



The competitive intelligence diamond model with the approach to standing on the shoulders of giants

Narges Oraee^a, Azam Sanatjoo^{a,*}, Mohamad Reza Ahanchian^b

^a Department of Knowledge and Information Science, Faculty of Education Science & Psychology, Ferdowsi University of Mashhad, Azadi Square, Mashhad, Razavi Khorasan Province 9177948974, Iran

^b Educational Management Department, Faculty of Education Science & Psychology, Ferdowsi University of Mashhad, Azadi Square, Mashhad, Razavi Khorasan Province 9177948974, Iran

ABSTRACT

Organizations that implement a competitive intelligence process are more successful in a competitive environment. To do so correctly there is a need for a comprehensive model that, in addition to eliminating the defects of the previous models, describes the phases and indicators and also illustrates the relationship between them. This research meets such a need and presents a developed model. The ongoing research is based on a mixed approach. The meta-synthesis method was used to identify the initial model in the first stage and the delphi method was used to validate and modify the initial model, as well as to understand the relationship between all the phases of this process in the second stage. Two samples were used, the first included all the papers in the competitive intelligence field, of which 45 were selected. The second sample included experts in intelligence. Organizations can use this comprehensive model for deployment, correct implementation, and the practice of competitive intelligence.

1. Introduction

Competitive intelligence (CI) in organizations increases the quality of information, accelerates decision making, systematically promotes organizational processes, increases organizational effectiveness, reduces costs, increases organizational awareness, improves flow and dissemination of information, identifies opportunities and threats, and saves time (Stefanikova & Masarova, 2014). Competitive intelligence also might lead to the discovery of unknown customers, better strategic planning, a broader view of the hidden knowledge within the organization, support for a systematic information collection and, any revision if needed. In addition to those mentioned issues, competitive intelligence may cause an increase in the annual revenue of firms (Fuld, 1995; Ngugi, Gakure, & Mugo, 2012).

Competitive intelligence is a systematic and ethical process for collecting and analyzing information on competitors, market place, and competition and then disseminating the information that can affect those organizations' decisions, programs and finally, actions that have been taken (Adeyelure, Kalema, & Bwalya, 2018; Anica-Popa & Cucui, 2009; Hirvensalo, 2004; Saayman et al., 2008).

The process of competitive intelligence mostly focuses on information management (Bergeron & Hiller, 2002; Garcia-Alsina, Cobarsi-Morales, & Ortol, 2016). Information professionals and librarians have a critical role in the implementation and development of a competitive intelligence process (Nelke & Hakansson, 2015; Patterson &

Martouzoukou, 2012; Uzohue & Yaya, 2016).

2. Problem statement

Although the number of organizations that perform the process of collecting and analysis of competitive information is increasing, some of them cannot do these processes and actions accurately and correctly (Wright & Calof, 2006). Due partly to the lack of competitive intelligence, organizations face difficulties in their competitive environment. Bartes (2012), Du Toit and Muller (2004), Nasri (2011), Pellissier and Nenzhelele (2013) and Venter and Tustin (2009) caution, without a right process and structure, it is challenging to evolve CI.

Therefore, there is a need for a comprehensive model for deployment, correct implementation and, practices of competitive intelligence. Some phases of the process were considered in existing models, yet no one has researched the relationship between phases.

This research develops a deeper understanding and coherent view of the competitive intelligence process and provides a model that helps organizations to succeed in their competitive environment. The model can be used to assess the current state of competitive intelligence, determine the strengths and weaknesses of the organization, and to improve competitive intelligence projects. The model developed in this study, eliminates the defects of previous models, and illustrates the needed phases, indicators and the relationships between them were. Thus, the present study sought to answer the following questions:

* Corresponding author.

E-mail addresses: Narges.oraee@mail.um.ac.ir (N. Oraee), Sanatjoo@um.ac.ir (A. Sanatjoo), ahanchi8@um.ac.ir (M.R. Ahanchian).

- What is the competitive intelligence model based on a review of the literature?
- To what extent have the intelligence experts agreed with the developed model?

3. Literature review

Competitive intelligence is not a new concept and has a rich historical background. Calof & Wright (2008); Juhari and Stephens (2006); Qingjiu and Prescott (2000) believe it dates back to about five thousand years before Chinese history. In 1980, Porter developed the concept of competitive intelligence by publishing an article on competitive strategy in academic circles (Peyrot, Childs, Van Doren, & Kathleen, 2002).

Various disciplines with different theoretical foundations such as management, economics, computer science, information science, etc. are involved in the field of competitive intelligence. Also, the scientific associations and the professional community are active in this field (Brody, 2008). As a result, there isn't a unique definition of competitive intelligence (Franco, Magrinho, & Silva, 2011; Weiss & Naylor, 2010).

Due to the numerous definitions of competitive intelligence (Colakoglu, 2011), a kind of confusion has been witnessed in this area, which makes competitive intelligence a practice with unstable boundaries (Haddadi, Dousset, & Berrada, 2010).

Some definitions refer to competitive intelligence as a product, and others refer to it as a process (Brody, 2008). Researchers like Myburgh (2004) and Roitner (2008) define competitive intelligence as both a product and a process. Scholars like Adeyelure, Kalema, & Bwalya, 2018 and Du Toit (2013) have defined competitive intelligence as a work tool or a strategic tool. Some researchers defined the competitive intelligence process as a cycle (Bartes, 2013; Cloutier, 2013; Garcia-Alsina et al., 2016; Pellissier & Nenzhelele, 2013; Salguero, Resende Jr., & Fernández, 2017).

However, some of the studies have dealt with the limitations of the cyclic model of intelligence, such as accuracy and efficacy (Gill & Phythin, 2012; Adeyelure, Kalema, & Bwalya, 2018; Richards, 2010). Phythin (2015) believes that the classic cyclic model of intelligence is not effective any longer due to its over-simplicity, and the inability of the original designers to consider the complexity of the intelligence process has resulted in that model's fallaciousness and distortion of reality rather than simplifying it.

