Devising a conceptual model to illustrate accountants' career success through the implementation of a fuzzy cognitive mapping approach

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Abstract

The purpose of this research is to provide a local model of an accountant's career success. This research is applied in terms of the goal, and a descriptive-exploratory and mixed research in terms of data collection. The research method is conducted in four steps, the first step is carried out based on qualitative content analysis and reliability method in order to measure the validity. Achieving the initial conceptual structure of accountants' career success factors is the result obtained from this step. In the second step, the obtained influential factors are verified two steps based on the Fuzzy Delphi method by the experts. The statistical population in this step consists of 8 members of scientific-practical experts including professional and trained auditors and accountants and university professors selected based on theoretical sampling, utilization of targeted (judgmental) and snowball techniques. Subsequently, in the third step, experts' subjective models are extracted and analyzed based on the fuzzy cognitive mapping method, and the type of relationship and the intensity of accountants' career success factors are verified by 22 experts. Next, several scenarios are simulated in order to improve the factors and their role in devising the model. The utilized software to implement fuzzy cognitive mapping is FCMAPPER. Moreover, in the fourth step, the dynamic model of accountants' career success factors is devised and extracted by using social media analytics and UCINET software. based on the analysis of the represented comments, the generality of the model consists of 21 factors of indication, modeling, and verification. the final model indicated career success as a function of important models such as work environment, knowledge, and emotional quotient (EQ) which is guided towards individual, social, and organizational outcomes with the involvement of financial factors and organizational climate, family, and university backgrounding with the support of operational solutions and techniques.

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1 Introduction

In today's world, the role of the accountant in organizations has become so essential due to the rapid financial changes and globalization, since they assist the managers to a large extent to implement strategies and make effective decisions to improve the organization's performance and achieve permanent success in the current competitive and global environment. This matter has caused organizations to look for accountants who are successful in their professions and are capable to provide special consultations to managers in the current market conditions followed by changes in technology, growth of science, new and various law enactments, and challenges. Therefore, in a situation where businesses in the current century are lacking stability, and organizations facing difficult conditions of changes in performance, the presence of accountants who can think of appropriate measures to find a way out and look for implementation of profitable and efficient businesses using the available capacities and potential is of utmost importance.

In recent decades, career success has been the focus of many experts in various fields. The correlation of this variable with organizational efficiencies including desertion, job satisfaction, career growth, and productivity has led to various research to be conducted regarding the correlation of organization structure type and its device with success in career and satisfaction. The more people feel satisfied with their professions, the more successful they are and this increases the organization's effectiveness [9]. Career success is a relatively complicated and multidimensional phenomenon and is correlated with an individual's performance and ability on the one hand, and the adaptivity competence and coping method to deal with tensions and crises on the other hand. Moreover, career success is related to various factors and variables, and identifying these factors and variables is essential. Career success is a concept that is resulted from a person's evaluation of his current situation and his ideas in the field of employment. Being successful or not depends on the relative estimation of the importance of ideals [21]. Nonetheless, as one of the vital pillars of organizations, accountants are no exception to this rule and their promotion and development I always considered. Due to the globalization process and advancements in technology, the role of accountants has also evolved from traditional account clerks to information interpreters and effective participators in management, so professional accountants are now known as business partners and value creators for organizations. Thus, in addition to individual advantages, accountants' progress in their profession leads to the organization's growth, prosperity, and success in the field of competition and financial development.

In the same context, in most of the past studies, local and foreign researchers have only concentrated on certain aspects of employee's career success and other cased have been of less importance. For instance, some studies have only kept tabs on the factors affecting the career success of employees and some other researchers have focused on its consequences [5, 14, 26], though these researches can be helpful, it can be stated that no research has yet comprehensively concentrated on the entire career success phenomenon of employees and specifically accountants in the form of a conceptual model. With all this in mind, accountants' career success has received less attention in research, therefore, this study has attempted to concentrate on this category in and comprehensive and complete manner, to study all the influential and involving factors, and to devise a thorough model so that accountants can be guided to improve themselves organizations' managers and planners can be assisted with their development path based on the final version of the model. Concerning what was stated, the main purpose of the current research is to answer this main question: what factors does the accountants' career success model consists of, and how do they relate to content?

2 Literature review

In terms of the literal meaning, success means favored, achievement, achieving one's desire, and doing something based on merit and competence [25]. The concept of career success was proposed by researchers in the late seventies. Career success and promotions are among the variables that have been provided with a significant theoretical and research context so far. Professional success is a concept resulting from a person's evaluation of his current situation and his aspirations in the field of employment. Being successful or not depends on the relative estimation of the ideals [12, 21]. The success of achieving the planned goal in the form of an assignment or personal purposes is defined as the achievement of a wish and career success means doing something based on qualifications, which every person can do to express his degree of success considering the type of work and his characteristics [27]. Career success is an evaluative concept and consists of the relationship between current progress and future ideals in the field of employment. Being successful or not depends on the relative estimation of the ideals. Moreover, career success is one of the essential and influential factors for taking big steps towards strengthening and productivity of a country [23]. Many workers and employees of organizations believe that climbing the ladder of wealth and reputation is considered a success, but researchers believe that career success consists of a set of desirable and favorable outcomes for people, which

can be classified by several main categories including progress, learning, survival, cognitive achievements, life quality, and work-life balance. Therefore, the meaning and concept of this variable, aligned with the meaning and concept of the word career, consists of two subjective (intrinsic) and objective (extrinsic) aspects. The objective aspect of this phenomenon includes the level of salary and benefits, the individual's position in the organization, and the rate of promotions on the contrary, the subjective or intrinsic aspects of this phenomenon include job satisfaction, being satisfied with the tasks and assignments that an individual performs during his time at work [2, 22].

