A mixed content analysis model of ethics in the accounting profession

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Abstract

Purpose – The purpose of this study is to propose a contemporary-specific model entitled "sustainable development model of accounting professional ethics (SDM-APE)" and empirically investigate and quantitatively prioritize its components.

Design/methodology/approach – The study adopts the mixed content analysis research method and integrates both qualitative and quantitative approaches. The necessary data for the initial model are extracted after examining 569 published articles related to professional ethics of accounting in Iran during 2005-2015. Then, the ethical codes are reviewed, summarized and extracted via "content analysis." Based on the findings of this study, a sustainable accounting model is developed, which consists of four constructs, including personal, social, economic-organizational and environmental factors, with 69 components. Afterward, the model is tested through collecting questionnaires and simple random sampling by 217 academic and professional experts. Accordingly, the second-order confirmatory factor analysis in LISREL software is used.

Findings – The paper clearly demonstrates that ethics in the professional accounting are underpinned by four major constructs: personal, social, economic-organizational and environmental factors; all four mentioned constructs of the model are interconnected and affect professional ethics in accounting and maintain a proper goodness of fit. Meanwhile, social, personal, economic-organizational and environmental features reveal the greatest fit accordingly. The variable of "avoiding the misuse of organizational property and information" is the most important variable of the model. It is followed by deontology, responsibility and accountability for environment, preventing environment degradation and emission of environmental pollutants, promoting the culture of environmental conservation, standing in the second to fifth priority levels, respectively.

Originality/value – This paper has developed a contemporary practical model in professional accounting ethics, which is extensive and applicable to various organizations.

Keywords Accounting, Professional ethics, Sustainable development, Factor analysis, Mixed content analysis

Paper type Research paper

1. Introduction

Accounting ethics is the guideline for an accountant's decision. A professional accountant is not exclusively responsible to satisfy the needs of clients or the employing organization, and they should follow the ethical codes (IESBA, 2018). When important issues such as ethics and accounting are dovetailed, more attention and consideration are necessary. In these situations, ignoring some ethical criteria creates financial corruption and is of great concern in governmental and nongovernmental sectors. Indeed, consideration of ethics is the main solution for such a crisis as the nature of affairs conducted by accountants and auditors

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requires a high level of ethics (Mitschow and Asgary, 2004). Shareholders and other users of financial statements also rely on the financial statements of companies because they can make superior decisions about their investments through this information. They also rely on auditors who have confirmed the financial statements. In all of these situations, ethics play a significant role because they create a public trust on the information provided by the accountants and auditors and prevents them from misdeeds to a great extent.

Unfortunately, comprehensive and seminal empirical and practical studies on accounting professional ethics are scarce. This scarcity also involves ethical charters as well as codes of professional ethics and models. A study of the ethical codes prescribed by international institutions suggests that these codes are not comprehensive and generally encompass organizational issues. For instance, the Code of Ethics of the Institute of Management Accountants (IMA) emphasizes competence, confidentiality, integrity and reality (Verschoor, 2005). The IFAC (International Federation of Accountants) (2014) also provides the enforceable codes of ethics, including the generalities and principles, integrity, objectivity, professional competence and care, confidentiality and professional behavior and customs (Catherine, 2010). Although formulation of these codes is considered as a positive step toward improving the accounting professional ethics, their effect has been negligible because the constructs identified in codes of ethics are neither comprehensive nor based on systematic research and are prescriptive, and they rely more on deductive reasoning. Furthermore, the prescribed components of the codes are scattered and separated from each other and are unsystematic. Therefore, there is an ambiguous relationship between various components of the code of ethics. The importance of each prescribed ethical element is also equivocal in comparison with other codes of ethics. Hence, the influence of each factor cannot be recognized, and thus, the benefit of each code of ethics is nuanced. Consideration of this issue necessitates identifying other dimensions and factors affecting professional ethics of accounting and developing a model.

This study eliminates the preceding problems by providing a comprehensive and quantitative model of accounting professional ethics, which can overcome the aforementioned deficiencies by creating a practical model which is applicable in various organizations. The assumption of this study, based on the current literature (Payne *et al.*, 2018; Blay *et al.*, 2018), is that ethical behavior of the professional accountants cannot be improved merely by promulgating accounting codes of ethics; rather, it will be enhanced when the effects of various complex personal, organizational and social factors affecting the behavior of accountants are considered simultaneously. Actually, a professional accountant must comply with ethical considerations over and above the needs of their specific clients/organizations.

In effect, based on the literature that will be presented in a later section, we speculate that professional ethical conduct of the accountants is comprised of the comprehensive functions of the personal, social, economic and organizational and sustainable development factors. To determine the exact effect, the elements of each factor must be unambiguously specified, and their relationship should be examined quantitatively.

The importance of this study is that it uses "mixed content analysis approach" (Creswell and Plano Clark, 2011; Creamer and Ghoston, 2013) to provide a qualitative and quantitative and practical model applicable in different organizations. This model is comprehensive, whose constructs are based on empirical variables, not inductive (qualitative) and deductive (quantitative) reasoning. The importance of constructs is scientifically and systematically determined via the "second-order confirmatory factor analysis (CFA) technique" (Agostini *et al.*, 2016; Mustapha and Bojuwon, 2015), and the systematic relationship of the model is

then specified. Accordingly, this study can significantly expand the knowledge boundaries, especially in the field of mixed model of professional accounting ethics.

The structure of this study is as follows. Theoretical development and literature review will be presented in Section 2 which also introduces a novel contemporary model entitled as "(SDM-APE)." Section 3 elaborates on the research method and outlines the hypotheses, data collection methods, the statistical sample and population and the "second-order CFA." The findings of the descriptive statistics as well as tests of the factorial analysis on various components of the model are presented in Section 4. Section 5 discusses the results and draws the conclusions. Lastly, Section 6 provides suggestions and limitations of the research.

2. Theoretical development and literature review

Although various theories of professional ethics such as Aristotelian thoughts, utilitarianism, deontology, inclusive justice, libertarianism and teleology have been promoted and used in accounting (Dessler, 2015; Argandoña, 2016; Kolk, 2016; Marilyn and Fisher, 2017), this study is generally based on inclusive justice. This is because the philosophy of accounting is devised on positive paradigms and theories, especially justice. Generally, based on the "theory of the stakeholders," which is merged with justice oriented theory (Donaldson and Preston, 1995; Jones, 1995), accounting is an information system which provides different internal and external users with financial and non-financial information of the organization to make economic decisions. This information is especially expended by various users, including the government, investors, debtors, creditors, banks and credit institutions, stock markets, employees and managers of organizations and communities. They can be applied to fulfill and evaluate the organization's current and future operations, change the real and legal entities' behavior and optimally allocate scarce resources of the organizations (IFAC, 2014; Horngren *et al.*, 2017). To attain these objectives, the "qualitative characteristics of accounting information" such as relevancy, timeliness and cost–benefit analysis should also be taken into account in addition to its technical and quantitative aspects to make accounting information reliable and useful. The stakeholder theory is concerned with the principle that firms and managers should behave such that it is ethically acceptable when dealing with their stakeholders and others (Jones, 1991). In this case, ethical compliance would increase both the quantity and quality of the accounting information (Smith, 2003; Khan and Gray, 2016).