The Society of Competitive Intelligence experts, an accredited and recognized institution in competitive intelligence, introduces it as a systematic and ethical process for collecting, analyzing information and disseminating it, that affects the programs, decisions, and practices of the organization (Wachira, 2009). Models for competitive intelligence are provided by Bartes (2013); Garcia-Alsina, Ortoll, and Cobarsi-Morales (2013); Haddadi et al. (2010); Salguero et al. (2017); Strauss and Du Toit (2010), and others.

Like any other process, competitive intelligence consists of related phases (Nasri, 2011). Pellissier, & Nenzhelele (2013, p. 2) declare: "The output of each process step is the input of the next one. The overall output of the CI process can be an input for decision making (Bartes, 2012). Most of the models differ from one another and this has led to a confused CI field (Salguero, Resende, & Fernández, 2017; Sandelowski & Barroso, 2007; Sewdass & Du Toit, 2014; Smith, Wright, & Pickton, 2010; Stefanikova & Masarova, 2014; Strauss & Du Toit, 2010; Tanev & Bailetti, 2008; Uzohue & Yaya, 2016; C. Venter & Goede, 2017; P. Venter & Tustin, 2009; Viorel & Radu, 2014; Wachira, 2009; Weiss & Naylor, 2010; Wright & Calof, 2006; Wright, Eid, & Fleisher, 2009). There is a need for a comprehensive CI process framework. There are very few studies on how to create competitive intelligence in an organization (Jaworski, Macinnins, & Kholi, 2002).

A great deal of research is conducted on competitive intelligence every year, each of which investigates the issue from a particular angle and emphasizes a specific aspect of this issue. These studies report

different findings and the volume is increasing, while this dispersion causes the scientific community and enthusiast's difficulty in using the findings. Also, at first glance, it may seem that with the amount of studies carried out, competitive intelligence has been thoroughly studied and the overall findings achieved. While each phenomenon consists of many components and parts, these factors together cause its formation. Hence, relying only on the findings of the studies, a thorough investigation into a phenomenon or a subject cannot be possible, because the probability of superficiality is very high. It is necessary to study it from a variety of angles, to understand the depth of the subject and this is possible through meta-synthesis. This study provides a deeper understanding of the competitive intelligence process as well as a thorough, coherent, and relevant view of the findings of earlier research to create a model of the competitive intelligence process to replace the previous models. The meta-synthesis method is used in this way. Therefore, indicators underrated or overrated by other studies are compared side by side. The opinion of experts is also used to validate the model and to identify previously unmentioned indicators. Also, in this stage, the relationship between the phases of the process is done. In this study, the effort has been made to show the stated cases in figures and tables. However, no study has yet developed a model for the competitive intelligence process based on the meta-synthesis approach that is built on the findings of previous research and expert's opinions.

4. Methodology

As mentioned earlier, the ongoing research reported in this article is based on a mixed-methods approach. First the meta-synthesis method was used. The meta-synthesis research method is an exploratory research methodology used to create and extract a common reference framework for the results of past studies (Lee, 2010). The seven-step approach developed by Sandelowski and Barroso (2007) was used in this research. There were two stages to this research project. In the first stage, all papers related to competitive intelligence were reviewed and a sample of 45 papers selected. In the second stage of the study, the correctness of the model from the experts' opinion was investigated using the Delphi method. The steps of the meta-synthesis method are described below.

4.1. Meta-synthesis method

4.1.1. Step 1: Setting up research questions

In the first step, basic questions are initially asked to specify the work scope. The purpose of identifying restrictions is to eliminate possible ambiguities in the next stages of the research. The research parameters include the following items, which are formed based on the research questions.

(What): In the present study, the identification of phases and indicators of the competitive intelligence process in the related literature were investigated.

(Who): The studied population was determined. In this research, the papers in relation to describing and identifying the phases and components of the competitive intelligence process were reviewed. Only the papers in the journals are reviewed. It should be noted that conference papers or those on personal websites were not considered in this study.

(When): The reviewed papers in this study were published from 2008 to 2018.

(How): The researcher identified the eligible papers that were used for the meta-synthesis process, considering the criteria, and the papers that were excluded.

4.1.2. Step 2: Systematic review of papers

At this step, the researcher focused the systematic study on various databases from 2008 to 2018. The researcher chose varied, relevant, and necessary keywords for further retrieval. Based on the keywords, the researcher carried out a series of online searches on databases.

Table 1
Keywords and strategies used to search articles.

("Competitive intelligence") + (process OR procedure OR mechanism OR step OR system OR tool OR activity OR practice OR practice OR implementation OR set up OR model OR framework OR Information)
("Business intelligence") + (process OR procedure OR mechanism OR step OR system OR tool OR activity OR practice OR practice OR implementation OR set up OR model OR framework OR Information)
("Marketing intelligence") + (process OR procedure OR mechanism OR step OR system OR tool OR activity OR practice OR practice OR implementation OR set up OR model OR framework OR Information)
("Market intelligence") + (process OR procedure OR mechanism OR step OR system OR tool OR activity OR practice OR practice OR implementation OR set up OR model OR framework OR Information)
("Technical intelligence") + (process OR procedure OR mechanism OR step OR system OR tool OR activity OR practice OR practice OR implementation OR set up OR model OR framework OR Information)
("Strategic intelligence") + (process OR procedure OR mechanism OR step OR system OR tool OR activity OR practice OR practice OR implementation OR set up OR model OR framework OR Information)

Multiple reliable scientific-information databases were selected to achieve a more favorable coverage of studies. Due to the restricted access of researchers to the databases, Science Direct, Springer, Emerald, Wiley, Taylor, Francis, and Sage were chosen. If an article was found in more than one database it was only counted once. The search was conducted in the title, abstract, and keyword fields to avoid high retrieval and probability of error. The keywords and strategies were used to search are shown in Table 1.

A total of 1210 papers were retrieved (see Table 2) and stored for analysis and evaluation.

4.1.3. Step 3: Selection of related papers

The researcher reviewed the retrieved papers several times using a variety of criteria. The review process was conducted in such a way that various parameters such as paper title, abstract, content, and details (i.e., language, and year of publication) were considered and unrelated papers were omitted.

