outbreak of the Covid-19 pandemic has profoundly affected society in all aspects of economic and social life (Brammer et al., 2020). This crisis situation has created numerous constraints and challenges to the accounting and auditing profession as well (Rinaldi, 2022). Against this backdrop, organizational and professional bodies provide guidance to their members regarding the accounting and auditing implications both at an

international and at a national level (Albitar et al., 2020). For instance, the Financial Reporting Council (2020) released guidance on issues that auditors should consider while performing their duties. Similarly, the International Auditing and Assurance Standards Board (IAASB, 2020) and the Association of Chartered Certified Accountants (ACCA, 2020), drew the attention of auditors to the fact that, due to the changes brought about by

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Covid-19 to their understanding of the audited entity's system of internal control, they must reevaluate their planned reliance on controls, so that they can effectively respond to identified risks of material misstatement. This illustrates that most guidelines focus on the identification and assessment of audit risk, the response to assessed audit risk and, finally, audit reporting.

Based on these arguments, users expect more transparency on the disclosure of the pandemic's material effects on corporate operations (IAASB, 2020). Thus, to avoid the possibility of fraud or error, auditors should have timely and appropriate communication with the entity's management to obtain and report sufficient and appropriate audit evidence (IBR/IRE, 2020; CEAOB, 2020; CNDCEC, 2020). In addition, they should consider the series of guidelines that have been produced these years. The key areas include: i) the financial reporting date beyond which Covid-19 pandemic will be considered an adjusting event, ii) the manner in which entities should assess a going concern and iii) other significant effects on accounting and reporting (such as fair value measurement, impairment of non-financial assets, management estimates, contingent liabilities and expected credit loss assessments). In this context, the actual impact of the pandemic on the audit profession is yet unknown.

The contribution of this paper to the existing literature is that it is one of the first studies that examine the CPAs' perception regarding the Covid-19 crisis consequences. Since accounting and audit research on Covid-19 is at the pre-early stage of development, this study constitutes an early indication of how Covid-19 changed the audit environment. A valid and reliable questionnaire has been designed. The questionnaire can be used to measure the perceptions of CPAs on the pandemic impact to their profession. The developed questionnaire, can also be used if modified accordingly, in the measurement of the perceptions of CPAs of the impact in their profession of any crisis or other context. Therefore, regulators and audit firms can use the questionnaire to measure CPA perceptions and consequently issue directives that will enhance the effectiveness of the auditor's profession and the quality of financial information.

The remainder of the paper proceeds as follows: in section two, we review prior literature. In the third section, we describe the research methodology. The main results are presented in the fourth section, while the fifth section discusses the impact of Covid-19 on CPAs. In the sixth and final section, we conclude the study.

Motivation

This work was directly motivated by a recent call for Covid-19 implications for audits and the auditing profession, which suggests the need for more research on such issues (Agoglia and Krishnan, 2022). Additionally,

a recent study by Albitar et al. (2020) discusses the theoretical impact of the pandemic on audit quality and provides guidance on how to construct a research instrument to measure it. Although the impact of the pandemic has been extensively examined on a theoretical level, little research has been conducted on its practical implications for the audit profession. To the best of the authors' knowledge, this is the first study that develops a reliable and valid questionnaire to illustrate the CPAs perception regarding Covid-19.

Main CPA issues during the pandemic

Within the Covid-19 era, as we have already mentioned, a variety of supervisory and professional bodies have provided guidance to their members regarding implications for accounting and auditing. Additionally, there are some prior empirical studies that try to shed light on some aspects of the impact of Covid-19 on CPA's. For this reason, the authors summarize this literature and discuss the main areas in which the pandemic has affected CPA's work.