Following on, research that has directly or indirectly considered the variable of career success has been reviewed in a brief manner. In a study, Eisenbarth et al. [6] reviewed the correlation of psychotic personality with objective and subjective career success. They stated that fearless mastery had a positive relationship with subjective career success but a negative relationship with egocentric impulsivity. Moreover, self-centered impulsivity and coolness have a negative correlation with objective career success. In research, Hirschi et al. [11], studied objective career success as a background for character development. They found that career success predicts personality changes for neuroticism, extraversion, and openness. Higher income predicts a decrease in neuroticism and an increase in openness. Higher prestige anticipates a decrease in extraversion and an increase in openness. In a study, Vibhor et al. [28] found a positive correlation between career success and emotional intelligence (EQ) using Golman's emotional intelligence model (to measure emotional intelligence) and the degree of job promotion and salary and payment increase (to measure job success). Abdullah Bandar et al. [1] indicated that there is a statistically significant correlation between career success and innovative behavior (opportunity exploration, idea generation, promotion, realization, and reflection). Diedrich et al.'s [5] study showed that intelligence, social and emotional factors, interests, and personality can be worthy indicators of career success. Poona et al. [19] analyzed the meaning of career success in the form of subjective and objective success among Malaysian workers. In order to define objective success, he defined three dimensions including achievement, the ability to support family, and formal learning, and for subjective success, he defined five dimensions including being different, satisfaction, work-life balance, goal realization, and informal learning. Wenchen et al. [8] investigated the correlation between human capital and the career success of academic staff in research and indicated that human capital beyond demographic variables is a great indicator of career success.

In their study, Haghshenas and Abulmaali [9] devised a conceptual model to explain the career success of school counselors. They represented five main categories of school counselors' career success in the qualitative section, including having professional knowledge, application of knowledge, ability development, professional/social interaction, and office activities. In a research, Soleimani et al. [26], studied the effect of personality traits on career success having the mediating role of employee's job enthusiasm at Mohaghegh Ardabili University. Their study results indicated that the mediating role of job enthusiasm in influencing agreement and conscience has a positive impact on academic success. However, the mediating role of academic enthusiasm in influencing extroversion, emotional stability, and orientation to new experiences does not have an impact on career success. Asgari and Hasanpoor Azad's [4] research results specified that there is a significant correlation between psychological competence (competence, autonomy, influence, significance, and trust) utilizing human resource productivity (ability, understanding and recognition, organizational support, motivation, feedback, credibility, and adaptiveness) and career success. The results of Hemati et al.'s [10] research indicated that the greatest impact is related to organizational culture and communication skills and the least impact is related to individual ability and capability and the influence of women's socialization on career success. Moradi and Afshar Imani [16] in their research demonstrated the existence of a relationship between spiritual intelligence and emotional intelligence, while there was no significant correlation between spiritual intelligence and the performance of auditors, there was a significant relationship between emotional intelligence and performance, and consequently, emotional intelligence intermediated between spiritual intelligence and the performance of auditors. Sheikhi et al.'s [24] research results indicated that political skill has a positive impact on an individual (motivation, humbleness, and affability), others (accountability and trust), and group/organization (extension of goals, learning influence, empowerment). Therefore, political skill and professional ethics have an impact on employees' career success in the organization, and clearly, professional ethics improve the correlation between political skill and career success. In another research, Fazel Bakhsheshi [7] demonstrated that work ethics' three dimensions consist of the support of senior management, the moral atmosphere of the organization, ethical conduct, and career success has a positive and significant correlation with job satisfaction, in other words, creating an ethical environment in the organization can improve employees' job satisfaction. Rahmani and Adam Pira's [20] research showed that individual factors, the balance between work and family, having a coach, and presence in social networks are among the influential factors of women accountants' career success and have a significant relation with career success, also, individual factors are the most essential in achieving success.

In general, literature concerning the determining factors of career success is mostly related to managers and there are few related to accountants. However, most research, has only concentrated on certain aspects of the individual's

career success and all factors such as the effective criteria and intervening factors of individuals' career success have been excluded. Therefore, it can be stated that no research has yet thoroughly concentrated on the whole phenomenon of employees' career success and specifically accountants' in the form of a conceptual model. With the purpose of filling this research gap, the current dissertation, whilst identifying the factors of an accountant's career success based on the qualitative content analysis and its verification using the Fuzzy Delphi technique by the experts, reviews the content relation within these factors with the help of Fuzzy cognitive mapping technique and the final model devised by the analysis of social networks.

3 Methodology

From a methodological standpoint, the conduction of this research is based on the mixed research method, since a combination of different methods is carried out in four steps and based on a predetermined plan, and the final result is a combination of research methods, not a specific one. Thus, in the framework of mixed research methodology, this research's modelling process is carried out in four steps. The first and second steps have a qualitative nature, and the third and fourth have a quantitative analysis approach. The research's methodology is of documentary-survey nature, in the first step, the primary conceptual framework of the accountants' career success factors is extracted based on the results of library study regarding the theoretical foundations and research background utilizing qualitative content analysis. In the second step, regarding the need to develop, integrate and confirm factors of accountants' career success, and moreover, having in mind the possibility of bias in the researcher's opinions, in order to ensure the correctness, accuracy, applicability, and comprehensiveness of the identified steps and excluding the potential biases, the Fuzzy Delphi technique is utilized to achieve group agreement between experts. In the third step of the research, after the verification of the factors by the experts, the fuzzy cognitive analysis technique is utilized in the third step to determine the type and intensity of the correlation between the factors of accountants' career success. In this step, scenario writing is carried out using FCMAPPER software based on the obtained data. The fourth step consists of devising a dynamic model, reviewing and analyzing the correlation between the factors of accountants' career success, weight, competence, and centrality of each factor with the use of UCINET software based on social media analytics method.
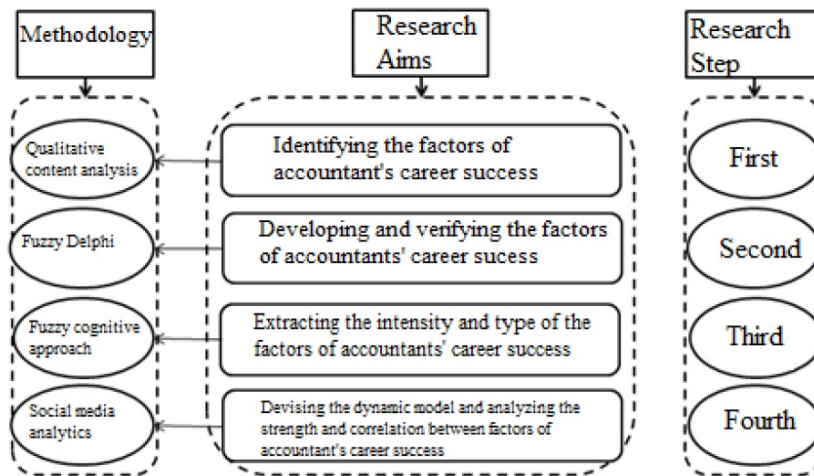