The researcher next evaluated the methodological quality of the papers. The Critical Appraisal Skills Program (CASP) tool, which consists of 10 questions (research objectives, method logic, research design, sampling method, data collection, reflection, ethical considerations, accuracy of data analysis, clear expression of findings, and the research value), was used to examine the precision, reliability and value of the papers.

The researcher applied a quantitative score to any paper based on the criteria of the above questions. CASP scores are based on the above criteria: excellent papers (41–50), very good papers (31–40), good papers (30–21), medium papers (11–20) and weak papers (0–10). In this research, excellent and very good grades (papers with a score of over 30) were selected and, other studies were excluded from the survey. Based on this 50-point scale, each paper that was assigned scores lower than good (below 30) was eliminated from the sample. Five papers were eliminated, with a total of 45 papers remaining in the sample. Fig. 1 shows the algorithm used to select the papers in the sample.

Fig. 1 shows that out of 1210 papers, 402, 673 and 85 papers were

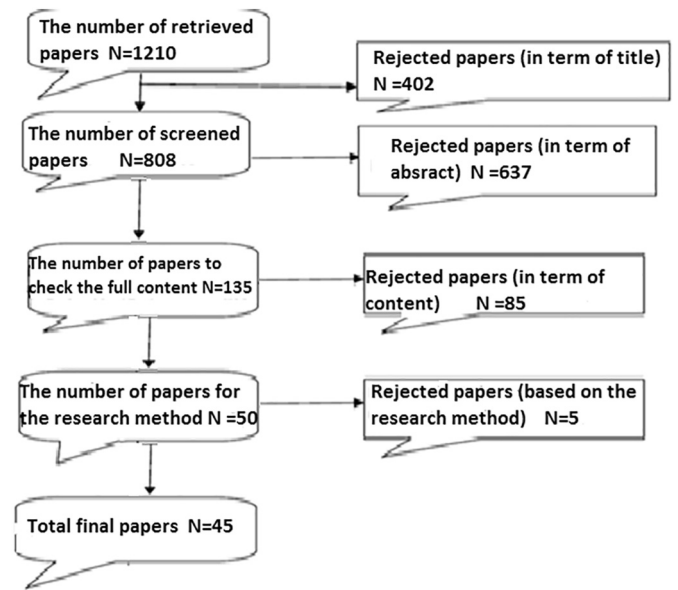


Fig. 1. Selection algorithm of the appropriate articles' analysis here.

excluded during Step 3.

After the qualitative assessment of the methodology, 45 papers remained for analysis. Table 3 presents selected examples of articles with their bibliographic characteristics.

4.1.4. Step 4: Extracting the paper information

In this step and the next one, coding is done. The three coding stages used were open, axial, and selective coding. All the components extracted from papers were initially considered as code. The codes were the result of a close analysis of data or dense data, sentences, phrases, and words in the text of the selected papers. Coding was done using the MAXQDA software version 10 by the researchers.

4.1.5. Step 5: Analysis and synthesis of the findings

By constantly comparing codes with each other, each code was grouped with other similar and common codes into one concept. And finally, categories emerged through the classification of concepts. In this step, concepts and categories were identified.

4.1.6. Step 6: Quality control extracted codes

The opinion of an expert in competitive intelligence outside the research team was used to ensure the accuracy of coding. The agreement of the expert coding with the researcher coding was calculated using Cohen's kappa coefficient with the help of MAXQDA. The extraction of codes had a good reliability, considering the significance number of 0.00 and the index value of 0.87.

4.1.7. Step 7: Providing findings (the initial model)

Because the CASP tool was used to select the articles and also the coding was highly reliable (as explained previously in Step 6), the identified codes, concepts, and categories were valid. Therefore, based on the findings, the initial model of the competitive intelligence process was formulated.

4.2. Delphi method

The second step of the study evaluated the accuracy of the model and the relationship between the phases of the competitive intelligence process using the Delphi method. In the present study, this section was conducted through the following steps.

Table 2
Databases searched.

Databases	Retrieved articles
Science Direct	506
Springer	60
Emerald	197
Wiley	236
Taylor and Francis	100
Sage	111

Table 3
Selected examples of articles.

Title	Authors	Year	Journal	Citation	Research approach	Tools	Sample/Population	Country
Current state of competitive intelligence in South Africa	(Sewdass & Du Toit, 2014)	2014	International Journal of Information Management	54	Quantitative	Questionnaire	Competitive intelligence experts in organization	South Africa
Intelligence cycle integration within decisional system among public administration	(Viorel & Radu, 2014)	2014	Procedia Economics and Finance	10	Quantitative	measures	Pragmatic documents	Romania
Competitive intelligence: a multiphasic precedent to marketing strategy	(Dishman and Calof, 2008)	2008	European Journal of Marketing	208	Quantitative	Questionnaire	Executive managers	Canada
Competitive intelligence programmers for SMEs in France: Evidence of changing attitudes	(Smith, Wright, & Pickton, 2010)	2010	Journal of Strategic Marketing	45	Qualitative	Interview	Directors of CI programs from four regions of France	France
Competitive intelligence theoretical framework and practices: The case of Spanish universities	(Garcia-Alsina et al., 2016)	2016	Aslib journal of information management	9	Qualitative and quantitative	Interview And questionnaire	Universities	Spanish
Competitive intelligence failures: An information behavior lens to key intelligence and information needs	(Maungwa & Fourie, 2018)	2018	Aslib Journal of Information Management	4	Quantitative and qualitative	Questionnaire and interview	Competitive Intelligence Specialists, Trainers and educator	America and South Africa

4.2.1. Step 8: Determination of purpose for using the Delphi method

In this section, the degree of codes necessity in competitive intelligence was determined by experts. As a result, some of the codes were removed and some new codes were added. Also, the relationship between the phases was identified based on the experts' opinions.

