A Systematic Literature Review on Competitor Analysis: Status Quo and Start-up Specifics

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Abstract The purpose of this paper is to determine the status quo of research on competitor analysis (CA), which constitutes a cornerstone of strategic management. Of special interest are potential specifications for start-ups which act in an environment of high uncertainty, where CA is supposed to provide meaningful information to determine the right course of action. This study is performed as a conceptually organized systematic literature review with representative coverage and focus on research outcomes. The findings of 78 identified relevant studies out of 43 different journals are analyzed. Results are presented with regard to research contribution, mentioned purposes for conducting CA, CA processes and methods, and elements for ensuring quality of CA. To provide a cohesive understanding of the CA theme, as well as a foundation and guidance for researchers and practitioners, a conceptual framework is derived, which synthesizes the facets of the CA theme in a novel manner. Start-up related research contributions and avenues for future research are discussed.

1 Introduction and Motivation

"Every firm competing in an industry has a competitive strategy, whether explicit or implicit" (Porter, 1980, p. xxi). Ever since the seminal works of Porter (1980, 1985) sophisticated competitor analysis (CA) is considered a crucial cornerstone for the strategic decision process. CA should generate insights in support of the development of successful business strategies (Aaker, 2013). As such, CA is an integral part of strategic management which deals with initiatives of firms to enhance performance in their external environment (Nag et al., 2007). This means that strategic decisions need to be informed by an assessment of the organization's external environment (Dishman & Calof, 2008). Moreover, with less predictable market environments and an increasing level of competition as a consequence of the internationalization of business and accelerating rates of technological innovation, an even increased need for informed decision-making based on intelligence of the competitive environment exists (Jennings & Jones, 1999). In today's environment which is defined by increased globalization and competition, and fast-developing technologies, more and better information is needed to underpin sound decision-making (McEwen, 2008). The consequences of formulating or implementing a business strategy without the benefit of actionable competitive intelligence are severe.

In these fast-changing industries, start-ups, thanks to their agility, are often among the first aiming to exploit new business opportunities by providing innovative offerings, products and services. As such it is argued, that addressing the challenge of strategy formulation, whilst taking into account their environment, is therefore equally essential for start-ups (Zahra & Bogner, 2000), and that start-ups need to understand the dynamics of competition in their industries to survive and succeed (Vella & McGonagle, 1988).

Even though information about the actual competitive environment is also key for the success of new ventures (Zahra & Bogner, 2000), certain problems surface with regard to how start-ups deal (or do not deal) with their competition. In fact, CB Insights reported, that one of the top four reasons for ventures to fail is to "get outcompeted" (CB Insights, 2016). Mohan-Neill (1995) finds that start-ups are likely to ignore the need for formal CA activities. Media quotes like "some Founders [...] insist that they're the first and only company to do what they do or offer the service they offer" (The Startups Team, 2017) or "competitive research and analysis is one of those areas that is often horribly lacking from any pitch" (Yoskovitz, 2011) hint at problems entrepreneurs seem to have when performing CA activities. Moreover, all of the authors of this paper engage as start-up coaches, mentors, and/or seed fund investment managers and within the scope of their daily work with start-ups and in exchange with colleagues observe that founding teams very often struggle to conduct a meaningful and actionable CA. This weakness is particularly perceptible in the development of business plans

and investor discussions. Superficial and poorly developed analyses of the competitive environment convince neither start-up coaches nor investors and lead to ill-informed decisions.