Figure 1: Research Methodology Structure

Content analysis is one of the essential methods to observe documents by means of which text, documents, in fact, any type of submitted and recorded document, can be evaluated and analyzed more regularly and accurately, and most importantly with a higher degree of reliability, whether related to the past or the present. In the first step of the research, qualitative content analysis has been utilized, which is very useful for textual data analysis. Moreover, four criteria of reliability, validity, transferability, and verifiability are used to replace narrativity and consistency in the first step of the research. The second step of the research is carried out to verify the conceptual model and factors of accountants' career success. Having in mind the possibility of bias in the researcher's opinions, in order to ensure the correctness, accuracy, applicability, and comprehensiveness of the identified steps and excluding the potential biases, the Fuzzy Delphi technique is utilized to achieve group agreement between experts.

Experts' perspectives have been used to assess the importance of the indicators. Triangular fuzzy numbers have been used to fuzz the experts' point of view. Experts' views on the importance of each indicator are collected with a 7-degree fuzzy spectrum. Various methods have been proposed to aggregate the views of n respondents. In fact, these aggregation methods are experimental methods that have been proposed by various researchers. For example, a conventional method for aggregating a set of fuzzy triangular numbers is the minimum l, the geometric mean m, and the maximum u.

$$F_{AGR} = \left(\min\{l\}, \prod\{m\}, \max\{u\}\right) \tag{3.1}$$

$$F_{AGR} = \left(\min\{l\}, \left\{\frac{\sum m}{n}\right\}, \max\{u\}\right) \tag{3.2}$$

$$F_{AVE} = \left(\left\{\frac{\sum l}{n}\right\}, \left\{\frac{\sum m}{n}\right\}, \left\{\frac{\sum u}{n}\right\}\right) \tag{3.3}$$

Each triangular fuzzy number resulting from the aggregation of experts' views for the jth index is represented as follows:

$$\tau_j = (L_j, M_j, U_j)$$
$$L_j = \min(X_{ij})$$
$$M_j = \sqrt[n]{\prod_{i=1}^{n} X_{ij}}$$
$$U_j = \max(X_{ij})$$

Index i refers to an expert. So that

X_{ij}: The value of the i-th expert evaluation of the j-th criterion

L_j: The minimum value of evaluations for the criterion j

M_j: The geometric mean of the experts' assessment of the performance of the standard j

U_j: The maximum value of evaluations for the criterion j

In this study, the fuzzy mean method is used. It can usually be summed up as the sum of the mean of triangular and trapezoidal fuzzy numbers by a definite value which is the best corresponding mean. This operation is called de-fuzzing. There are several methods for de-fuzzing. In most cases, the following simple method is used for de-fuzzing:

$$x_m^1 = \frac{L + M + U}{3} \tag{3.4}$$

Another simple method to de-fuzzy the mean of fuzzy triangular numbers is as follows:

$$F_{ave} = (L, M, U)$$
$$x_m^1 = \frac{L + M + U}{3}; \quad x_m^2 = \frac{L + 2M + U}{4}; \quad x_m^3 = \frac{L + 4M + U}{6}$$
$$\text{Crisp number} = Z* = \max(x_{\max}^1, x_{\max}^2, x_{\max}^3) \tag{3.5}$$

The values of $x_{\max}^i$ are not much different and are always a number close to M. M is the mean of the sum of possible values of m from different triangular fuzzy numbers. However, the definite value of the largest calculated $x_{\max}^i$ is considered. In this study, the surface center method is used for de-fuzzing as follows:

$$DF_{ij} = \frac{[(u_{ij} - l_{ij}) + (m_{ij} - l_{ij})]}{3} + l_{ij} \tag{3.6}$$

The study's statistical population in the second step, consists of active experts in the accounting profession who have academic knowledge, adequate experience and at least a master's degree or official professional degree in accounting, having at least 20 years of useful work experience in the profession and are known to be successful people from the eyes of the public. the sampling is carried out using targeted and snowball techniques. Data is gathered by 8 scientific-practical experts.

In the third step of the research, Fuzzy cognitive mapping (FCM) is implemented in order to extract the intensity and type of correlation of career success factors. Fuzzy cognition is a technique implemented by Kosko [15] to develop quantitative modeling based on the knowledge and experience of experts which indicated the type and intensity of the correlations between concepts. Making use of George Kelly's [13] personal construct theory, the cognitive mapping method tries to minimize the researcher's opinions and interventions in the interpretations of the created constructions in qualitative research wherein the opinions of the participants are important.

A fuzzy cognitive map consisting of n concepts is displayed in an $n \times n$ matrix (proximity matrix) [18]; in this way that $W_{ij} > 0, W_{ij} < 0$ and $W_{ij} = 0$ mean, respectively, positive, negative and no relationship between two concepts. Moreover, the values of W_{ij} show how much concept C_i affects another concept C_j. In addition, the centrality of a concept C_j in a cognitive map is determined by the sum of the number of concepts influencing C_j (directly and indirectly) and the number of concepts dependent on C_j. These numbers are determined by the number of edges in the paths leading to C_j and leaving it. In the fuzzy cognitive map, the number and the influence of cause and effect relationships can be considered to define a more accurate view of the concept of centrality using the following relationships:

$$(1)C(C_i) = IN(C_i) + OUT(C_i) \tag{3.7}$$

where $IN(C_i)$ is the sum of the weight of the causal relationships, including all connecting paths from nodes $C_j, (I \neq j)$ to node C_i calculated using relation (3.8):

$$IN(C_i) = \sum n_j = 1 W_{ij} \tag{3.8}$$

It should be added that in relation (3.7), $OUT(C_i)$ is the sum of the weight of the causal relations, which includes all the paths connected from node C_i to all nodes C_j calculated using relation (3.9):

$$(3)OUT(C_i) = \sum_{j=1}^{n} W_{ij} \tag{3.9}$$

In the summation of causal weights, absolute values are used for assigning equal importance to positive and negative relationships. In addition, a fuzzy cognitive map based on imprecise fuzzy expressions shows mutual relationships in concepts. The experts are asked to describe the relationship between two concepts using a fuzzy rule describing the cause and effect relationship and explain the degree of influence of one concept on the other concept using the linguistic concept. Then, their responses are converted into numbers between negative ones and positive on. Once the data are gathered, the linguistic variables are transformed using the table of fuzzy numbers, and then their averages are obtained according to equation (3.4) (n is the number of experts).