2.1 Sustainable development model of professional accounting ethics

The specific theoretical basis of this article, however, is based on the argument that dominant paradigms leading accountants to comply with professional ethics are affected by various constructs. Consequently, the question that this paper intends to answer first is, what are the constructs that support the ethical behavior of professional accountants? By studying the literature, adopting qualitative content analysis and adopting the following theories, we propose "The sustainable development model of accounting professional ethics" (SDM-APE) model. The four most important constructs of the model are presented in Figure 1.

These four consecutive constructs are: personal constructs, social constructs, economic-organizational constructs and environmental constructs. The foundation of these constructs along with relevant supporting studies will be explained in the following. These constructs are explained by dovetailing "behavior change theories" (Glanz *et al.*, 1997; Witte, 1997) and its three components: social cognitive theory (Bandura, 1986; Perry *et al.*, 1990), theory of planned behavior (Ajzen, 1991; Armitage and Conner, 2001) and theoretical stages of the

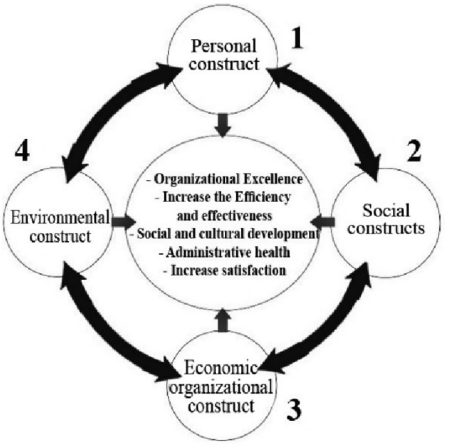


Figure 1.
SDM-APE

change (Prochaska *et al.*, 1994) and sustainable development theory of accounting (McKinley, 2008).

2.2 Personal constructs

Based on this model, the ethical behavior of an accountant is first affected by the constructs influencing the personal behavior. Figure 2 shows the main components of this personal behavior.

It indicates that an accountant's personal constructs, which include instincts, drives, traits and other motivational drivers, are affected by two holistic variables: accountant's attitude and perceived behavior control. The first variable relates to the degree to which the accountant's behavior is positively or negatively valued by himself/herself. The second variable involves the accountant's perceptions of his/her ability to conduct the designated behavior to feel self-efficacy. When these variables are combined, the output leads to the emergence of the accountant's "intension." Intention relates to the accountant's plans to perform the identified task, which is expected to produce the desired behavior. Intention is also determined by the accountant's attitude (beliefs and values about the outcome of the behavior) and subjective norms (beliefs about what other people think the accountant should do or general social pressure). It is also shown that it is the most important variable in predicting behavioral change.

In this regard, Yoon (2011) considered individuals' ethical behavior under the impact of two groups of factors. The first group, which can be considered as personal characteristics, includes justice, deontology, relativism, degree of selfishness and utilitarianism. All these

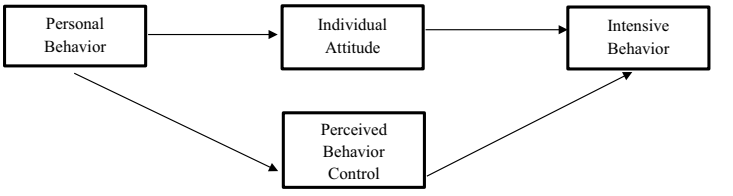


Figure 2.
Components of the personal behavior construct

factors affect the ethical judgment as the latter group of factors. Finally, ethical judgment, utilitarianism, degree of selfishness and justice directly affect ethical behavior.

West (2017) found that several aspects of Aristotle's ethics can be fruitfully applied to the ethics of professional accountants. These include the relationship between function, goals and the good and awareness of the human goal to achieve Eudemonia, development of both excellences of character and of intelligence and the significance of non-rational aspects of morality, including emotions, will, responsibility and choice.

Waldron and Fisher (2017) found significant differences in both the structure of personal values and ethical judgments between practitioners and accounting students. Life-stage effects play an important role in explaining these differences. Hedonistic values appear to lose their prominence through the maturation process, while others such as security become increasingly important. Unexpectedly, values are found to have a little direct impact on ethical judgments. In the work of Payne *et al.* (2018), a moral decision-making basis is provided for accounting professionals to employ during times of ethical dilemmas.

2.3 Social constructs

Accountant's behavior, however, is not only driven by personal inner forces, but also by external impediment constructs. Thus, the second major construct affecting the ethical behavior of an accountant, which is represented in Figure 2, is the social pressures exerted on the accountant by social actors, including parents, spouse and friends, to engage in or refrain from conducting designated actions. Based on this construct, an accountant's ethical behavior is deeply influenced by the social factors consisting of affectability by what others think and do as well as by norms and practices prevailing in the society. In effect, social norms and structures largely define the accountants' behavior. Some of the social factors that influence an accountant's behavior are: commitment, messenger, ego and social norms.

Moreover, Mo *et al.* (2017) found that team fault lines significantly moderated the curvilinear relationship between ethical leadership and team creativity such that the inverted U-shaped relationship was more significant among teams with weak team fault lines. Another research has scrutinized the usefulness of the social norm theory in empirical business ethics (Blay *et al.*, 2018). To show the merits of the social norm theory, examples where the theory is applied effectively to experimental accounting research were presented to generate new insights. They pinpointed the situations where the theory may be useful in empirical business ethics research by providing those examples.

2.4 Economic-organizational construct

The third important construct affecting an accountant's ethical behavior is the economic-organizational factor. This construct includes the effect of the industry, type, size and economic conditions of the organization on ethical behavior of the accountant. Here, "organizational justice" is particularly considered as an influential factor, as it reflects the compliance of the organization in enumerating the "fairness principle" (Whiteside and Barclay, 2013). In the process of social exchange, when the accountant observes and comprehends the justice and fairness behavior of the organization, he/she would provide greater services to the organization far more than his/her designated duties, which will provide higher returns and profits for the organization. Organizational justice, on the other hand, consists of three perspectives of distributive justice, procedural justice and interactional justice (Adams, 1965). Distributive justice focuses on the equity and fairness of the outcome of the behavior such that the accountant is compensated for his/her desirable actions. Procedural justice emphasizes the fairness of organization's process. Consistency of procedures, lack of bias in performing procedures, maintaining accurate information for

decision-making and compliance of the procedures with ethical standards are the prime examples of this justice. Interactional justice relates to the personal relations interaction between management and accountants. Accountants who believe that managers maintain a fair relationship with them, with a greater probability, manage their relationships through exchanging social transactions, which ultimately leads to increased benefits for the organization (Seifert *et al.*, 2014).