4.2.2. Step 9: Determining the experts and sampling

In this study, intelligence experts are: 1) those scholars considering intelligence (competitive, business, etc.) with at least two scientific research papers; and 2) the scholars with experience of teaching at the university. Sampling of the experts was done by non-random and purposive methods. See Table 4 for profiles of the experts.

Communication with the experts was done via email. At first, 20 experts declared their readiness to participate in the panel, but 13 people in the first round and 11 in the second round responded to the questionnaires.

4.2.3. Step 10: Preparation of the first-round questionnaire

In the first round, a questionnaire consisting of three parts was prepared. Based on the model derived from the meta-synthesis method, 74 codes are identified. In the first part of the questionnaire, respondents were asked to state their opinion on the necessity of the 74 codes, concepts and categories in competitive intelligence from 1 (very low) to 5 (very high) based on the Likert scale. In the second part, respondents were asked to express their opinion on the relationship between the phases of the process. In the third part of the questionnaire participants were asked to express the indicators that were not mentioned in the competitive intelligence process in the questionnaire (Questionnaire No. 1). In this way, the researchers attempted to create a space for identifying new ideas. The questionnaire was sent to three intelligence professors and experts and they were asked to express their views about it, to determine the validity. Cronbach's alpha coefficient has been calculated (0.78), to measure reliability.

4.2.4. Step 11: Distribution and collection of the first round questionnaires

The first round of electronic questionnaires were sent via email to 20 experts who declared readiness for their participation in the study. Only 13 experts completed the questionnaires and returned them. The responses were collected after 20 days had passed.

4.2.5. Step 12: Analysis of the questionnaires of the first round

After collecting and reviewing the questionnaires, the mean and standard deviation were evaluated using SPSS software. Through analyzing the third part of the questionnaire new codes were identified. Codes identified by more than three of the experts were then included in Questionnaire 2. The relationship between the process steps was identified and expressed in terms of the second part of questionnaire 1. Also, if more than 3 experts identified the relationship between them then the relationships were included in Questionnaire 2.

4.2.6. Step 13: Preparation of the second round questionnaire (2)

Codes and concepts identified from Questionnaire 1 were included in Questionnaire 2. Experts' views on the degree of the necessity of each code in competitive intelligence, the elimination of some of the codes, and their degree of agreement on the relationship between process steps on a 5-point Likert scale were included in Questionnaire 2. Also, the results of the Questionnaire 1 analysis were given to the experts to review the necessity of the existing codes in competitive intelligence based on the results.

4.2.7. Step 14: Distribution and collection of the second round questionnaire

The second questionnaire was sent to the 13 respondents of the previous round via email. In this round, only 11 participants responded to the questionnaire. The responses were collected after 14 days had passed.

Table 4
Experts profile.

Code	Sex	Field of study	Qualification	Academic rank
E-1	Female	Business Management	Doctor	Associate Professor
E-2	Male	Information Management	Doctor	Professor
E-3	Male	Business Management	Doctor	Associate Professor
E-4	Male	Information Studies	Doctor	Associate Professor
E-5	Female	Information Studies	Doctor	Associate Professor
E-6	Female	Library and information science	Doctor	Professor
E-7	Female	Knowledge management	Doctor	Professor
E-8	Female	Library science	Doctor	Professor
E-9	Male	Information and Communication	Doctor	Professor
E-10	Female	Information science	Doctor	Professor
E-11	Male	Computer science	Doctor	Associate Professor
E-12	Male	Social science	Doctor	Associate Professor
E-13	Male	IT management	Doctor	Professor

4.2.8. Step 15: Quantitative analysis of answers - questionnaire 2

After collecting questionnaire 2 responses, the mean and standard deviation of the codes were evaluated using SPSS software. In this study, the experts' consensus criteria were mean and standard deviation. If the average of codes were above 4 and their standard deviation was less than 0.6, the agreement was about these codes. The codes were omitted with an average of less than four.

4.3. Step 16: Ultimate competitive intelligence model

The remaining codes formed the basis of the competitive intelligence process model. Competitive intelligence can be implemented by using the model.

5. Results

5.1. Meta-synthesis results

Through analyzing the content of selected papers, codes were extracted. The frequency of repetition of each code was considered among the reviewed papers to justify the theoretical support of each code. In general, 74 codes were identified that are diverse in terms of repetition and frequency. Table 5 shows selected examples of the results of the meta-synthesis.

5.1.1. Intelligence pre-generation category

Before the intelligence generation stage, there is a preliminary stage called Pre-generation. This stage consists of three concepts (Identification of Information Need, Planning and Direction, and Information Acquisition). Identification of Information Needs has seven codes, Planning and Direction has 18 codes, and Information Acquisition has 9 codes (in meta-synthesis).

In the concept of the Identification of Information Needs, the considered codes are the identification of the issues that are important and prioritized for the organization in the competitive environment; the

existence or establishing of an assessment department/unit and receiving information needs from the various departments of the organization and their staff; the establishment of rules for the boundaries of responding to information needs; consistency between information needs and the rules; and information assessment through methods such as questionnaire, interview, forms, etc. Moreover, in this concept, attention was paid to identification of the needed information about the competitive environment, classification of the types of information needs (demand-driven, fixed, unconscious), and the use of models to identify information needs such as risks-based approach (RIBA).

In the concept of Planning and Direction, the codes include having a competitive intelligence team and assigning its duties for the competitive intelligence process; top management engagement in the competitive intelligence process; having a mission statement for the process; teaching the actions to be taken in the process; developing the information sharing culture and having internal knowledge management systems in the organization; determining the number of the staff involved in the competitive intelligence activities; allocation of financial and human resources for the process; having a timetable for taking actions; having a protocol on how to initiate the phases of the process (analysis, marketing, publication, evaluation); performing the process in different methods (formal, informal, semi-formal; strategic, tactical, operational, etc.; proactive or reactive); and implementing the process in the ad hoc, regular, continuous and specific scanning and analysis, or continuous and unspecific scanning and analysis types. Furthermore, having a structure (having a competitive intelligence unit or working structures such as committees or work groups); assigning the position of the competitive intelligence unit in the organizational chart; establishing a control and monitoring unit for the competitive intelligence unit; identifying the target groups or the audiences; awareness of the competitive intelligence terminology in the organization; and determining integrated policies for information management are also taken into consideration.