$$W = (w_i^{(1)}, w_m^{(1)}, w_u^{(1)}) \qquad i = 1, 2, ..., n \tag{3.10}$$

$$Wavf = \sum n_i = 1(wi(i), wm(i), wu(i))/n \tag{3.11}$$

Then comes defuzzification. For this stage, the weighted average defuzzification method is used:

$$W_{\max} = w_1 + 2w_m + w_u/4 \tag{3.12}$$

In the third stage, the integration map for effective strategies on open innovation to improve the performance of small and medium-sized enterprises is extracted, and the necessary analysis of the qualitative model for it is done. Then, some scenarios for its development are simulated according to the model, and their results are investigated using analysis of social networks. Fcmapper and Ucinet softwares are used to perform, respectively, fuzzy cognitive mapping and social network analysis. A discussable topic in the field of cognitive mapping is the analysis of concepts and the calculation of the effectiveness of each concept in the mapping structure. Kosko introduced the concept of centrality to calculate the importance and weight of a node in a fuzzy cognitive map. Özesmi and Özesmi used degree centrality to analyze the structure of social FCMs by characterizing their most important nodes [17], but in general, few researchers have used this criterion to identify important concepts in the structure of a cognitive map. In the present study, the central conformity index has been used in order to analyze the nodes and identify the most effective node in the fuzzy cognitive mapping structure. This index is obtained from three indices, including centrality degree

$(Cen_D(C_i))$, closeness degree $(Cen_C(C_i))$ and betweenness degree $(Cen_B(C_i))$:

$$Cen_{Cons}(C_i) = Cen_D(C_i) + Cen_C(C_i) + Cen_B(C_i)$$

$$id(c_i) = \sum_{j=1}^{N} |w_{ji}|$$

$$od(c_i) = \sum_{j=1}^{N} |w_{ij}| \tag{3.13}$$

$$Cen_D(C_i) = id(c_i) + od(c_i) \tag{3.14}$$

in relation (3.14), $id(c_i)$ is equal to the input degree of the node, c_i. N is equal to the number of nodes connected to c_i node in the cognitive mapping, and w_{ji} is the weight of the input edge from node c_i to node c_i $od(c_i)$ is the output weight of the nth node, which is the net sum of the weights of the output edges from the node to the neighboring nodes:

$$Cen_B(C_i) = \sum_{i \neq S \neq T \in C} \frac{\sigma_{ST}(C_i)}{\sigma_{ST}} \tag{3.15}$$

relation (3.15) is used to obtain the betweenness degree, where σ_{ST} represents the number of shortest paths between T and S. In addition, $\sigma_{ST}(C_i)$ is the number of shortest paths between node T and node S that passes through node C_i.

$$Cen_C(C_i) = \frac{1}{\sum d_G(C_i, t)}; \quad (t \in C \backslash C_i) \tag{3.16}$$

relation (3.16) is used to calculate the closeness degree where $d_G(C_i, t)$ is the shortest path between node t and the node C_i in the structure of a map. The third step's statistical population consists of more accountant and auditor experts with a number of 22 individuals having professional accounting degrees with more than 20 years of work experience, selected by the snowball method. A matrix of career success factors was devised and presented to the experts, after making the necessary arrangements based on the pre-drafted framework and after final verification by the experts. The experts indicated the correlation between factors and their intensity by grading from -1 to +1 and completed the matrix accordingly, thus the subjective model of each expert was obtained. Subsequently, the causal map of each expert was drawn in FCMAPPER software. In the fourth step, it is attempted to study and analyze the correlation between the factors of accountants' career success, weight, competence, and centrality of each factor based on social media analytics using UCINET software and ultimately, to devise a dynamic model accordingly. In order to analyze and draw the dynamic model of the factors, the obtained data from the third step is entered into the software. Social media analytics is a technique that is increasingly used to identify information flows between individuals, organizations, or institutions. This technique enables the information flow to be represented by a set of connections between pairs of individuals.

4 Findings

In the first step of the research, the factors of an accountant's career success were identified, in accordance with the research background by utilizing the qualitative content analysis method during the coding stages. During the axial coding stage, the factors were arranged in the form of 21 principal components (main variables). Table 1 shows the secondary codes and principal components of accountants' career success.

Table 1: Identified secondary codes and accountants' career success factors from the first step of the research

Principal components	Secondary codes
Inherent intelligence	IQ and talent – relative analysis competence
Personality type	Character-wise acting- creativity and innovation- extroversion- accountability – the type of thinking
Psychological capital	Hope for the future- optimism- positivity- caring for others- hopefulness- self-efficacy- difficulty endurance
Spiritual intelligence	Having faith and believing in God- performing religious duties- inner peace- being purposeful in life- having self-knowledge- respecting parents- issue-solving capability
Moral intelligence	Accountability- acting fairly – honesty- Conscientiousness