The most common issue related to the pandemic impact on CPA in the relevant literature, is the *Work and the organizational environment*. This probably occurs due to the nature of the auditors' job and the changes brought about to their daily routine (Carungu et al., 2021). The shift to remote work for the audit team and the client had a significant impact and changed the procedures of obtaining audit evidence (IFAC, 2020a). In particular, the lack of face-to-face interaction with the client poses a significant challenge in exercising professional skepticism, while the increased complexities of financial reporting and risks challenge the delivery of audit engagements (IFAC, 2020a). As illustrated by Papadopoulou and Papadopoulou (2020) accounting professionals were significantly affected and generally experienced difficulties adapting to the new work demands. For instance, Humphrey and Trotman (2022) show that the pandemic has affected teamwork and the way the members of audit teams interact with each other in terms of knowledge sharing, mentoring and review of the audit work. A study on a sample of auditors in the Midwest of the US indicates that the various forms of remote communication (that is, instant messaging, telephoning and video conferencing) have increased due to the pandemic (Beechem, 2021). Another study documents significant difficulties faced by auditors in obtaining sufficient and appropriate audit evidence as a result of the complex conditions created by the pandemic (Ugurlu and Sarisoy, 2021). However, although the pandemic raised concerns regarding the ability of auditors to work efficiently, a survey on audit committee members shows that the vast majority of them consider that audit quality either increased (32%) or stayed the same (66%) (Tysiac, 2022).

A second issue is guidance for *Audit planning*. This involves the establishment of an overall audit strategy and the development of the audit plan according to which the audit will be conducted. In this context, the scope, timing and direction of the audit is set, and the auditor needs to consider several matters, such as risk assessment procedures, the determination of materiality and the potential involvement of experts (ISA, 300). An efficient audit plan allows the productive assignment of duties among the audit team members, enhances the coordination of the audit procedures, and facilitates the effective supervision of the audit engagement by the engagement partner and the supervising manager. The auditor must apply the appropriate materiality level in planning and performing the audit to help evaluate the effect of misstatements (ISA 320). For instance, in a study conducted in the Jordanian context, Al-Khasawneh (2021) find that the Covid-19 pandemic had a significant effect on audit planning as well as on other audit areas, such as the determination of materiality levels, auditing risks, the collection of audit evidence and the auditor's report.

The Covid-19 environment is also likely to affect analytical audit procedures (Kend and Nguyen, 2021), defined as "*evaluations of financial information through analysis of plausible relationships among both financial and non-financial data*" (ISA 520; p. 4). The use of analytical procedures in risk assessment is described in ISA 315 "Identifying and assessing risks of material misstatement". More specifically, IFAC (2020b) highlighted two major areas regarding ISA 315. First, the impact of new or revised risks due to the Covid-19 pandemic on the planned audit approach and second, the identification of pandemic-related subsequent events and the assessment of whether these have been appropriately addressed. In this light, Crucean and Hategan (2021) showed that subsequent events disclosed by companies in 2019 annual reports are related to the reduction of corporate activities, the disclosure of prevention plans and distance working for employees. In the same direction, Kend and Nguyen (2021) showed that 3% of the analytical audit procedures applied in 2020 aimed to address the Covid-19 audit risks. Finally, Donatella et al. (2022), focusing on municipalities issuing annual reports in regions with higher numbers of Covid-19 cases, found that they were more likely to disclose information relating to the pandemic as a subsequent event.

Another issue to be addressed is the impact of the pandemic on the *Audit report*. Despite the uncertainties derived from the pandemic, auditors remain responsible for high quality audits (IOSCO, 2020). Thus, Covid-19 may lead to a modification to the auditor's opinion expressed in the auditor's report. More specifically, the form and the content of the auditor's report are defined by ISA 700 "*Forming an opinion and reporting on financial statements*". According to it, the auditor expresses an unqualified opinion, when the financial statements are prepared in accordance with the applicable financial

reporting framework and modifies the opinion, when they are not free from material misstatement or when sufficient or appropriate evidence cannot be obtained to ensure that the financial statements are free from material misstatement. The auditor expresses an adverse opinion when, although sufficient and appropriate evidence is obtained, the misstatements are material and pervasive to the financial statements (ISA, 705). A disclaimer in the auditor's opinion occurs when the auditor is unable to obtain sufficient evidence and the possible effect of the undetected misstatements could be both material and pervasive or when it is not possible to form an opinion due to the interaction of uncertainties and the potential cumulative effect on the financial statements (ISA, 705). Recently, in a USA study, Morris et al. (2022) revealed a significant increase in late filing of audited annual reports during the pandemic, which was lower for companies audited by a Big4 auditor. Further, they illustrated an increase in new, modified audit opinions, but a decline in the cases where the auditor issued a modified going concern audit opinion and the client did not declare bankruptcy within the one-year period after the opinion.