Having investigated factors affecting accountants' ethical decisions in Sri Lanka, Liyanapathirana and Samkin (2014) provided a model based on which environmental factors, organizational factors such as organizational culture and demographic factors such as age, gender, experience, educational level and religion affect ethical decision-making. Knowledge about law and personal intention affects the ethical decision-making process. Nevertheless, ethical problems can also yield negative effects on personal decisions. The study of Latan *et al.* (2018) provided insights into the relationship of the individual levels of the precursor and how the intention of whistle-blowing is received by perceived organizational support, team norms and perceived moral intensity. Their findings suggested that the perceived organizational support, team norms and perceived moral intensity are important in controlling organizational behavior.

2.5 Environmental constructs

The fourth significant construct regarding the ethical behavior of accountants relates to environmental and sustainable development factors. Environmental factors refer to the importance, protection, conservation and ethics of the environment. The importance of "corporate social responsibility" (CSR) is a major reason for dealing with environmental factors. When viewed from the outside, it is concerned with the organization's impacts on society. However, when viewed from the inside, it explains how reflection on the firm and its role in society and acceptance of the resulting responsibilities influence the management of the firm (Argandoña, 2016). In recent years, businesses have begun to acknowledge the importance of CSR (Basu and Palazzo, 2008). The term CSR refers to the emergence of a movement which seeks to include social and environmental factors in business decisions of companies as well as accounting and business strategies with the aim of enhancing social and environmental performance alongside the economic dimensions such that they are beneficial for the business, society and environment (McKinley, 2008). In other words, organizations are in charge of social responsibility, suggesting that they have to be careful not to influence the social life in a malicious way. Generally, not polluting the environment, being fair in employment, not engaging in immoral activities and informing customers about the quality of products are some duties of organizations. Also, this duty can be interpreted as having a positive influence on people's lives (Fassin, 2008). The concept of CSR is very close to the concept of sustainable development, which depends on factors such as environmental support, economic growth and social justice. CSR refers to voluntary participation of a company in sustainable development beyond legal requirements and is considered as a method for reducing the gap between companies and stakeholders' expectations by reporting and disclosing additional information through a sustainable approach. One of the concepts in the area of professional accounting ethics is social responsibility which has also appeared in economics, law, ethics and religion. This indicates that accountants are committed to maximizing social benefits and to minimizing social costs. So, there is a close link between professional accounting ethics and social responsibility in organizations (Cacioppo *et al.*, 2008).

From a general point of view on the development of CSR, it is observed that in recent years, the discussion on CSR has been closely related to previously predominant business

ethics with legal requirements, to address issues of incompliance of CSR and labor laws (Pflugrath *et al.*, 2011). Now, countries are making it obligatory for enterprises to follow labor laws and CSR practices (Asad *et al.*, 2018).

Note that the four key constructs and their components in the SDM-APE model are not independent of each other and provide causal mutual interactions. For instance, personal construct affects other constructs and their components. At the same time, it is also influenced by other constructs. Therefore, the constructs of the SDM-APE model will establish multi-interactions with each other. Accordingly, accounting ethics paradigms are always being exchanged in the process of interactions, and constantly changing. Thus, a paradigm may be considered dominant in some periods and cultures, while other paradigms may be prevalent in other periods and cultures. Furthermore, accountants' ethical behavior is not an instant and revolutionary behavior; rather, it is an evolutionary process which adopts the following consecutive paths according to theoretical stages of the change (Prochaska *et al.*, 1994):

- precontemplation: No recognition of need for or interest in change;
- contemplation: Thinking about change;
- preparation: Planning for change;
- action: Adopting contemporary habits; and
- maintenance: Ongoing practice of new, healthier behavior

Thanks to the comprehensiveness of the model and inclusion of significant and robust ethical constructs, implementation of this ethical model could provide the potential to enhance efficiency, economic and social development, administrative integrity, satisfaction and generally organizational excellence. Furthermore, this model will promote the professional ethics and improve the organizational culture, augment the productivity, create competitive advantage at the organizational level and promote public ethics, sustainable growth and development at the national level. In general, it leads to the development of healthy global competition and achieving a more desirable business world. Inclusion of the sustainable development factor in the presented model also indicates the importance of paying attention to surrounding environment and current accounting topics which have been taken into account in contemporary studies by Kolk (2016), Khan and Gray (2016) and Schaltegger and Burritt (2018).

3. Research methodology

This article used the mixed approach of qualitative and quantitative content analysis (Creswell and Plano Clark, 2011). The research design is a quasi-design because it applies past data to the research model (Smith, 2017).

3.1 Statistical population and data collection

The initial population of the present study consists of all ethical papers and theses published in Iran during 2005-2015. Iran is selected as the statistical population because it is an ancient country with a history of over 2,500 years, and thanks to the presence of famous philosophers and ethicists such as Avicenna and Zakariyyā al-Rāzī (Farsam, 2009). For instance, the European people became familiar with "The Canon of Medicine," a book by Avicenna translated by Gerard of Cremona in the fifteenth century which was then taught in Louvain and Montpellier medical faculties until the seventeenth century. According to *UNESCO Journal*, Avicenna's *Canon of Medicine* book and his medical ethics were taught at the University of Brussels until 1909 (Abu Ali, 2011, p. 21) . Furthermore, Iran has an ancient

and Islamic culture, philosophers and civilization, which have significantly helped to develop a comprehensive and leading ethical model, that is well developed and beyond the existing models. Researchers' knowledge of published ethical sources in the field of accounting has also been another important criterion in selecting Iran as the statistical population.

By using the preceding population study, we followed the guidelines for conducting the mixed approach of content analysis provided by Creswell and Plano Clark (2011) and Creamer and Ghoston (2013). Consequently, at first, the process of qualitative content analysis approach presented by Bengtsson (2016), which is shown in the appendix, was implemented. This step involved performing from planning stages (aim of the study, unit of analysis, etc.) to data collection approach (publications of professional ethics), data analyzing approach (latent analysis and its stages) to responding to the research question:

RQ1. What are the underlying constructs of the professional ethics in the accounting profession, and how important are they?