Emotional intelligence	Proper self-confidence- not having false pride- inner motivation- independency- emotional control and management
Knowledge	Having connected documents and certificates to accounting- Degree of education in accounting and connected majors- having general knowledge- having knowledge of the financial situation- being familiar with various accounting methods
Professional skills	Accountability competence- having the art of reporting according to accounting standards and the ability to interpret financial statements- having relative analysis competence- having public relations- communication skills- experience
Job satisfaction	Inner job satisfaction- having a sense of value creation- consistency of success- feeling satisfied with the work environment- wanting others to succeed- goal achievement- pleasant work results- work encouragement
Reputation	Approval by society- general professional acceptance- becoming famous
Salary	Financial security- the amount of salary and payment
Job rank	Job-status- earned promotion- organizational position
Family environment	The educational culture of the family- the level of family support- family's view towards the profession- family peace
Job environment	Person-job fit- job type- having an idol or coach- motivation to get organizational support- creating a sense of organizational and professional belonging
Educational environment	Familiarity of the student with the field of accounting and related majors before enrolling- enrolling in the accounting profession after getting the gist of it- the connection between profession and university- teaching both applied and theoretical accounting- creating motivation during studies- improving education quality
In-service training	Law training for employees (taxation, companies, trade, insurance, export, and import, etc.) – teaching the outcomes of accountants' work on the organization- keeping accountants' information updated
Perceived support	Financial encouragement- spiritual encouragement- the way accountants are treated by the organization
Accountants' empowerment	Familiarizing the individual with his abilities in accounting matters- giving authority to an individual to do things- work results highlighted as valuable for the accountants- informing accountants of their performance impact on the organization's outputs
Career development management	Utilizing consultants to assist accountants regarding career advancement- planning for accountants' success- creating development opportunities for accountants
Economic factors	Economic conditions governing the society- financial crisis- economic recession or inflation- individual financial problems
Organization climate	Duty separation in the organization- ownership separation from management- organization's rule of law- how managers plan and perform- establishing teamwork spirit by the organization

In the second step of the research, the Fuzzy Delphi method is used in order to develop and verify the factors of career success. Based on this, in order to reach an agreement on the expert's opinions regarding the accuracy of the identified steps, a questionnaire was made based on the results of qualitative content analysis recoding utilizing the Likert scale and was given to the experts to determine the significance of each factor. The statistical population of this step consisted of 8 accounting and auditing experts. The triangular fuzzy average and the de-fuzzified value of each step were obtained. The fuzzy values of participants' recorded responses and the fuzzy average calculation manner and the de-fuzzified values of accountants' career success factors were carried out. In the first step of Delphi, each expert's conflict of opinion degree was calculated with the expert panel members' opinion averages. Thus, another questionnaire was provided, containing the previous opinions of each expert and their conflict of opinion with the panel members' average opinion. Consequently, the results of the first stage were compared with the results of the second stage. Since the experts' conflict of opinion degree was less than the very low threshold (0.2) between the first and second stages of the Delphi implementation, the survey was stopped in the second stage.

In the research's third step, Fuzzy cognitive mapping (FCM) is carried out in order to extract the type and intensity

Table 2: Expert's standpoint on accountants' career success factors (Fuzzy Delphi's second stage survey)

Effective factors	Triangular Fuzzy average (I,m,u)	De-fuzzified value of S2	$|S_1 - S_2|$
Inherent intelligence	(0.61-0.86-0.97)	0.81	0.03
Personality type	(0.59-0.84-1)	0.81	0.01
Psychological capital	(0.62-0.84-0.95)	0.80	0.02
Spiritual intelligence	(0.55-0.80-0.95)	0.77	0.02
Moral intelligence	(0.53-0.78-0.97)	0.76	0.02
Emotional intelligence	(0.66-0.91-1)	0.86	0.03
Knowledge	(0.59-0.84-0.98)	0.80	0.01
Professional skills	(0.55-0.80-0.95)	0.77	0.03
Job satisfaction	(0.63-0.88-0.97)	0.83	0.04
Reputation	(0.61-0.86-0.97)	0.81	0.02
Salary	(0.50-0.75-0.94)	0.83	0.04
Job rank	(0.61-0.88-0.97)	0.82	0.01
Family environment	(0.62-0.84-0.95)	0.80	0.01
Work environment	(0.59-0.84-0.95)	0.79	0.02
Educational environment	(0.66-0.91-1)	0.86	0.05
In-service training	(0.62-0.84-0.95)	0.80	0.01
Perceived support	(0.63-0.88-0.97)	0.83	0.01
Accountants' empowerment	(0.61-0.88-0.97)	0.82	0.02
Career development management	(0.55-0.80-0.97)	0.77	0.02
Economic factors	(0.59-0.84-0.98)	0.80	0.03
Organization climate	(0.56-0.82-0.97)	0.78	0.01

of accountants' success factors. One of the main processes of qualitative modeling is to extract and analyze the causal map of experts. A matrix of career success factors was devised and presented to the experts, after making the necessary arrangements based on the pre-drafted framework and after final verification by the experts. The experts indicated the correlation between factors and their intensity by grading from -1 to +1 and completed the matrix accordingly, thus the subjective model of each expert was obtained. Subsequently, the causal map of each expert was drawn in FCMAPPER software and in order to ensure the accuracy of the recording and extracting process of the experts' subjective model, the drawn casual map was approved by the relevant experts. After the determination of the subjective model and its initial analysis, it is possible to extract the integrated causal map to draw the model of accountants' career success factors. Table 3 indicates the experts' integrated matrix with an average number of 410 responses for each expert regarding the relationship between each of the factors. The numbers of this matrix indicate the impact of each variable (factor) on another based on an overview of experts' opinions.

After combining experts' opinions, each factor's impact is analyzed in FCMAPPER software. In Table 3 indegree, outdegree, and centrality of Fuzzy map construction and main indicators of structure mapping analyses are specified. indegree is the sum of added weights to the concept or degree of effectiveness from other concepts, outdegree is the sum of the weights removed from the concept or its impact on other concepts, and centrality is the sum of indegree and outdegree of each concept.