RESEARCH METHODOLOGY

This part of the study discussed how the questionnaire was developed and validated using a web-based survey.

Development and validation process

An eight-step validation process for the development of the questionnaire was used (Trakman et al., 2017; Dancet et al., 2011). These steps include: i) gathering and studying CPA institutes and accounting bodies' guidelines, ii) identifying International Auditing Standards (IAS) key aspects, iii) compiling a list of factors, iv) receiving a review of the questionnaire by a CPA committee, v) composing a questionnaire test, vi) performing a skewness and kurtosis test, vii) checking the reliability of the questionnaire, and viii) performing a factor analysis. Table 1 provides a summary of this process.

The eight steps of development and validation

First, we combined the key aspects of professional guidelines, prior literature, and expert opinions (experts on IAS) and we formulated a list of 57 questions to determine/assess the impact of the Covid-19 pandemic on the CPA profession on a five-point Likert scale (steps 1 to 3). Through this process, four dimensions emerged. Three were adopted from professional guidelines, namely audit planning, field work and audit report and the fourth was adopted from prior empirical studies, namely the working and organizational environment. Apart from the above mentioned questions, the questionnaire included common and experiential demographic questions. Common demographic questions included categorical age, gender, and education level. Experiential demographic questions included professional experience in years, client base industry, audit firm current employer and client's size.

At the fourth step, three CPAs were used to review the questionnaire and provide comments and recommendations (same as Crocker and Algina, 1986). Our basic (implicit) assumption was that CPAs have the expertise to make important comments. For this purpose, we selected CPAs with different gender, experience, and

Table 1. Flow chart of 8 step methodology used to design and validate the questionnaire.

Step one: Collection and study of CPA institutes and accounting bodies guidelines

Research of issued guidelines by national CPA Institutes and International accounting bodies concerning Financial Reporting and Audit Quality implications due to the coronavirus pandemic

Step two: Identifying International Auditing Standards (IAS)key aspects

Experts on IAS noted key aspects of IAS and prepared corresponding questions for our questionnaire

Step three: Creating a list of factors

Information gathered from steps one and two were used for the creation of 57 questions concerning the impact of the Covid 19 pandemic on the CPA profession.

Step four: Review by CPA committee

Three CPAs reviewed the questionnaire and a group evaluation followed. All comments and recommendations from the above procedure were considered to improve the questionnaire validity, context and comprehension.

Step five: Questionnaire test

Two separate CPA's before distribution tested the questionnaire. Comprehension, accessibility, time needed for completion as well as the website-based platform's reports were tested in this step.

Step six: Skewness and Kurtosis test

Prior to our analysis, we calculated the skewness and kurtosis of our variables (questions). Variables with skewness and kurtosis between [-2, 2] were kept for further analysis. Eleven (11) variables were excluded.

Step seven: Reliability of the questions

We measured the questionnaire's internal consistency by Cronbach's alpha measure and corrected the item-total correlation. All twenty five (25) items with $\alpha \leq 0,7$ were excluded.

Step eight: Factor analysis

Explanatory factor analysis was implemented to unravel any underlying factors and examine the relations between factors and items-variables. Eighteen items were found to influence four (4) factors.

Source: Author.

educational background. Each CPA made a preliminary evaluation of the questionnaire and a group evaluation followed. The review of the Auditing Board guidelines was available to the CPAs. All comments and recommendations from the above procedure were considered with a view to improving the questionnaire validity, context, and comprehension.

This final questionnaire was further tested by two different CPAs, in the fifth step, to assess the comprehension, the accessibility, the time needed for completion and the website-based platform's reports. After the completion of the questionnaire, CPAs were encouraged to report the difficulties they encountered (if any) in the process of completion. Only minor difficulties were reported, which were addressed accordingly.

The sixth step included the calculation of the skewness and kurtosis, which led us to exclude 11 questions that exceeded the limits [-2, 2]. Accordingly, the seventh step included the calculation of the Cronbach's alpha measure, which led us to exclude 25 questions with value $\leq 0,7$. Finally, the eighth step included the implementation of the Explanatory Factor Analysis, which led us to a final set of 18 questions classified into four dimensions. The results of these last three steps are presented in detail in section 4 "Results".