By following the preceding steps, 569 papers and theses, which explicitly contained "ethics" in their titles and were related to professional and organizational ethics, were extracted from Iranian journals during the period of the study. Two types of articles, those containing articles about accounting professional ethics and other articles, were collected in this regard. The articles associated with accounting ethics were those with the main variables related to assessing ethical values or providing solution for accounting environment or accountants. Other articles explored the general status or provided solutions for various topics and professions such as Islamic, medical, engineering ethics, etc. in Iran. For this purpose, 16 theses and 553 articles were studied as resources. As a result of this qualitative approach, four significant constructs in professional accounting ethics were found: personal constructs, social constructs, economic-organizational constructs and environmental constructs. These constructs were entitled as elements of the SDM-APE model.

Afterward, the articles were evaluated qualitatively and quantitatively in more depth by two independent researchers, and the obtained codes were allocated to each group of the SDM-APE model. The checklist was given to accounting experts and approved to determine its validity. Kappa's coefficient of agreement was applied in SPSS 22 software to inspect the reliability and researchers' agreement.

In Kappa's formula, the ratio of a particular value, which is used by the coder in a group, is multiplied by the ratio of using the same value by the second coder. These ratios are then added together to obtain the expected agreement (Raif *et al.*, 2002). The result we obtained from the Kappa test was 0.788. Reliability investigates different individuals' agreement on coding a particular case. Landis and Koch's (1997) grading was applied to judge the reliability status using the Kappa coefficient. Based on their conclusion, the result we obtained lied within the range of acceptable coefficients of agreement. As the agreement was between 0.61 and 0.80, the agreement was acceptable based on Landis and Koch's (1997) grading.

3.2 Importance of the components of the model of sustainable development of accounting

In the second phase, this article used "quantitative content analysis" (Neuendorf, 2002; Smith, 2017) to obtain a quantitative model and its subsets, and applied "factor analysis" to quantitatively evaluate the importance of the elements of the four factors of the SDM-APE model. The preceding content analysis led to the discovery of 69 ethical factors distributed among four key constructs of the SDM-APE. Specifically, 12 out of these 69 variables were related to personal constructs, 29 to social constructs, 19 to organizational-economic

constructs and nine to environmental constructs. At this step, the following steps were taken, and the second-order CFA was used to investigate the importance of components of the SDM-APE model from the perspectives of experts, professionals and academics by converting the factors of the model into a questionnaire.

3.3 Statistical population and research sample

The statistical population of this part of research consisted of all professionals and academics of accounting and other fields (auditing, management accounting, financial accounting, tax accounting, etc. in Iran). Given that it is extremely difficult and somewhat impossible to access the entire population and there is not any official statistics of their numbers, the number of statistical population was assumed unknown. Therefore, equation (2) was expended to calculate the sample size in an uncertain population. Based on equation (1), the standard deviation δ for a five-point Likert scale data was equal to 0.667 (Winner, 2009). According to equation (2), the sample size was found to be 170:

$$\delta = \frac{\max(x_i) - \min(x_i)}{6} = \frac{5-1}{6} = 0/667 \tag{1}$$

$$n = \frac{z^2 \frac{\alpha}{2} \delta^2}{\varepsilon^2} = \frac{(1/96)^2 (0/667)^2}{(0/1)^2} = 170 \tag{2}$$

However, to compensate for non-responses and low rate of responses, and based on the researchers' experience in Iran, approximately 25 per cent were added to the number of questionnaires, and so, 217 questionnaires were used in this research.

3.4 Data collection

The construct validity was utilized to investigate the validity of the questionnaire, and Cronbach's α was used to study the reliability. The validity was approved by different experts and the obtained result of Cronbach's α was equal to 0.94. As Cronbach's α coefficient was higher than 0.70, the reliability of the research questionnaire was confirmed.

Data were collected via both face-to-face and virtual methods. In the former method, 54 questionnaires were completed by referring to available university professors, graduate students and accounting experts. In the virtual method, the invitation was completed and sent to the mentioned individuals after designing the questionnaire in Google Forms. They were asked to send it to other professors, students and accounting experts for obtaining accurate responses. In this method, 163 usable questionnaires were received, and accordingly, a total of 217 questionnaires were collected.

3.5 Confirmatory factor analysis

The second-order CFA was adopted to operationalize SDM-APE model. The second-order CFA aims at examining hypotheses concerning the number of fundamental factors in a set of variables, relationships of factors with indicators and fit of the measurement model. Nevertheless, in contrast with the first-order CFA, it is applied when the latent factors in a set of variables have multiple levels where the latent factors result from other latent factors. Therefore, CFA is used to assure that data have been measured accurately. The magnitude of the relationship between the factor (latent factor) and observable variable is represented using factor loading. If the factor loading posits a value less than 0.2, the relationship will be

characterized as weak and neglected. A factor loading ranging from 0.2 to 0.6 is acceptable, and if it is greater than 0.6, it will be more desired. The minimum factor loading accepted in some resources is considered to be 0.2, though the *t*-statistic is the main criterion for judgment. If the test statistic is above the critical value of $t_{0.05}$ or 1.96, the observed factor loading will be "significant" (Kline, 1998).

4. Research results

4.1 Descriptive statistics

In this study, the mean age of respondents was 31.24 years, with a standard deviation of 7.24, and the mean work experience was 8.12 years, with a standard deviation of 7.18. Of the respondents, 19 had PhD degrees (8.75 per cent), 59 were PhD students (27.2 per cent), 67 had master's degrees (30.9 per cent), 46 were MA students (21.2 per cent) and 26 had bachelor's degrees (11.9 per cent). Accordingly, the statistical population of this study was in a favorable condition and eligible. As a result, as far as demographic features are concerned, the findings maintain necessary qualitative characteristics, including the internal validity.

4.2 Confirmatory factor analysis of the personal construct

The results of CFA for personal features, including the general factors and moderation, are presented in Figure 3. General factors reflect the underlying constructs associated with an accountant's personal characteristics, while moderation refers to the optimal use of the mentioned variables without extremity. Two main factors (latent variable) and 12 questions (observable variables) were utilized to measure the personal constructs. Each of these variables has been displayed by Q_1 to Q_{12} indices. The observable factor loading has been somehow greater than 0.3 in all cases, which indicates that there is an acceptable correlation between latent variables (dimensions of each main construct) and observable variables. The significance test was performed after identifying the correlation between variables.