Table 3: The degree of effectiveness and susceptibility and centrality of each accountant's career success factors

Factors	Effectiveness	Susceptibility	Centrality
Inherent intelligence	7.50	1.30	8.80
Personality type	7.30	7.10	14.40
Psychological capital	5.40	8.90	14.30
Spiritual intelligence	8.45	6.25	14.70
Moral intelligence	8.45	6.50	14.95
Emotional intelligence	10.85	9.20	20.05
Knowledge	10.95	9.05	20.00
Professional skills	6.85	9.85	16.70
Job satisfaction	7.65	8.80	16.45
Reputation	7.15	9.00	16.15

Salary	8.70	8.90	17.60
Job rank	8.75	9.85	18.60
Family environment	7.55	10.10	17.65
Work environment	10.55	11.00	21.55
Educational environment	8.35	8.30	16.65
In-service training	8.35	10.55	18.90
Perceived support	8.45	10.75	19.20
Accountants' empowerment	9.10	10.10	19.20
Career development management	9.00	10.30	19.30
Economic factors	8.70	2.80	11.50
Organization climate	9.10	8.55	17.65

According to the table above, in terms of comparing concepts' centrality degree, factors such as work environment, emotional intelligence, and knowledge are ranked from first to third and have more centrality than other factors. Therefore, it seems that these factors have more effectiveness and susceptibility in accountants' career success. According to Table 4 and role evaluation of the factors in improving other factors' status, several scenarios are simulated of which, the results of two of them have been presented. In the first scenario, all the factors are in an active state, which remains unchanged compared to the other two scenarios. In the second scenario, a condition is simulated in which while concentrating on the work environment, no effort is made to improve emotional intelligence and knowledge. In the third scenario, the two emotional intelligence and knowledge factors are considered and the work environment is excluded.

Table 4: The results of stimulated scenarios of accountants' career success factors

Factors	First scenario	Second scenario	Third scenario	Results of the first scenario	Results of the second scenario	Results of the third scenario	Comparison of First and second policy	Comparison of First and third policy
Inherent intelligence	1			0.90026	0.87237	0.88989	−0.02788	−0.01036
Personality type	1			0.99968	0.99946	0.99956	−0.00022	−0.00012
Psychological capital	1			0.99995	0.99991	0.99992	−0.00004	−0.00003
Spiritual intelligence	1			0.99926	0.99863	0.99877	−0.00063	−0.00049
Moral intelligence	1			0.99941	0.99901	0.99902	−0.00040	−0.00039
Emotional intelligence	1	0	1	0.99996	0.00000	1.00000	−0.99996	0.00004
Knowledge	1	1	0	0.99995	1.00000	1.00000	0.00005	0.00005
Professional skills	1			0.99998	0.99996	0.99996	−0.00002	−0.00002
Job satisfaction	1			0.99994	0.99992	0.99989	−0.00002	−0.00005
Reputation	1			0.99995	0.99991	0.99991	−0.00005	−0.00004
Salary	1			0.99995	0.99989	0.99991	−0.00006	−0.00004
Job rank	1			0.99998	0.99996	0.99997	−0.00002	−0.00001
Family environment	1			0.99998	0.99997	0.99998	−0.00001	−0.00001
Work environment	1	1	0	0.99999	1.00000	0.00000	0.00001	−0.99999
Educational environment	1			0.99990	0.99981	0.99986	−0.00009	−0.00004
In-service training	1			0.99999	0.99998	0.99998	−0.00001	−0.00001
Perceived support	1			0.99999	0.99999	0.99998	−0.00001	−0.00001
Accountants' empowerment	1			0.99998	0.99997	0.99997	−0.00001	−0.00001

Career develop- ment management	1		0.99999	0.99998	0.99998	−0.00001	−0.00001
Economic factors	1		0.97740	0.97495	0.97500	−0.00245	−0.00241
Organization cli- mate	1		0.99992	0.99989	0.99985	−0.00004	−0.00008

All factors will move slightly in a negative orientation if the work environment factor is concentrated on without improving emotional intelligence and knowledge. Also, if the emotional intelligence and knowledge factors are focused on without paying attention to the work environment factor, all the factors will move in a negative orientation to a slight to a moderate degree, meaning that all the factors will fall off. Thus, it can be concluded that improving each of the factors in isolation won't result in accountants' career success and that all three factors are integral and related to each other.

In the fourth step, it is attempted to study and analyze the correlation between the factors of accountants' career success, weight, competence, and centrality of each factor based on social media analytics using UCINET software and ultimately, to devise a dynamic model accordingly. In order to analyze and draw the dynamic model of the factors, the obtained data from the third step is entered into the software. Considering the average responses of the statistical population in the third step's matrix of success factors, the obtained data are entered into the UCINET software and ultimately, the experts' subjective map is drawn in Figure 2.
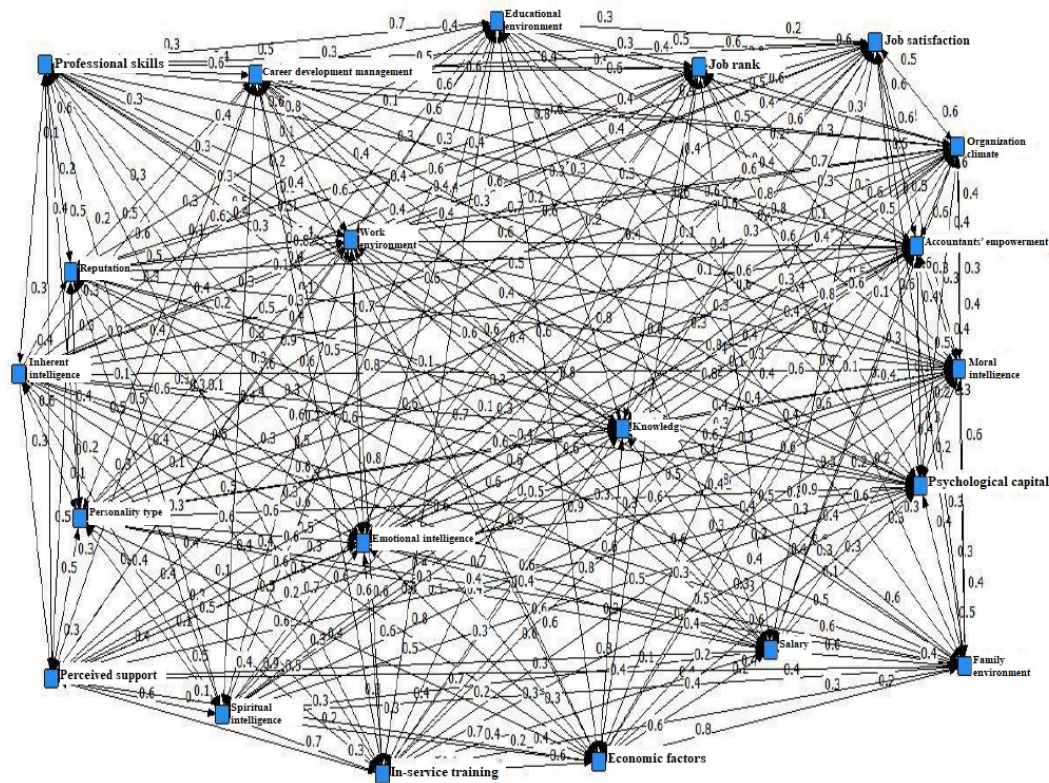

Figure 2: Experts' subjective model regarding the factors of accountants' career success

After simulating different scenarios on the model, the experts' integrated matrix data are entered into the UCINET software and a graph was drawn from the model. This graph indicates the most essential factors of accountants' career success. As can be seen in the drawn graphs, based on the subjective correlations between the factors, each variable that has a more essential role in accountants' career success is placed in the center of the model and graph.