RESULTS

Sample

The Hellenic Accounting and Auditing Standards

Oversight Board (HAASOB) is responsible for maintaining a publicly available register of CPAs in Greece. A low rate of answers was anticipated, given that the population of CPA's in Greece is relatively small and numbers 1351 CPAs. In response to this limitation, the link to the online questionnaire was sent via e-mail to all 834 CPAs with available e-mail information, on the public registry from all audit firms in Greece. We collected 104 anonymous questionnaires (12.47 % of the 834 CPAs) and accepted 95 responses (11.39 % of the 834 CPAs) with declared auditing experience of at least five years. The questionnaires were collected during the period from 14th of August to 18th of October of 2020, between the first and second pandemic wave.

Our respondents were drawn mainly from non-Big4 audit firms. This may have been due to the Greek Big4 policy towards external research. Table 2 provides an analysis of the population of CPA per audit firm, the number of answers per audit firm, and associated percentages.

Given the unverified email addresses and heavy workload of CPAs, we consider that the number of responses gathered is a representative sample of Greek CPA's.

In Table 3, the descriptive statistics of our sample was

Table 2. Responses and population per audit firm.

Audit firm	Responses		Available CPA		
	Frequency	%	Frequency	%	% of responses per firm
Big four	17	17.89	140	16.79	12.14
Sol Crowe	41	43.16	321	38.49	12.77
Grant Thornton	19	20.00	68	8.15	27.94
Other audit firms	18	18.95	305	36.57	5.90
Total	95	100.00	834	100.00	11.39

Source: Author.

Table 3. Descriptive statistics.

Number of variables (n=57)	
Number of variables after exclusion (n=46)¹	
Variable mean score, range	[1.61, 4.47]
Variable SD, range	[0.503, 1.562]
Variable skewness, range	[-1.418, 1.627]
Variable kurtosis, range	[-1.043, 1.957]
Age group (years)	
<30	n=7
30-39	n=39
40-49	n=27
50-59	n=12
≥60	n=10
Education groups	
BA	n=53
MSc	n=39
PhD	n=1
PostDoc	n=2
Accounting/ auditing certifications	
ACCA, JES, ACA	n=16
IESOEL	n=71
ACCA, JES, ACA and IESOEL	n=8
Economic first degree	
Yes	n=93
No	n=2
Gender groups	
Female	n=26
Male	n=69
Customer base²	
≤ 1 industry	n=11
2 – 3 industries	n=64
4 – 5 industries	n=17
> 5 industries	n=3

Table 3. Cont'd

Audit experience	
≤ 1 firm	n=62
2 - 3 firms	n=30
4 - 5 firms	n=1
> 5 years	n=2
Audit firm (current firm)	
Big 4	n=17
Sol Crowe	n=41
Grant Thornton	n=19
Other	n=18
Customer size	
Small	n=13
Medium	n=47
Large	n=35

¹We included only variables with skewness and kurtosis between [-2, 2]. All others were excluded. ²We considered the following industries of the customer base: (i) Banking and Finance, (ii) Insurance, (iii) Shipping, (iv) Commercial, (v) Industrial, (vi) Public sector, (vii) Other.
Source: Author.

presented. The variable mean range and standard deviation range are [1.61, 4.47] and [0.503,1.562] respectively. All respondents have at least a bachelor's degree, as it is prerequisite for a CPA qualification in Greece. 74.75% of them, have IESOEL certification, which is issued by the Institute of certified public accountants of Greece, 16.85% have a non-Greek certification (ACCA, ACA etc.), while only 8.40% have both a Greek and a non-Greek certification. Women constitute 27.37% of our sample and men the rest. Finally, the average audit professional experience was nineteen (19) years.

Skewness and Kurtosis test

Prior to reliability tests, in the sixth step, we calculated the skewness and kurtosis of the variables (questions). Variables with skewness and kurtosis between [-2, 2] were kept for further analysis, while all others were excluded (similar with Dancet et al., 2011; Demaray et al., 2016; Kabuye et al., 2017). This implies that normality assumption is not violated.