In the concept of Information Acquisition, the following codes are considered: various methods to acquire information (scanning, search

Table 5
Selected examples of codes.

Code	Source	Frequency
Prioritizing the sources	Jamil (2013)	1
Evaluation of sources	(Chevallier, Laarraff, Lacam, Miloudi, & Salvetat, 2016; Colakoglu, 2011; Garcia-Alsina et al., 2016; Helm, Krinner, & Schmalfuß, 2014; Isik, Jones, & Sidorova, 2013; Izquierdo, Fernández, & Ballesté, 2017; Maungwa & Fourie, 2018; Pellissier & Kruger, 2011; Tanev & Bailetti, 2008; Venter & Goede, 2017; Wright et al., 2009)	11
Analysis tools	(Aspinall, 2011; Cantonnet, Aldasoro, & Cilleruelo, 2015; Dishman and Calof, 2008; Garcia-Alsina et al., 2016; Gresty, 2014; Köseoglu, Ross, & Okumus, 2016; Lukman, Hackney, Popovič, Jaklič, & Irani, 2011; Muñoz-Cañavate & Alves-Albero, 2017; Sewdass & Du Toit, 2014; Viorel & Radu, 2014)	11
Education	(Adeyelure, Kalema, & Bwalya, 2018; Mariadoss, Milewicz, Lee, & Sahaym, 2014; Dishman and Calof, 2008; Reinmoeller & Ansari, 2016; Grublješič & Jaklič, 2015a; Grublješič & Jaklič, 2015b; Adeyelure, Kalema, & Bwalya, 2018; Adeyelure, Kalema, & Bwalya, 2018; Köseoglu et al., 2016)	8

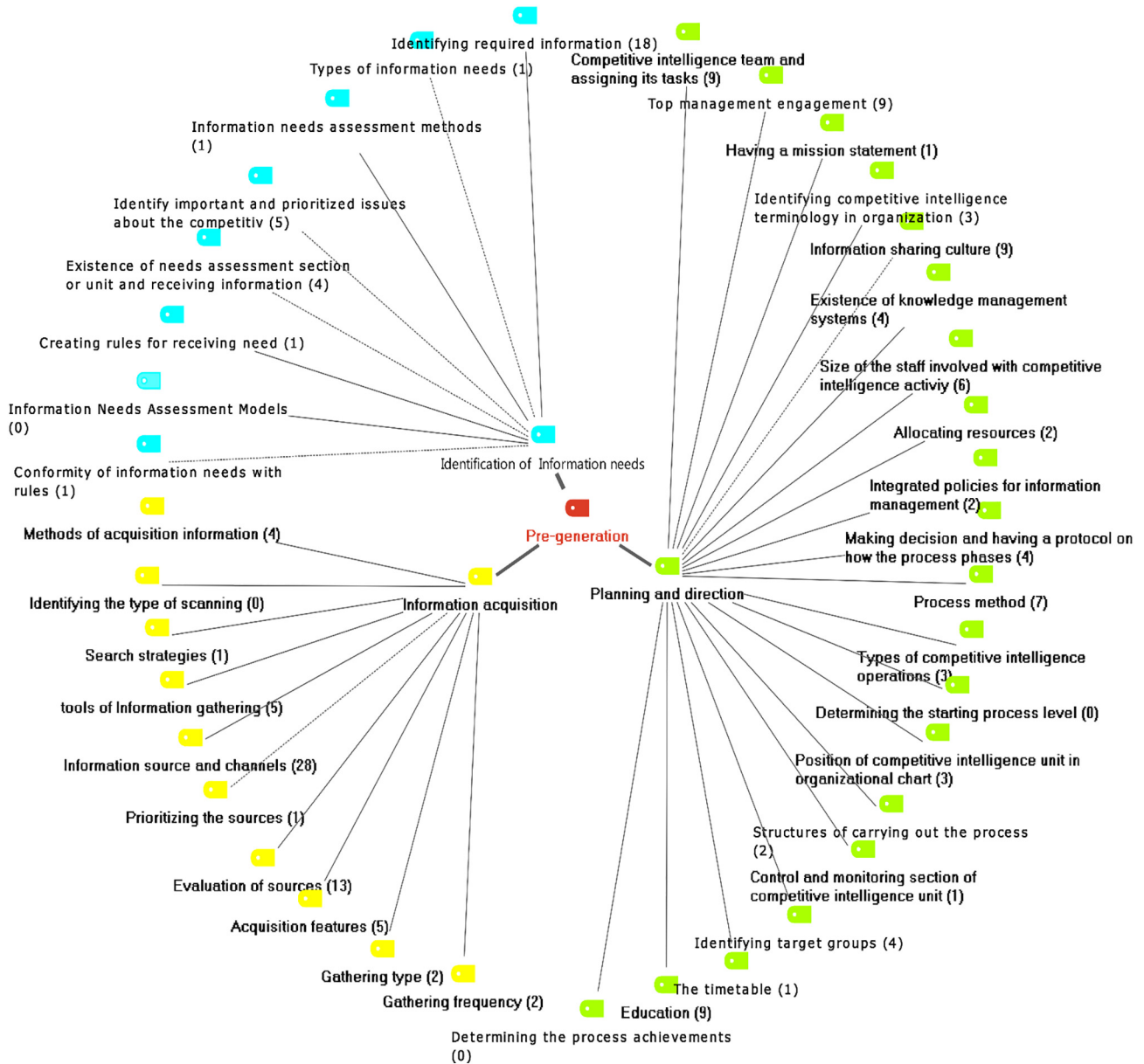


Fig. 2. The Pre-Generation category with concepts and relevant codes [here].

and retrieval, browsing, encounter, capturing, delegating); search strategies (basic, advanced, phrase-based, etc.); information acquisition tools (interview, observation, Web, etc.); and information resources and channels (personal: clients, suppliers, competitors; information storage and retrieval tools and technologies: websites, databases, networks; a combination of the two: meetings, conferences, trade shows). Moreover, prioritization of the information sources; evaluation of information sources (range, level, reliability, etc.); attention to acquisition features (legal, ethical, cyclic and non-cyclic, with or without procedures); information gathering types (easy gathering and hunter-gathering); determining the gathering frequency (periodical, non-periodical, on-demand); and specification of the type of scanning (personal or organizational) were noticed.