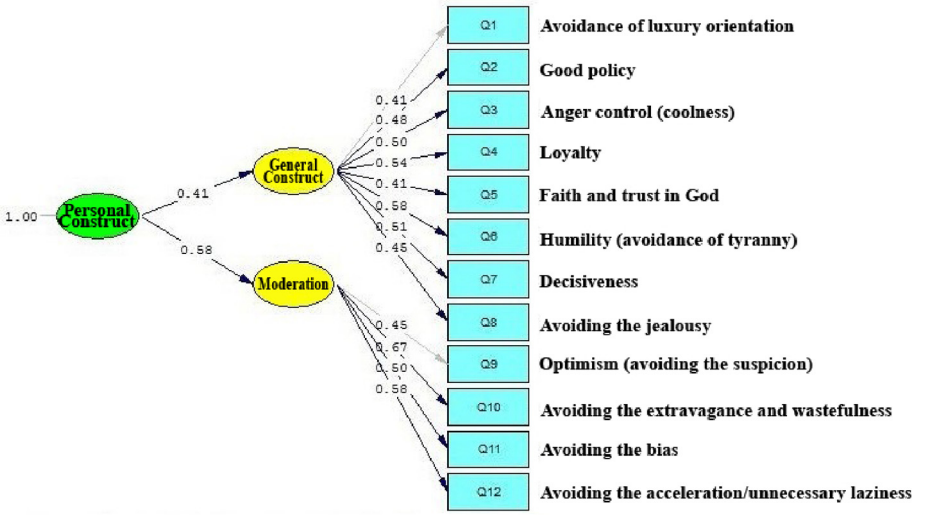


Figure 3.
Standard factor loading of the personal construct test

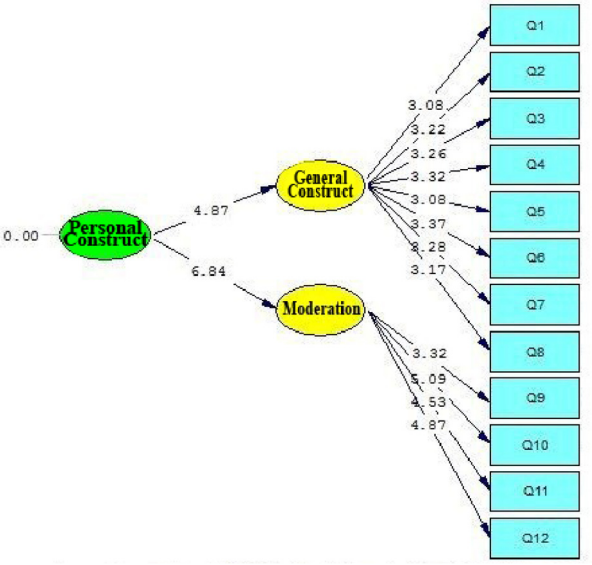
Notes: Chi-square = 72.45, df = 52, *p*-value = 0.00000; RMSEA = 0.043

T-value statistics were used to determine the significance of the relationship between variables. As the significance was investigated at an error level of 5 per cent, the relationship was significant if the *t*-values test was greater than the critical value of 1.96 Based on the findings of Figure 4, *t*-values of measurement indices for each applied scale has been greater than 1.96 at the confidence level of 5 per cent; therefore, the observed correlation is significant.

The goodness of fit was investigated in the next step. Normal χ^2 index, which is obtained from simple division of χ^2 by the degree of freedom, is one of the general indices for determining free parameters in calculating the fit indices. If this value ranges from 1 to 5, it is desirable. Normal χ^2 was equal to 1.393 and thus, the result has been desired. Furthermore, the RMSEA index is used as a main fit index in most CFAs and structural equation models. If this index is less than 0.05, the result will be optimal. This index was equal to 0.043 in this model; hence, the goodness of the fit of the model has also been optimal.

4.3 Confirmatory factor analysis of the social construct

The results of CFA of social characteristics, including social responsibility, personal constructs and effective interaction, are presented in Figure 5. Although it is difficult to determine the boundary between personal and social factors, the main difference of personal and social factors is that personal factors refer to an accountant's personal characteristics, while social factors deal with his/her social characteristics. In this regard, social responsibility indicates an accountant's commitment to community with regard to his/her duties and responsibilities, while personal factors represent his/her intrinsic characteristics in social communication. Effective interaction also refers to increased



Notes: Chi-square = 72.45, df = 52, *p*-value = 0.00000; RMSEA = 0.043

Figure 4.
T-value statistic of the personal construct test

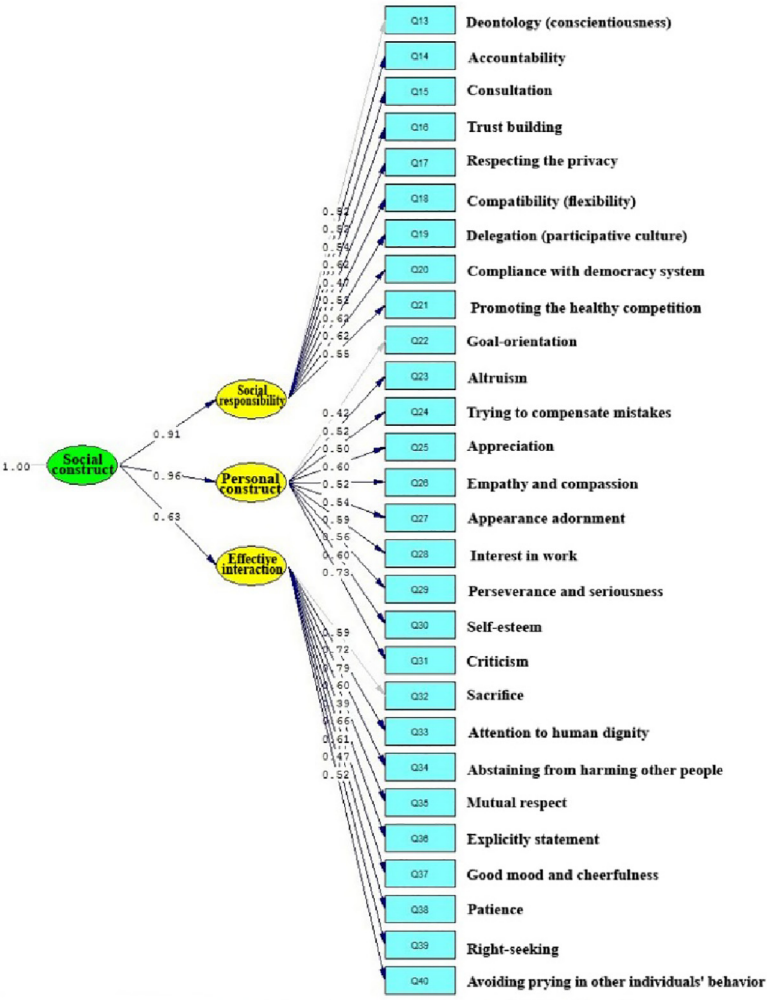
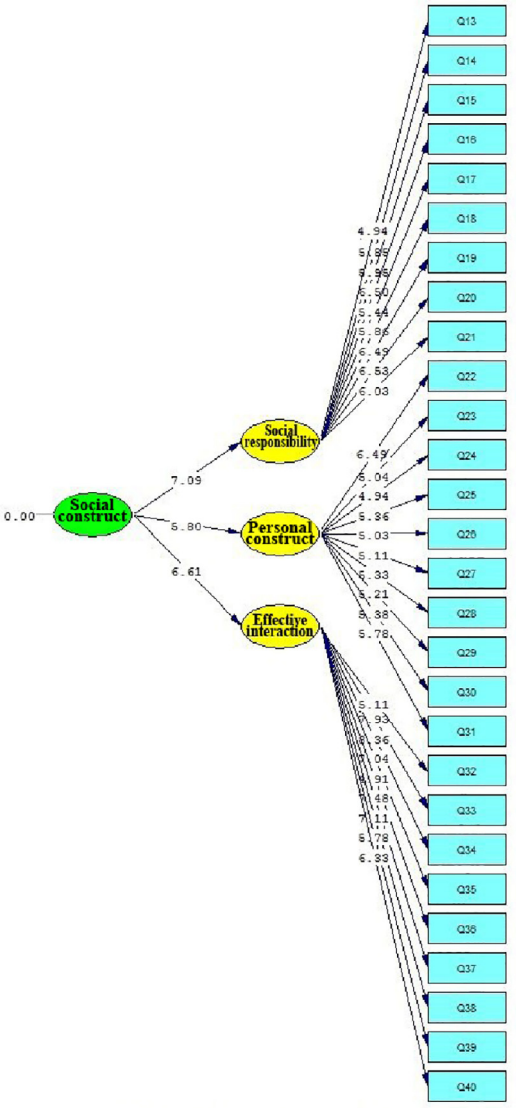