Therefore, eleven variables (questions) were excluded (A1.5, A2.2, B1.5, B2.6, B10.8, C1.4, C1.6, C1.7, C3.1, C3.2, C3.5).

Reliability

To test the questionnaire's reliability, in the seventh step, Cronbach's alpha was used to measure internal

consistency and item-total correlations. Internal consistency was used to measure the reliability of our questionnaire because it can be established in one testing situation, thus it avoids many of the problems associated with repeated testing found in other reliability estimates (Allen and Yen, 1979). Alpha values above 0.7 are generally considered acceptable and satisfactory, above 0.8 are usually considered quite well and above 0.9 are considered to reflect exceptional internal consistency (Cronbach, 1951). In the social sciences, the acceptable range of alpha value is from 0.7 to 0.8 (Nunnally and Bernstein, 1994). After discarding questions with low Cronbach's alpha ($\alpha \leq 0.70$), we resulted in 21 questions with relatively high reliability as presented in Table 4. For the four domains, the coefficient ranged from 0.834 to 0.916 (Table 4). The *Work and organizational environment* domain had a Cronbach's alpha of 0.916, the *Audit planning* section had a Cronbach's alpha of 0.851, *Field work* had a Cronbach's alpha of 0.834 and finally *Audit report* had a Cronbach's alpha 0.872. The above results indicate good internal consistency reliability (Norman and Streiner, 1994). In addition to high internal consistency results, corrected item-total correlation surpassed the level of 0.20 (Nunnally and Bernstein, 1994) ranging from 0.48 to 0.832 (Table 4).

Factor analysis

Preceding factor analysis (step 8), we tested our data's suitability for factor analysis. For this reason, different

Table 4. Cronbach's Alpha results.

B) Work and organizational Environment Cronbach's Alpha = 0.916			D) Audit planning Cronbach's Alpha = 0.851			E) Field work Cronbach's Alpha = 0.834			F) Audit report Cronbach's Alpha = 0.872		
Variable	Corrected item- total correlation	Cronbach's alpha if item deleted	Variable	Corrected item- total correlation	Cronbach's alpha if item deleted	Variable	Corrected item- total correlation	Cronbach's alpha if item deleted	Variable	Corrected item- total correlation	Cronbach's alpha if item deleted
A1.1	0.774	0.900	B1.1	0.616	0.831	C1.2	0.480	0.830	D6.3	0.677	0.855
A1.2	0.797	0.899	B1.2	0.694	0.815	C1.3	0.491	0.828	D6.4	0.710	0.844
A1.3	0.768	0.904	B1.3	0.582	0.836	C1.5	0.622	0.804	D6.5	0.797	0.807
A1.4	0.803	0.896	B2.1	0.651	0.823	C1.8	0.513	0.825	D6.6	0.729	0.836
A1.6	0.832	0.888	B2.2	0.730	0.808	C1.9	0.786	0.764			
			B2.3	0.546	0.842	C1.10	0.766	0.770			

Source: Author.

approaches were proposed for the suitability of factor analysis. Regarding the appropriate sample size, Stoel et al. (2012) illustrate that for each item we should have at least two responses. In this sense, the 97 responses for these 21 items are considered acceptable. Moreover, the Kaiser - Meyer-Olkin (KMO) was employed to measure the Sampling Adequacy and Bartlett's Test of Sphericity. KMO for our sample was equal to 0.728 and Bartlett's Test of Sphericity was significant ($p < .001$). Both results indicate that our data are adequate and thus, we proceeded with the factor analysis.

According to Hair et al. (2010), factor loadings greater than 0.50, are considered very significant and can be used for further analysis. Consequently, three (3) items with factor loadings lower than 0.50 were excluded from this analysis, and there were no items that cross-loaded onto any other factor. As can be seen in Table 5, where factor analysis results are presented, the impact of the Covid-19 pandemic on the audit profession consists of four factors. Validating our questionnaire design, each factor is affected only by items belonging to a certain stage of the audit

process.