In Fig. 2, the Pre-Generation category with concepts and relevant codes is shown. This shape was depicted by MAXQDA. Codes with delicate lines are linked to each concept, and concepts are connected to categories with bold lines. The frequency of each code is in parentheses. Zero-frequency codes from the Delphi step were added to draw an accurate picture and deleted codes based on expert opinions are marked

with a dotted line. In the concept of Identification of Information Needs, the code of identifying required information had the highest frequency (18) and conformity of information needs with rules, information needs assessment methods, types of information needs, creating rules for receiving need had the least frequency (1) (related to meta-synthesis). In the concept of Planning and Direction, the codes of competitive intelligence team and assigning its tasks, top management engagement, education, information sharing culture had the highest frequency (9) and having a mission statement, the timetable, control and monitoring unit of competitive intelligence unit had the least frequency (2). In the concept of Information Acquisition, the code of information source and channels had the highest frequency (28) and search strategies, prioritizing the sources had the least frequency (1).

5.1.2. Intelligence generation category

The Generation Intelligence stage consisted of three concepts. Information Organizing had 11 codes, Storage and Retrieval had three codes, and Analysis had eight codes (in meta-synthesis).

In the Information Organization phase the codes considered were:

information cataloging; information indexing; classification of information based on dates, competitors' names, and subjects; information screening (removing redundant, repeated or expired information); information refinement (removing irrelevant and obscure information), and validation (elimination of false information). Also, codes of information comparison, consistency of information, compression and summarization, types of organization, tools used in information organization (applications, software programs, etc.) were included.

In the Information Storage and Retrieval concept, the examined codes were: the use of storage and retrieval tools and technologies (e.g. organizational repositories, databases, content management systems); the method of evaluating storage and retrieval systems (language, resources, user interface); discretion regarding information security through anti-virus, firewall, etc.

In the Analysis concept, the considered codes were: the use of analysis tools such as SWOT; determination of the reason to use a specific tool (such as accuracy and speed); conducting the analysis on individual, group, or a combinatory bases; controlling the analysis for errors; the type of the result, e.g. reports, competitors' profiles, etc.; determination of the purpose of analysis; type of analysis (e.g. future predictions, orientation of activities, special cases); and analysis procedures (quantitative, qualitative, combinatory).

Fig. 3 shows the Generation category with concepts and relevant codes (22 codes). This shape is depicted like Fig. 2. The frequency of each code is in parentheses. Zero-frequency codes from the Delphi step have been added to draw an accurate picture and deleted codes are

marked with a dotted line. In the concept of organization information, the code of cataloging, indexing, classification has the highest frequency (3) and screening; refining; compression and summarization; compering, integrating; types of organization had the least frequency (1) (related to meta-synthesis). In the concept of storage and retrieval, the code of information storage and retrieval technologies and tools had the highest frequency (10) and evaluation of the information retrieval system, information security the least frequency (7). In the concept of analysis, the code of analysis tools had the highest frequency (12) and the reasons for selecting the analysis method, type of analysis, analysis control have the least frequency (1).

5.1.3. Intelligence post-generation category

Post-Generation is the last stage. This stage consists of three concepts (Dissemination, Usage and Evaluation and Supervision). Dissemination had two codes. Usage had four codes, and Evaluation and Supervision had eight codes (in meta-synthesis).

In Intelligence Marketing, the codes are the types of marketing for the analyzed information (internal/external), using information marketing models such as AIDAS etc., using different marketing methods such as storytelling etc., and the specification of marketing purposes.

In the Dissemination phase, the following were considered: ways of disseminating the analyzed information (via individuals, information storage and retrieval tools and technologies, or a combination of the two), determining the features of transferred information such as reports.



Fig. 3. The Generation category with concepts and relevant codes [here].



Fig. 4. The Post-Generation category with concepts and relevant codes here.

In the concept of Usage, the examined codes were: information as the social symbol (using the information to gain organizational value and improve individual and social merits); information to increase certainty and decrease environmental uncertainty information for decision-making; information for establishing policies in the organization and impact on policy-making outside the organization.

In the Evaluation and Supervision, the codes accounted for were: evaluating the process (are all stages conducted correctly) evaluating the product of information analysis in terms of timeliness and accuracy; evaluation of the usefulness of competitive intelligence for the organization; determination of the purpose of evaluation in the competitive intelligence process; and receiving feedback from the audiences and the users of intelligence. Supervision of the following factors affecting the process were also considered: individual factors such as motivation; information factors such as the size of the available information; and environmental factors such as the intensity of competition outside the organization.

Fig. 4 shows the Post-Generation category with concepts and relevant codes (14 codes). This shape is depicted as mentioned before. The frequency of each code is in parentheses. Zero-frequency codes from the Delphi step were added to draw an accurate picture and deleted codes were marked with a dotted line.

In the concept of Dissemination, the code of ways of dissemination has the highest frequency (12) and features of transferred information the least frequency (2) (related to meta-synthesis). In the concept of Usage, the codes of decision making and policymaking have the highest frequency (7) and social symbolism, uncertainty reduction the least frequency (2). In the concept of Evaluation and Supervision, the code of

supervision on the individual factors affecting the process has the highest frequency (12) and the quality of product evaluation the least frequency (1).

5.2. Delphi results

Delphi Questionnaire No. 1 was analyzed, and the mean and standard deviation of each code were also determined. Of the 74 codes identified in the meta-synthesis phase, 64 have an average of more than four and ten codes less than four. The codes with an average of less than four were deleted from the model based on experts' opinions. Also, by analyzing Questionnaire No. 1, the codes that have been related to the process of competitive intelligence but are not available in the initial process model have been extracted. Twelve codes have been considered by more than three experts. The analysis of the second questionnaire on communications and interactions between process phases has been carried out, and four codes have been extracted. Questionnaire No. 2 has been analyzed and because of the extent of the content only, the added, and deleted codes are presented in Tables 5 and 6. Communications and interactions between process phases are shown in Table 7.