Figure 5.
Standard factor loading of the social construct test

Notes: Chi-square = 506.21, df = 347, *p*-value = 0.00000; RMSEA = 0.046

efficiency in an accountant's social communication. Three main factors (latent variables) and 28 questions (observable variables) were used to measure social characteristics. All of these variables have been shown with indices of Q_{13} to Q_{40}. The observed factor loading has been greater than 0.3 in all cases, which suggests that there is an acceptable correlation between latent variables (aspects of each main construct) and observable variables. After identifying the variables, it is necessary to run the significance test. For this purpose, *t*-values statistics is used. As significance is investigated at an error level of 0.05, if *t*-values is greater than the critical value of 1.96, the relationship is significant. Figure 6 shows that *t*-values of measurement indices for each applied scale has been



Notes: Chi-square = 506.21, df = 347, p-value = 0.00000; RMSEA = 0.046

Figure 6.
T-value statistic of the social construct test

greater than 1.96 at a confidence level of 5 per cent, indicating that the observed correlations have been significant.

Normal χ^2 proved to be 1.458 for the goodness of fit. Furthermore, the RMSEA index was equal to 0.046, indicating the desirability of the model fit.

4.4 Confirmatory factor analysis of the economic-organizational construct

The results of CFA of economic-organizational features, including the general characteristics, integrity, compliance with professional principles and criteria, competence and commitment, are presented in Figure 7. The general characteristics include the underlying and general attributes required for an accountant. Integrity refers to the correct implementation of the work by an accountant. Compliance with professional principles and criteria represents implementation of rules and regulations of accounting by accountants. Competence refers to an accountant's professional qualification and commitment to his/her tasks. Overall, five main factors (latent variables) and 20 questions (observable variables) were used to assess the economic-organizational features. All of these variables have been shown by indices of Q_{41} to Q_{60}. In all cases, the observed factor loading has been greater than 0.3, indicating that the correlation has been acceptable between the latent variable (dimensions of each main construct) and the observed variable. The *t*-value statistic was also used to study the significant correlation between variables. Figure 8 illustrates that the *t*-test statistic has been greater than the critical value of 1.96, indicating that the observed correlation has been significant.

Normal χ^2 was found to be 1.287 for the goodness of fit. Furthermore, the RMSEA index was equal to 0.037, indicating the goodness of fit of the model.

4.5 Confirmatory factor analysis of the environmental construct

Overall, nine questions (observable variables) were used to measure the environmental construct. Each of these variables has been displayed by indices of Q_{61} to Q_{69}. The observed factor loading in all cases (except for Questions 62 and 65) was greater than 0.3, indicating an acceptable correlation between latent variables (dimensions of each main structure) and observable variables. The *t*-value statistic was also used to investigate the significance of the correlation between variables. Based on the findings of Figure 10, the *t*-values measurement

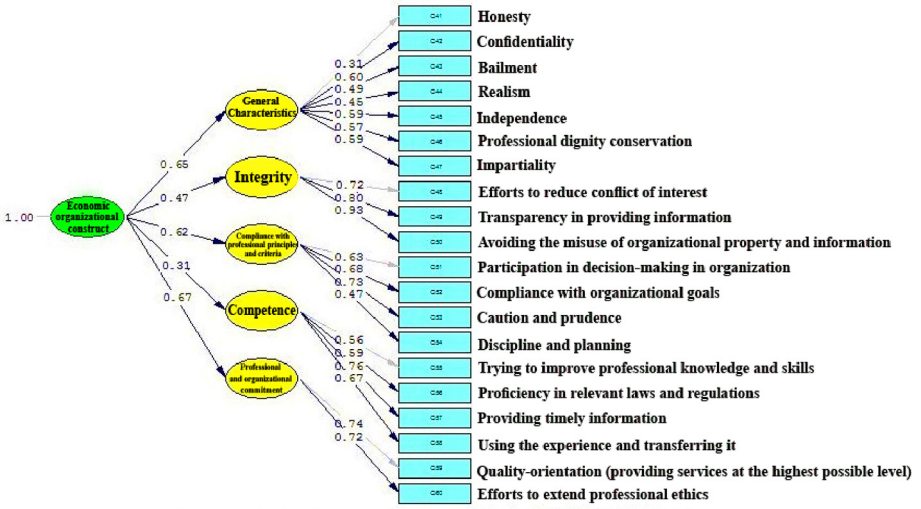
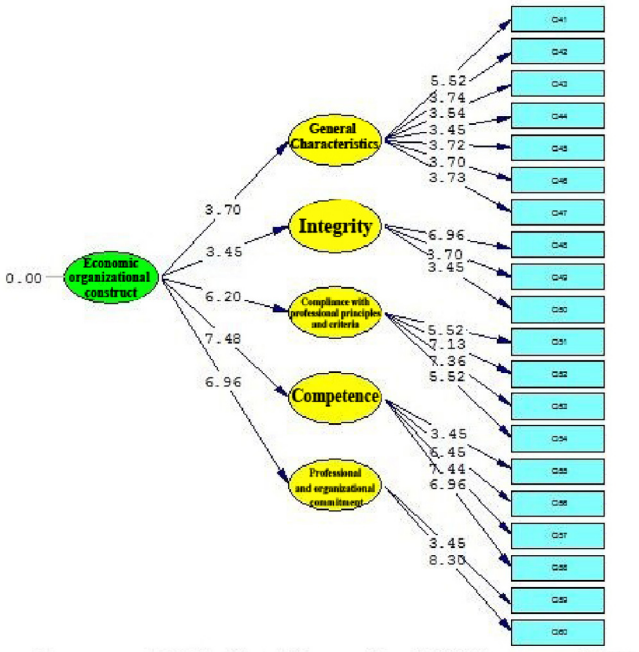