As illustrated in Table 5, the eighteen items are classified in four factors, as in our questionnaire design. In particular, the first factor, *Work and organizational environment*, consists of five items. The item loadings vary from 0.814 to 0.878 and explain the 23.62% of the factor variance. The second factor is related to the *Audit planning* and consists of five items with item loadings from 0.609 to 0.823. This factor explains the 16.21% of the factor variance. The third factor is related to *Field work* and consists of four items. The loadings of the items fluctuate between 0.628 and 0.872 and explain the 11.47% of the factor variance. Finally, the fourth factor, namely *Audit report*, contains four items, with loadings ranging from 0.806 to 0.895, and explains the 15.14% of the factor variance (Appendix).

DISCUSSION

In recent years, the impact of Covid-19 on the accounting and audit profession has received considerable attention by professional bodies,

practitioners, and scholars. Against this background, these professional accounting bodies have provided guidance to their members regarding the accounting and auditing implications both at international and national level. Therefore, the purpose of this study was to construct a reliable and valid questionnaire and evaluate the relative importance of each factor/dimension based on the perceptions of Greek Certified Public Accountants.

This research identifies four factors associated with the impact of Covid-19 on Greek CPAs. Every factor contains variables from a separate section of the questionnaire. Thus, we can infer that factor 1 refers to *Work and organizational environment* as it contains only variables from the relevant section of the questionnaire and for the same reason factor 2 refers to *Audit planning*, factor 3 refers to *Field work* and factor 4 refers to *Audit report*. Of the four, the highest rated factors are *Work and organizational environment* and *Audit planning*, which explain the greatest variance in the factor analysis. It is reasonable to expect *Work and organizational environment* to be the most important factor, since the accounting

Table 5. Exploratory factor analysis results.

Kaiser-Meyer-Olkin Index = 0.728				
Bartlett's sphericity test = < 0.001				
Variable	Factor 1	Factor 2	Factor 3	Factor 4
	Work and organizational environment	Audit planning	Field work	Audit report
Your audit firm, in terms of dealing with the pandemic to what extent (from 1 to 5)				
A1.1 Delivered a comprehensive action plan on time	0.872			
A1.2 The plan was clear	0.876			
A1.3 Provided the necessary protective measures and equipment	0.814			
A1.4 Provided the necessary training	0.863			
A1.6 Adapted to the pandemic satisfactory	0.878			
As a result of the pandemic, which was the change to the following (from 1 to 5)				
B1.1 The required engagement time of each customer		0.777		
B1.2 The amount of audit evidence required		0.798		
B1.3 The quality of the required audit evidence		0.609		
How will the pandemic affect the following in the future (from 1 to 5)				
B2.1 The required engagement time of each customer		0.801		
B2.2 The amount of audit evidence required		0.823		
How was the quality of audit evidence affected by each procedure (from 1 to 5)				
C1.5 Evaluation of accounting estimates (impairments, etc.)			0.872	
C1.8 Confirmations from third parties (customers, suppliers, etc.)			0.628	
C1.9 Assessment of going concern			0.845	
C1.10 Subsequent events			0.871	
How pandemic effects on the financial statements will be dealt with in the post-pandemic era (from 1 to 5)				
D6.3 There will be an increase in matters of emphasis				0.806
D6.4 There will be an increase in matters that raise modification of audit reports				0.815
D6.5 There will be an increase in audit reports with an adverse opinion				0.895
D6.6 There will be an increase in audit reports with a disclaimer of opinion				0.859

Source: Author

and audit profession is considered one of the most affected by the pandemic, due to the nature of the work.

Work and organizational environment

As far as *Work and organizational environment* is

concerned, the variables that best describe the impact of the pandemic are related only to the audit firm's response to the pandemic conditions. Thus, the timely delivery of a comprehensive action plan, the comprehensiveness of the above-mentioned plan, the provision of the necessary protective measures, equipment, and training, and

the overall adaptation of the firm to the pandemic are the variables that best describe the first factor.

Audit planning

The impact of the pandemic on *Audit planning* can

best be depicted by variables with more general content rather than variables with high expertise content. That is why items with high loadings in Table 5, consist of questions about required engagement time, the amount and quality of audit evidence in present impact and the anticipated future impact of the pandemic (except quality of audit evidence that concerns only the pandemic's present impact). On the other hand, questions with high expertise content, such as materiality benchmark changes, fraud risk assessment, risk of material inaccuracies by account do not seem to explain the impact of the pandemic on audit planning.