Table 8 shows that the type of relationship among Identification of Information Needs, Planning and Direction, Information Acquisition, Organizing Information, Storage and Retrieval, Analysis, Intelligence Marketing, Dissemination, Usage, Evaluation and Supervision, which were obtained from the analysis of Questionnaire No. 1, according to the experts' opinions, get an average of over 4.

Table 6
Codes requiring deletion.

Codes	Questioner 1		Questioner 2	
	Average	Standard deviation	Average	Standard deviation
Existence of needs assessment section or unit and receiving information needs	3.03	0.87	3.03	0.87
Conformity of information needs with rules	3.50	0.67	3.44	0.65
Types of information needs (demand-driven, fixed, unconscious)	3.25	0.76	3.15	0.38
Information sharing culture	3.32	0.89	3.32	0.89
Size of staff involved with competitive intelligence activities	3.63	0.60	3.67	0.65
Control of the analysis phase	3.28	1.07	3.08	0.85
Identify important and prioritized issues about the competitive environment	3.44	0.96	3.22	0.42
Types of organizing	3.43	0.67	3.21	0.45
Prioritizing the information sources	3.23	0.69	3.13	0.42
Purpose of the evaluation	3.19	0.78	3.15	0.34

Table 7
Codes added.

Added codes	Average	Standard deviation
Information Needs Assessment Models (INAM)	4.02	0.32
Determining the starting process level	4.41	0.84
Determining the process achievements	4.53	0.52
Identifying the type of scanning	4.76	0.84
Determining the possible storage materials	4.34	0.54
Format of stored information	4.05	1.33
Information transfer strategy	4.76	0.84
Features of dissemination channel	4.36	0.97
Type of marketing	4.11	0.57
Marketing models	4.08	0.63
The manners and methods of marketing	4.15	0.58
Marketing purposes	4.49	0.41
Concept added	Average	Standard deviation
Intelligence marketing	4.21	0.55

Table 8
The relationship between process phases.

The relationship between process phases	Average	Standard deviation
Direct and indirect relationship and interaction	4.88	0.67
Possibility of repeating the process phases	4.69	0.36
Possibility of returning the process phases to previous phases	4.83	0.62
Co-occurrence of the process phases	4.35	0.82

5.3. *Ultimate competitive intelligence model*

The final comprehensive model consists of 76 codes, 10 concepts (Identification of Information Needs, Planning and Direction, Information Acquisition, Organizing Information, Storage and Retrieval, Analysis, Intelligence Marketing, Dissemination, Usage, and Evaluation and Supervision) and three categories (Intelligence Pre-Generation, Intelligence Generation, Intelligence Post- Generation) The relationships between the process phases is also shown. The conceptual model is presented in Fig. 5.

6. Discussion

The competitive environment among organizations has changed, and they are required to use an intelligent and future-sighted approach through competitive intelligence to deal with the survival crisis, continuous development, or even to maintaining their current status in the competition, both nationally and internationally. Therefore, competitive intelligence has gained increasing significance in organizations, and they are even more willing to deploy and implement this process. This need has necessitated a comprehensive model for the deployment and correct implementation of competitive intelligence practices.

Some of the indicators or phases of the competitive intelligence

process have been examined in various studies; however, there appears to be a need for a consistent and systematic perspective to achieve an appropriate and comprehensive model by integrating various studies. Also, the unexplored relationships between the phases of the process must be carefully examined. This study presents a model of a competitive intelligence model through a mixed approach. First, based on the meta-synthetic method, the selected papers were examined, and the indicators and dimensions of competitive intelligence were extracted. The initial model consists of 74 codes and nine concepts.

Based on experts' opinions, the indicators were modified, and ten codes were omitted. Also, the concept of marketing and its indicators were added along with eight additional necessary indicators. These indicators are: information needs assessment models, determining the starting process level, determining the process achievements, identifying the type of scanning, determining the possible storage materials, format of stored information, information transfer strategy, features of dissemination channel.

The concept "intelligent marketing" and its indicators have not been of concern in prior publications. However, information marketing and its particular type, i.e., intelligence, are of great importance for organizations and have been dealt with in this research. The final model, the result of a broad view of competitive intelligence studies, could be used by managers and employees when deploying, developing, or evaluating competitive intelligence.

The number of phases or concepts in the proposed model exceed those of the Haddadi et al. (2010), Strauss and Du Toit (2010), Bartes (2013), Garcia-Alsina et al. (2013), and Salguero et al. (2017) models. The concept of process implies that the output of each phase should be the input of the next one, but factors affecting the process (structure, awareness, etc.) are considered as separate phases in the process in some studies, such as Pellissier and Nenzhelele (2013), Salguero et al. (2017), and Strauss and Du Toit (2010). Also, these factors were neglected in models such as Bartes (2013), Bose (2008), and Haddadi et al. (2010); in this study, these factors are combined and integrated into the phases of this process.

The results of this study showed that, in addition to the initial path of intelligence (the bold lines in Fig. 5), the rest of the phases of the process could relate and interact with each other. There is a kind of discourse between the process phases, in other words, this process not only is not silent but also creates a network in the form of a diamond. Also, according to this study, many process phases have co-occurrence, or in other words, they take place in parallel sessions. All of these reasons suggest that the network model must be replaced by a cycle.