Figure 7.
Standard factor loading of the economic-organizational construct test

Notes: Chi-square = 212.37, df = 165, *p*-value = 0.00000, RMSEA = 0.037



Notes: Chi-square = 212.37, df = 165, *p*-value = 0.00000, RMSEA = 0.037

Figure 8.
T-value statistic of the economic-organizational construct test

of the indices for each applied scale has been greater than 1.96 at the significance level of 5 per cent, showing the significance of the observed correlation (Figures 9 and 10).

The normal χ^2 proved to be 1.369 according to examination of the goodness of fit of the model. Furthermore, the RMSEA index was also equal to 0.041, indicating the fitness of the model.

4.6 Overall fitness of the model

The results of CFA for all constructs of the SDM-APE model have been presented individually in Figure 11. It shows that the maximum overall factor loading first belongs to the social construct, followed by personal, economic-organizational and environmental constructs. This suggests that special attention should be paid to the "social construct" for attaining and enhancing the dynamics and level of accounting professional ethics.

5. Discussion and conclusion

The present study aimed at identifying and determining the importance of constructs of accounting professional ethics through quantitative and qualitative analysis. In this regard, the SDM-APE model was first introduced. Then, 69 variables related to the four interrelated constructs (personal, social, economic-organizational and environmental factors) of the model were identified via content analysis. Afterward, the importance of each group of the

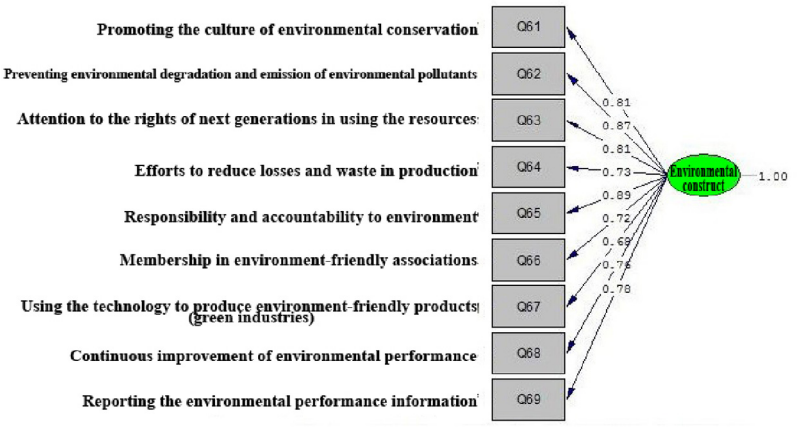


Figure 9.
Standard factor loading of the environmental construct test

Notes: Chi-square = 36.98, df = 27, *p*-value = 0.00000; RMSEA = 0.041

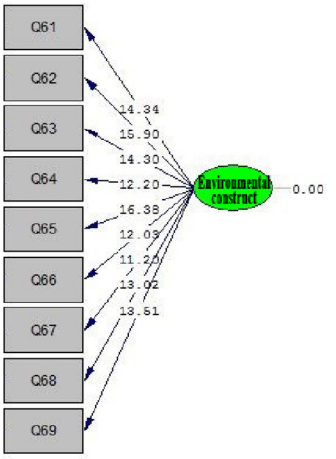


Figure 10.
T-value statistic of the environmental construct test

Notes: Chi-square = 36.98; df = 27, *p*-value = 0.00000; RMSEA = 0.041

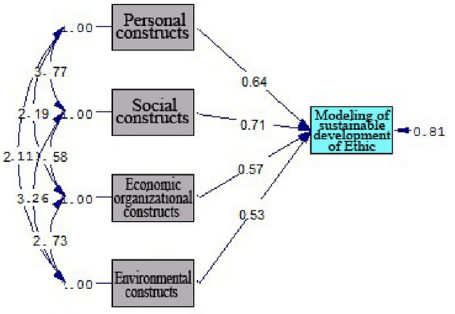
main constructs of the model and their key components were determined through "second-order CFA." The research population consisted of all professionals and academics in accounting and other relevant fields (auditing, management accounting, financial accounting, tax accounting, etc.) in Iran. The data were collected by distributing 217 questionnaires across the statistical population.

Figures 3 and 4, which exhibit details of the personal construct affecting ethics, confirm the significance of the elements of the "behavior change theories" (Glanz *et al.*, 1997; Witte, 1997). They specifically indicate that the "moderation" component with a factor loading of

0.58 has had the greatest impact factors in comparison with the general factors (0.41). Further, "avoiding the extravagance and wastefulness" (0.67) among the moderation factors, and "humility" (0.58) among the general factors, revealed the maximum factor loadings. Our findings demonstrate the significance of these data with respect to the prevalent theories in this regard. The reason might be related to the importance of the nature of moderation factors which persuade accountants not to behave unethically, in comparison with the significance of general factors dealing with committing ethical issues.

The findings of Figures 5 and 6 confirm the significance of the "social cognitive theory" (Bandura, 1986; Perry *et al.*, 1990). They specifically illustrate that the factor analysis of the social construct consists of three components, namely, social responsibility, personal factors and effective interaction. Based on the findings, personal factors with a factor loading of 0.96 and social responsibility with a factor loading of 0.91 possess a higher impact factor than that of the effective interaction with a factor loading of 0.63. The criticism from personal factors (0.96), deontology (conscientiousness) from social responsibility (0.91) and abstaining from harming other people from effective interaction (0.63) gave the maximum factor loadings and hence are far more important than other factors. Our findings in terms of the "social cognitive theory" revealed the significance of these variables, which might have been because of the strong influence of family and other factors affecting personal values, less awareness and beliefs concerning CSR and attaching less importance to interaction effects variables by accounting professionals.