Field work

The variables that affect the third factor, *Field Work*, are questions about the impact of the pandemic in the evaluation of accounting estimates (impairments etc.), assessments of going concern, subsequent events and confirmation from third parties. In contrast with what is expected, audit procedures mentioned by many national CPA professional bodies on their issued guidelines and performed on site, like the inventory census and document audit, are not among the variables that affect the third factor. This result is attributed to the period in which the questionnaire responses were collected and depicts the concerns of Greek auditors at the time. Since the inventory census of 31/12/2019 was conducted in a non-covid environment, in the summer of 2020, at the time inventory census was not an issue for CPAs. The same fact largely explains why alternative means of obtaining audit evidence proposed by CPA institutes did not affect the *Field work* factor either. That is because alternative means suggested mainly target audit procedures that were already concluded at the time of the response collection. Document audit had already largely been completed during interval audits, also in a non-covid environment. At the time of the response collection, CPAs were concerned about near reporting procedures, such as going concern, subsequent events and accounting estimates. Due to the above reasons, there is a high probability that our results are highly dependent on the time that responses were collected.

Audit report

The fourth and final factor, *Audit report*, is affected only by questions that refer to how CPAs will deal with the impact of the pandemic in the post pandemic era and, in particular, only by questions concerning contents of the audit report.

Thus, the variables that affects the fourth factor concern the increase in matters of emphasis, matters that call for the modification of audit reports, audit reports with an adverse opinion and audit reports with a disclaimer of opinion.

Conclusion

Covid-19 has been one of the most significant global crises that further exacerbated preexisting social, economic and governance problems and triggered a variety of institutional, organizational and individual responses (Rinardi, 2022). In this turbulent environment several aspects of socio-economic life were severely affected, extending from public economics to business operations, education and, ultimately, working conditions and environment. The accounting and auditing profession is one of the categories of professionals most affected by the pandemic due to the nature of the work, the need to meet strict deadlines and the requirement to provide high quality information to the users of the financial reports that ensures transparency and facilitates decision making. Acknowledging the complexity created by the pandemic, several regulatory and professional organizations in accounting and auditing issued guidance to their members in order to support their work and help them handle the consequences.

Motivated by the impact of the pandemic on the accounting and auditing environment and the guidance provided to the accounting and auditing community, we conducted a questionnaire survey on certified public accountants during the first wave of the pandemic in Greece. Our purpose was to depict auditors' views on the impact of the pandemic on their profession and identify the key factors that affected them. Factor analysis was employed to identify significant relationships between the items of our research instrument and evaluate their importance. The findings suggest the existence of four factors with significant influence: *Work and organizational environment*, *Audit planning*, *Field work* and *Audit report*.

Through an eight step process a valid and reliable questionnaire was designed. This instrument can be used as a benchmark to measure the impact of the Covid-19 pandemic on the CPAs in other, similar contexts. In addition, it can be applied during the different waves of a pandemic to get a clearer picture of the consequences of the phenomenon for the audit profession. On that basis, our study has important implications for CPAs, practitioners, and regulators. Because the 57 questions of the initial questionnaire cover most of the audit process, the developed questionnaire, if it is modified accordingly, can be used as a measurement tool of any crisis, health related or not. Therefore, regulators and audit firms can use the initial questionnaire to measure CPA perceptions on the impact of any crisis to their profession and consequently issue directives that will enhance the effectiveness of the auditor's profession and the quality of financial information.

Limitations

Another limitation is that the sample is only reflective of people living in a certain region, and so cannot be

generalized to apply to the whole population. The survey was restricted to people from a particular region that may not be reflective of the country as a whole. Therefore, predictions about the general population cannot be made using the results of this study. In addition, although the sample of this study is large enough to support the statistical analysis, a larger sample or one extended to more countries could potentially strengthen the robustness of the results.

FUTURE RESEARCH RECOMMENDATION

Future research could reassess the impact of the pandemic after the vaccination program and examine its impact.

Moreover, since vaccination was not mandatory for the accounting and auditing profession, it would be extremely interesting to examine differences in the opinions between professionals who were vaccinated and those who were not.