6.1. Limitations

One of the limits encountered in this study was the lack of a single scientific database that covers all records, and the compilation of the required data necessitated the exploration of multiple databases. Nevertheless, some studies may be indexed in inaccessible databases,

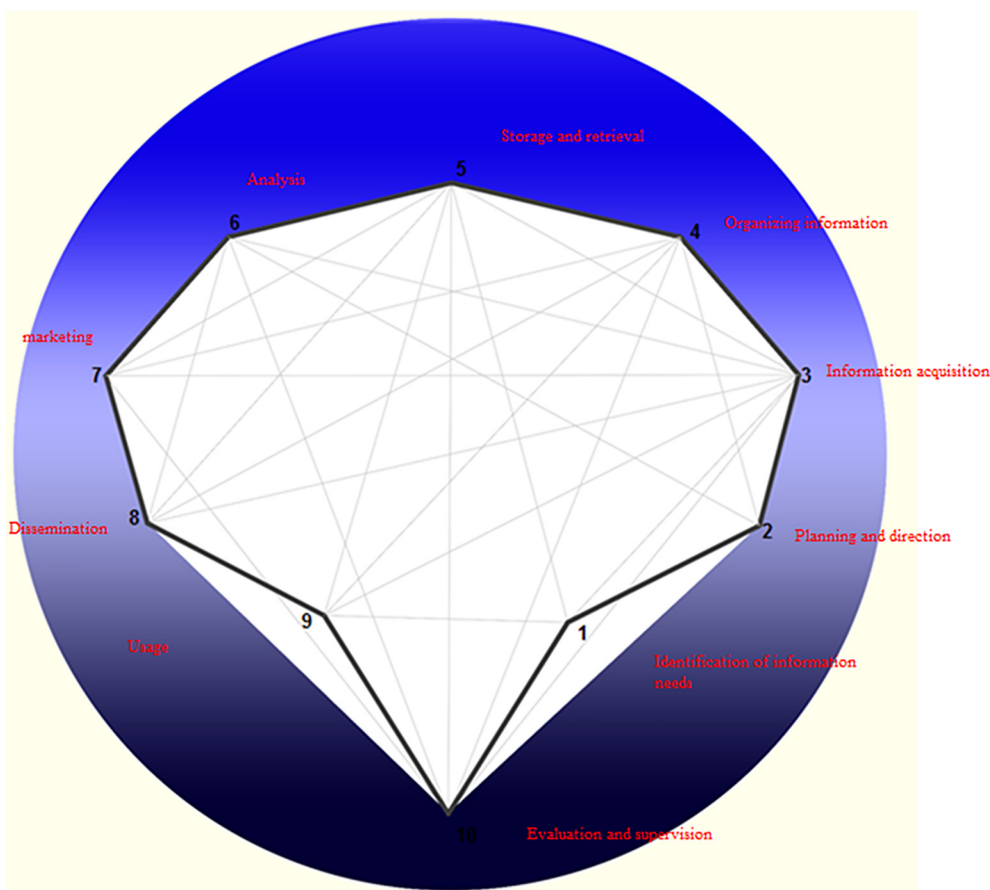


Fig. 5. Competitive Intelligence Diamond model here.

precluding them from review by scholars. It is recommended to extend the range of databases for future research.

Additionally, meta-synthesis is a qualitative method, and in qualitative studies, the scholar is the judge and evaluator, and despite attempts at avoiding biases, as well as benefiting from professional opinions, there is room for error.

7. Conclusion

This study is the first one to combine meta-synthesis and Delphi methods to research competitive intelligence. Through the Competitive Intelligence Diamond model, organizations can accomplish and flourish in a competitive area.

This study provides researchers with a more profound understanding of the concept of competitive intelligence and introduces a conceptual and practical model to deploy, develop, or evaluate the process of competitive intelligence. This study suggests a model to promote the competitive intelligence process practically, in addition, laying a foundation for greater attention by scholars toward the concept of competitive intelligence.

In this study, a set of the phases and indicators of the competitive intelligence process were identified through the meta-synthetic approach; these indicators have not been used simultaneously in previous studies. The Delphi method, aside from validating the initial model and choosing the proper and practical indicators, facilitated the addition of necessary dimensions and indicators to the model. This model has numerous advantages. In addition to presenting competitive intelligence phases, the implementation steps of the model are widely and transparently provided, as well. There is the possibility of repeating the activities in the same manner by using this model. Besides, any organization or company can use this model by localizing it. The advantage

of this study over the previous ones is its precision. Based on professional opinions, this model removes the redundant and immaterial indicators in the literature and adds the necessary indicators. The model is simple yet not simplistic, and adequately demonstrates the competitive intelligence process, and permits modification and development.

The results of this research may be of interest to policymakers, managers, and staff of organizations or information professionals in some areas, for example, identifying the factors affecting the implementation and deployment of competitive intelligence. This model can be used to recognize the barriers to the implementation of the competitive intelligence process as well as identify the capabilities of organizations to move toward competitive intelligence. Another application is to use the model as a measure or tool for how to conduct competitive intelligence activities or in other words, to facilitate assessment and measurement. Finally, the model can be used as instruction for the proper implementation of the roles and job duties of information professionals in the competitive intelligence process.

Further research is needed to evaluate the validity of the model and to extend the generalizability of its findings. In this regard, the quantitative approach of the linear structural equation model could be used. Moreover, this model needs to be implemented in different organizations, the results compared, and their weaknesses identified and addressed.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Narges Oraee is a doctoral student in information science and knowledge at Ferdowsi University in Iran. Her research interests include competitive intelligence, higher education, information and knowledge retrieval, as well as e-commerce. She has publications in *Library and Information Sciences Journal* and *Scientometrics Research Journal*.

Azam Sanatjoo is an Associate professor at the Department of Knowledge and Information Science at Ferdowsi University in Iran. She earned her PhD in information studies at the Royal School of Library and Information Science, Copenhagen University, Denmark. Her research interests focus broadly on the area of scholarly communication, information retrieval, information organization, and digital libraries. She has publications in the *Knowledge Organization Journal*, *Journal of Information Science* and *Library Philosophy and Practice (e-journal)*.

Mohamad Reza Ahanchian is a professor at the Department of Education at Ferdowsi University in Iran. He received his PhD in educational management philosophy from the University of Sheffield. His research interests are educational management, higher education, designing performance appraisal systems, as well as educational leadership development. He has over 100 publications in journals including the *International Journal of Business Innovation and Research*, and *Performance Improvement*.