Five main factors (latent variables) and 19 questions (observable variables) were utilized to measure the economic-organizational construct, as displayed in Figures 7 and 8. These figures confirm the underlying principle of the economics and "organizational justice" in enumerating the "fairness principle" (Whiteside and Barclay, 2013). Specifically, according to the results of the CFA, professional and organizational commitment (0.67), general characteristics (0.65), compliance with professional principles and criteria (0.62), integrity (0.47) and competence (0.31) presented the highest impact factors. In this regard, avoiding misuse of organizational property and information (0.93) from integrity factor, providing timely information (0.93) from professional competence, quality orientation (0.74) from professional and organizational commitment, caution and prudence (0.73) from compliance with professional principles and criteria and confidentiality (0.60) from general characteristics harbored the greatest factor loadings and importance. This might be attributed to the interests of Iranian accountants in professional and organizational commitment and avoiding misuse of organizational property and information.



Notes: Chi-square = 13.26; df = 8; *p*-value = 0.00000; RMSEA = 0.038

Figure 11.
Overall fitness of the sustainable development model of accounting professional ethics

Furthermore, nine questions (observable variables) were extracted to assess the environmental construct, as shown in Figures 9 and 10. These figures provide information with respect to the "sustainable development accounting theory" (McKinley, 2008). According to the results, "responsibility and accountability for environment" revealed the maximum impact factor with a factor loading of 0.89. Part of the reason might be due to the discussions of the sustainable development in the ethics literature and conferences which are organized on this subject (Namazi, Rajabdorri and Rostameymandi, 2017). The results also show that the issue of sustainable development has been mainly neglected in ethics, and more effort needs to be exerted in this domain.

The findings illustrated in Figure 11 show that all constructs of the SDM-APE model, including personal, social, economic-organizational and environmental constructs, exhibited a good fit, where the social, (0.71) personal (0.64), economic-organizational (0.57) and environmental characteristics (0.53) indicated the maximum fit. In other words, the social construct presented the maximum fit, while the environmental construct showed the minimum fit. Part of the reason stems from the fact that accounting professionals are more influenced by social and cultural issues of ethics, and environmental considerations are not still an ethical priority for the accounting profession. This finding also suggests that there is an unequivocal need for more investment on these issues to move toward the ethics.

Considering the lack of research in this field, these findings are not directly comparable with the results of previous studies; however, the final research results, suggesting that more attention should be paid to modeling professional ethics in accounting are consistent with the findings of numerous studies, such as Jones (1995), Wooten (2001), Yoon (2011), Liyanapathirana and Samkin (2014), West (2017), Namazi *et al.* (2017) and Payne *et al.* (2018), and related ethical theories. The findings also indicate that SDM-APE is a useful ethical model which is based on empirical proliferation of various important and comprehensive factors. This model qualitatively revealed major elements, correlations, priority and status of all essential factors of ethical components in the accounting profession through empirical investigation. Therefore, it can be applied in real practice, and be considered as a roadmap for future accounting model for ethics.

6. Research limitations and suggestions

This study had several limitations. It developed the SDM-APE model and its components according to content analysis, which indicated four constructs (personal, social, organizational-economic and environmental factors). The research model was also based on the 69 variables identified via content analysis of the published studies and administering questionnaires. The statistical analysis was conducted through CFA. Use of content analysis, questionnaires and CFA as a statistical technique bring inherent limitations (Smith, 2017). Although this model and its constructs are comprehensive and include personal, social, economic-organizational and even environmental constructs, it is limited to 69 identified variables. Nevertheless, an attempt was made to control the internal and external validity of the study as much as possible.

Given the importance of ethics, managers, accountants, researchers and professional accounting associations should pay special attention to four elements of the professional ethical model of this study, as organizations and societies are increasingly demanding ethical considerations and increased levels of professional ethics, particularly after recent scandals. Under these circumstances, practical implementation of the current model and investigation of other variables in real organizations are suggested to accelerate the role of ethics and determine relevant variables and their priorities in the organization. Professional accounting associations

can also consider the development of code of ethics in their plans by benefiting from variables identified in this study, thereby promulgating appropriate standards of ethics, investigating comprehensive studies in this sphere and encouraging members to be active in this domain. In addition, appropriate ethical educational programs and research can be established by accounting bodies, universities and educational centers to educate and emphasize the importance of planning and implementation of major ethical issues in organizations. This research can also enhance the level of professional ethics by highlighting the importance of each factor identified in the model of this study.

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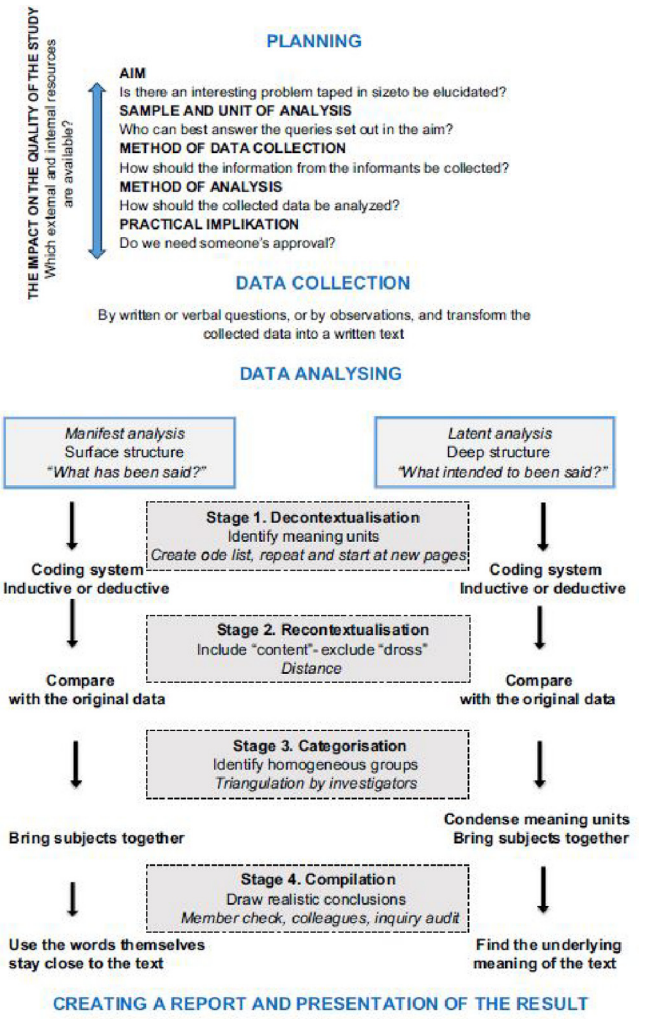
Appendix



Source: Bengtsson (2016, p. 9)

Figure A1.
An overview of the process of a qualitative content analysis from planning to presentation

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