5 Discussion and conclusion

This research is conducted in order to present a local model of accountants' career success. In general, the results of the current study in the qualitative stage are as follows: after a thorough study of the research literature regarding

career success, considering the theoretical literature and research topic's background, and using the qualitative content analysis method, 21 factors were identified as success variables for the accountant's career success. Moreover, in order to compare the results and findings of the research with the carried-out researches, by identifying the factors related to effective valuables of accountants' career success including inherent intelligence, psychological capital, spiritual intelligence, moral intelligence, emotional intelligence, knowledge, professional skill, job satisfaction, reputation, salary, job rank, family, work and education environment, economic factors, organization climate, in-service training, cognitive support, empowerment and career path management, it can be stated that the conducted studies such as [3, 5, 6, 11, 16, 23, 26, 28], considered all the mentioned variables as the main factors of career and professional success in their studies. As of this matter, the results of this study are consistent with the results of recent studies.

In organizations, even with the existent capital and strong facilities, it is the active and successful force that can assist the organization to achieve its goals, due to the importance of successful and dynamic human resources, all the factors have a direct and indirect impact on predicting career success can be studied. Studying the present theoretical gap in the research background indicated that most of the researchers have either studied the general indicators of career success or the factors affecting it. The purpose of the current research is to provide a comprehensive and integrated model of factors promoting and obstructing the career success of accountants specifically, which has stepped on devising a thorough model by completing the previous studies based on qualitative content analysis, Fuzzy mapping analysis, and social network analytics approaches and has created a theory from the gathered data with the help of systematic solutions. The final model provided has been carried out as the first model for the career success of the accountants and also for ranking and verifying the model.

Based on the results of the current research, the integrated theory of accountants' career success is defined as follows: Individual and acquired factors such as intelligence and talent, professional knowledge and skills, personality type, psychological capital, spiritual, moral, and emotional intelligence are the creators of success. Success indicators are expressed in the form of job, reputation, salary, and high job rank. In order for accountants to succeed as much as possible in the organizations, in-service training and organization support, empowerment, and management of their career development path can be beneficial as operational strategies, of course, family, work, and educational environment surrounding the individual provides the necessary and particular platform, however, economic factors and organizational climate are of its influencing variables. Finally, accountants' career success leads to individual, social, professional, and organizational outcomes on a wide level.

Based on the devised model, it is suggested that managers evaluate and analyze the primary conditions of entering the profession, including knowledge, intelligence, skills, personality type, and even psychological features of the individual when employing accountants, and designate them to a proper rank based on this information. Since if these causal conditions are not understood properly, it will be more difficult for accountants to achieve success. Moreover, after studying the causal conditions, they should provide the required platform and needs for the accountant including the education system, family, and work environment, and take the necessary measures to improve the platform's conditions in order to hit fewer obstacles in implementing the success process of accountants. When identifying and selecting successful accountants, objective and subjective factors such as job satisfaction, salary, job rank, and reputation of the individual should be considered and monitored thoroughly. After individuals enter the profession, managers can provide the necessary operational strategies and create promotional opportunities for their career success through management tools at their disposal such as in-service training, career development, and accountant empowerment support. Needless to say, this requires the managers' familiarity with the accounting profession. Since managers who are familiar with the financial and accounting reports' feedback understand the value of accountants' work and provide aid to their success as much as possible. The outcomes of accountants' career success can be noticed through the identification of the tools and mechanisms and the implementation of the proper strategy. Undoubtedly a successful accountant will be recognized as a role model not only in the professional field but also in society; will achieve financial and mental well-being, a sense of security, and job commitment, and by that, others will also be encouraged to choose and follow this profession. Ultimately, accountants who achieve success in their profession subjectively and objectively, will have better performance, increase organizational and individual productivity and provide the environment for the economic development and prosperity of the country. In terms of practicality, the devised model can be applied as a criterion to assist accountants' career success and analyze their status in the hands of the managers and the decision makers of human resources development due to its comprehensiveness and extensiveness in all aspects; of the proposed model is extended to all employees with regard to the capacity and job type, it will lead to the construction of agile, dynamic organizations having optimal performance and providing financial and domestic growth.

Also, it is recommended to accountants who intend to succeed in this profession concentrate on improving their financial skills and knowledge and always equip themselves with learning through further studies, and participate in in-service classes and post-graduation training. furthermore, to make more efforts to improve their emotional intelligence

since the results indicated the impact of this variable as an effective factor.

Factors such as perceived support from the organization and in-service training were determined by the experts which can improve the cooperation spirit in the accountants and develop their knowledge and skills. In order to fulfil this outcome, managers of the organization and companies are suggested to provide the necessary platform for the accountants to increase their activity and growth through partaking in in-service training and empowerment courses.

Moreover, other factors of accountants' career success include family, work, and educational environment. In this concern, it is suggested to universities and higher education institutions provide more success for their graduates by devising appropriate and up-to-date topics and providing them with written and practical training. families can also play a role by creating a safe and healthy environment for accountants' success, furthermore, companies are required to create a healthy work environment and organizational climate to provide accountants with a sense of satisfaction and success.

For further research in this field, it is recommended to study the variables, the correlation between them, their impact, and ranking the model's variables through decision-making theories. It is advised that the research of this topic be modelized and put to the test using Glaser's theory (another type of grounded theory). Also, the approach of this research should be implemented in other professions and its results should be studied and compared with the findings of the current research, and comprehensive information should be provided in harmony with organization studies.