In addition future research, can measure the perceptions of CPAs as future crisis develop over time by modifying our questionnaire accordingly. Furthermore, the developed questionnaire can be used in different countries as well as in various crisis, health or non-health related. Finally, interviews could supplement and broaden our understanding regarding the impact of the pandemic on the accounting and auditing profession.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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APPENDIX

Study's questionnaire.

Your audit firm, in terms of dealing with the pandemic to what extent (from 1 to 5)

- A1.1 Delivered a comprehensive action plan on time
- A1.2 The plan was clear
- A1.3 Provided the necessary protective measures and equipment
- A1.4 Provided the necessary training
- A1.5 Provided the necessary equipment for remote work (hardware, software)
- A1.6 Adapted to the pandemic satisfactory

Due to the pandemic, which was the change to the following (from 1 to 5)

- A2.1 Working hours
- A2.2 Income
- A2.3 Level of stress
- A2.4 Productivity
- A2.5 Ability to meet deadlines
- A2.6 Communication with your colleagues
- A2.7 Communication with your customers

As a result of the pandemic, which was the change to the following (from 1 to 5)

- B1.1 The required engagement time of each customer
- B1.2 The amount of audit evidence required
- B1.3 The quality of the required audit evidence
- B1.4 Audit fees
- B1.5 The overall quality of the audit

How will the pandemic affect the following in the future (from 1 to 5)

- B2.1 The required engagement time of each customer
- B2.2 The amount of audit evidence required
- B2.3 The quality of the required audit evidence
- B2.4 Audit fees
- B2.5 The overall quality of the audit
- B2.6 The frequency of changing audit firms

How will the risk of material inaccuracy change in the following accounts (from 1 to 5)

- B10.1 Fixed assets
- B10.2 Inventory
- B10.3 Receivables
- B10.4 Cash
- B10.5 Loans
- B10.6 Suppliers
- B10.7 Taxes – Insurance organizations
- B10.8 Revenue
- B10.9 Expenses
- B10.10 Going concern assessment

How was the quality of audit evidence affected by each procedure (from 1 to 5)

- C1.1 Inventory census
- C1.2 Internal control assessment
- C1.3 Document audit
- C1.4 Reconciliations (e.g., fixed asset register with accounts, etc.)
- C1.5 Evaluation of accounting estimates (impairments, etc.)
- C1.6 Assessment of the appropriateness of accounting policies
- C1.7 Final reconciliations of financial statements
- C1.8 Confirmations from third parties (customers, suppliers, etc.)
- C1.9 Assessment of going concern
- C1.10 Subsequent events

How much the below means contributed to the audit work (from 1 to 5)

- C3.1 Drones
- C3.2 Remotely operated robotic systems
- C3.3 Remote interviews
- C3.4 Live video tours from mobile devices
- C3.5 Document reviews via scan
- C3.6 Received posted documents
- C3.7 Remote (virtual) presences in censuses

How pandemic effects on the financial statements will be dealt with in the post-pandemic era (from 1 to 5)

- D6.1 Companies will adjust and no matters that raise modification of audit report will occur
- D6.2 Management representation letters will include more issues
- D6.3 There will be an increase in matters of emphasis
- D6.4 There will be an increase in matters that raise modification of audit reports
- D6.5 There will be an increase in audit reports with an adverse opinion
- D6.6 There will be an increase in audit reports with a disclaimer of opinion

Note: The questionnaire has also demographic questions, of which the main results are presented in section 4.1

List of non-Standard abbreviations

Acronym or Initialism	Full name
ACA	Association of the Institute of Chartered Accountants
ACCA	Association of Chartered Certified Accountants
AJPT	A Journal of Practice and Theory
CEAOB	Committee of European Auditing Oversight Bodies
CNDCEC	National Council of Chartered Accountants and Accounting Experts (Italy)
CPA	Certified Public Accountant
HAASOB	Hellenic Accounting and Auditing Standards Oversight Board
IAASB	International Auditing and Assurance Standards Board
IAS	International Accounting Standards
IBR/IRE	Institute of Company Auditors (Belgium)
IFAC	International Federation of Accountants
IOSCO	International Organization of Securities Commissions
ISA	International Standard of Auditing