References

[1] N.F. Abdullah Bandar, F.A. Binti Malek, H. Zaiton, S. Sabil, D.K. Abang Ibrahim, and V.B. Binti Md Nor Rekaya, *The relationship between innovative work behaviors and subjective career success among employees in selected private organization*, Int. J. Eng. Adv. Technol. (IJEAT) **8** (2019), 389–395.

[2] S. Akhtar and Z. Mahmood, *A tri-prong variable analysis of influence strategies*, World Appl. Sci. J. **7** (2009), 1080–1089.

[3] M.B. Arthur, J. Wang and M. Beigi, *Work-family interface in the context of career success*, Human Rel. **70** (2019), 1091–1114.

[4] R. Asgari and P. Hassanpoor Azad, *The study of the correlation between empowerment and Interest and employees' career success (case study: employees of academic affairs office of Sama Azad University)*, Manag. Entrepr. Stud. **5** (2019), no. 2, 17–27.

[5] J. Diedrich, A.C. Neubauer and A. Ortner, *The prediction of professional success in apprenticeship: The role of cognitive and non-cognitive abilities, of interests and personality*, Int. J. Res. Vocat. Educat. Train. **5** (2018), no. 2, 82–111.

[6] H. Eisenbarth, C.M. Hart, E. Zubielevitch, T. Keilor, M. Wilson, J. Bulbulia and C. Sedikides, *Aspects of psychopathic personality relate to lower subjective and objective professional success*, Person. Individ. Differ. **186** (2022), 111340.

[7] M. Fazel Bakhsheshi, *The correlation between work ethics and job satisfaction in employees of North Khorasan's sports and youth departments*, Bi-Quart. J. Sports Manag. Dev. **3** (2015), no. 1, 199–224.

[8] W. Guo, H. Xiao and X. Yang, *An empirical research on the correlation between human capital and career success of knowledge workers in enterprise*, Phys. Proc. **25** (2012), 715–725.

[9] S. Haghshenas and K. Abulmaali, *Devising a conceptual model to explain the career success of school counselors*, J. Counsel. Psychoth. Culture **13** (2022), no. 49, 77–94.

[10] E. Hemati, M. Jalali Farahani, I. Ali Doost Qahfarokhi and M. Khobeiri, *Presenting the model of individual and organizational promotive and obstructive factors of career success in female employees of Tehran municipality's sports organization*, Appl. Stud. Field Sports Manag. **6** (2018), no. 4, 61–71.

[11] A. Hirschi, C.S. Johnston, F. De Fruyt, A. Ghetta and U. Orth, *Does success change people? Examining objective career success as a precursor for personality development*, J. Vocat. Behave. **127** (2021), 103582.

[12] S.H. Ishak, *Career success studies: An examination of indicators, approach and underlying theories in literature*, Sci. J. Bus. Manag. **3** (2015), 251–257.

[13] G. Kelly, *The psychology of personal constructs*, Routledge, 1991.

[14] M. Koch, S. Park and S.A. Zahra, *Career patterns in self-employment and career success*, J. Bus. Ventur. **36** (2021), no. 1, 105998.

[15] B. Kosko, *Fuzzy cognitive maps*, Int. J. Man-Machine Stud. **24** (1986), no. 1, 65–75.

[16] M. Moradi and Y.-A. Afshar Imani, *The relationship between emotional, spiritual intelligence and auditor's performance*, Financ. Account. Audit. Res. **9** (2017), no. 35, 41–64.

[17] U. Özesmi and S.L. Özesmi, *Ecological models based on people's knowledge: A multi-step fuzzy cognitive mapping approach*, Ecolog. Modell. **176** (2004), no. 1-2, 43–64.

[18] Y.F. Pérez, C.C. Corona and A.F. Estrada, *Fuzzy cognitive maps for evaluating software usability*, Uncertainty Management with Fuzzy and Rough Sets, Springer, Cham, (2019), 141–155.

[19] J.M.L. Poona, J. Briscoe, R. Abdul-Ghania and E.A. Jonesb, *Meaning and determinants of career success: A Malaysian perspective*, J. Work Organ. Psycho. **31** (2015), 21–29.

[20] A. Rahmani and S. Adam Pira, *Factors affecting the career success of female accountants in Iran*, Sci. J. Account. Audit. Manag. Sci. **2** (2013), no. 8, 129–140.

[21] A. Ramaswami, N.M. Carter and G.F. Dreher, *Expatriation and career success: A human capital perspective*, Human Rel. **69** (2016), 1959–1987.

[22] R.M. Rasdi, M. Ismail and J. Uli, *Career aspirations and career success among managers in the Malaysian public sector*, Res. J. Int. Stud. **9** (2009), 21–35.

[23] G.G. Santos, *Career barriers influencing career success: A focus on academics' perceptions and experiences*, Career Dev. Int. **21** (2016), no. 1, 60–84.

[24] A. Sheikhi, A. Faramarzi and M. Moseli, *Dependent effects (cross) political skills and career success (employees) Mediating Role of Professional Ethics Case Study: Municipality of Bandar Abbas*, Urban Rural Manag. **15** (2016), no. 43, 237–248.

[25] S. Soleimani Farsani, *The impact of teaching healthy lifestyle factors based on the World Health Organization model of job success and job motivation of police officers*, MA thesis, Allameh Tabataba'i Univerisity of Tehran, 2016.

[26] E. Soleimani, R. Noori Puriavali, H. Ahmadi and M. Moini, *The investigation the impact of personality characteristics personality traits and job success with the mediating role of job engagement among employees University of Mohaghegh Ardabili*, Career Organ. Counsel. **12** (2020), no. 42, 49–72.

[27] D. Spurk, A. Abele and J. Volmer, *The career satisfaction scale in context: A test for measurement invariance across four occupational groups*, J. Career Assess. **10** (2014), 1–19.

[28] J. Vibhor, J. Smrita and R. Prachi, *An analysis for role of emotional intelligence in career success in commercial banks of India*, Revista Espacios **41** (2020), no. 5.