Motivated by these considerations, the authors intend to carry out a design science research project, which aims to develop an artefact to support entrepreneurs to perform a viable CA taking into account their specific requirements. Design science research is "a research paradigm in which a designer answers questions relevant to human problems via the creation of innovative artifacts, thereby contributing new knowledge to the body of scientific evidence" (Hevner & Chatterjee, 2010, p. 5). Whereas empirical research wants to "describe, explain, and predict", design science seeks "to change the world, [...] improve it, and [...] create new worlds [...] by developing artefacts that can help people fulfil their needs, overcome their problems, and grasp new opportunities" (Johannesson & Perjons, 2014, p. 1). Artefacts can be defined as "an object made by humans with the intention to be used for addressing a practical problem" (Johannesson & Perjons, 2014, p. 7). However, such artefacts are not created independently of natural laws or behavioural theories. To the contrary, the design process as well as the design product must be based on kernel theories (Walls et al., 1992). As such, a design science project needs to build upon an existing knowledge base in a rigorous way (Hevner et al., 2004; van Aken & Romme, 2012). The existing knowledge base must be used for the construction and evaluation of the artefact and serves as the basis to build new knowledge (Baskerville et al., 2018; Gregor & Hevner, 2013). Although design activities are central to most applied disciplines and have a long history in many research fields including building, engineering, and material science and is especially relevant for the computing and information technology field (Hevner & Chatterjee, 2010), it is a young but emerging and promising field in management and entrepreneurship literature (Dimov, 2016; Romme, 2016; Romme & Reymen, 2018). Scholars, thus, call for researching the "how" rather than the "why" and "what" of entrepreneurship (Stevenson & Jarillo, 1990, p. 21) by using design science research (Joan Ernst van Aken & Romme, 2009) complementary to positivist and narrative research modes in order to bridge the relevance gap of management and entrepreneurship research and practice (Joan Ernst van Aken, 2005; Van Burg & Romme, 2014).

As such, this systematic literature review (SLR) serves as a rigorous method for the derivation of such a knowledge base, i.e. a "review and synthesis of prior research findings" (Dimov, 2016, p. 25), that describes the status quo of CA in general and for start-ups in particular. This "archival knowledge base" constitutes a prerequisite to construct the envisaged artefact, that draws from a "vast knowledge base of scientific theories" (Hevner & Chatterjee, 2010, pp. 15, 17). An SLR is a suitable method to summarize and categorize knowledge (Fisch & Block, 2018), thus, providing a comprehensive review of the field of CA.

Besides the main goal of creating an archival knowledge base, that serves as an intermediary result for the creation of a design science artefact, the comprehensive review also provides immediate theoretical and practical contributions. An enhanced understanding of the

CA phenomenon can be obtained by combining various aspects in the field of CA into a uniform image and elaborating relationships between these aspects. This uniform image may serve as guidance for educators and practitioners, who aim to gain an overview of the topic and teach or utilize CA. The review also enables the disclosure of potential future research avenues.

Thus, we aim to comprehensively review the field of CA in the current body of research with a special focus on start-up relevant literature. Consequently, five research questions are derived, starting with a concrete overview of the existing methods: *What is the scientific state of the art with respect to CA processes and methods? (RQ1)* The second research question refers to the underlying purposes of conducting CA, because "no single competitive analysis system is universally valid" (Zahra & Chaples, 1993, p. 8) and CA, thus, needs to be matched with specific situations of the industry and the company. Hence, we are interested in the question: *Which purposes for conducting CA are mentioned in the literature? (RQ2)* To ensure the quality of the artefact to be developed, it is also necessary to know what constitutes or influences the quality of a certain CA method or process. Hence, we explore: *Which quality criteria for conducting CA are mentioned in the literature? (RQ3)* As we are especially interested in start-up specifics, we also examine: *Are there CA approaches that are specific and relevant for start-ups? (RQ4)* To conclude upon the review, we are also interested in a comprehensive overview of the field, which to the best of our knowledge does not exist yet. Thus, we want to answer the question: *How can the different aspects appearing in the CA literature be compiled into an integrated framework? (RQ5)*

The remainder of this paper is structured as follows. In the next section, we describe the theoretical background for conducting CA in incumbents and start-ups, elaborating upon the position of this paper in strategic management and entrepreneurship literature. In the following sections, the research method and the findings of this literature review are presented. The last sections of this paper contain the discussion and limitations, as well as the conclusion and avenues for future research.

2 Research Context

This section intends to elucidate the research context associated with this study. It serves to demonstrate the theoretical roots, relevance and rationale of CA within different research streams. It is also used as fundament for the research strategy, especially for journal selection and search string purposes. The peculiarities of start-ups and modern entrepreneurial management approaches are highlighted. The research context also serves as basis for the discussion.

2.1 Competitor Analysis

Whenever a business decision needs to be made for any reason, any available information will reduce the amount of information asymmetry and subsequent risks resulting from wrong decisions (Prašnikar et al., 2005). It is the management's task to create a superior business strategy, implement the strategy and set targets to be met, conduct evaluations of the strategy performance and execute adaptations if necessary (Thompson & Strickland, 2001). In a large-scale survey, Nag et al. (2007) extract a consensual definition of strategic management. In this definition, the external environment is seen as an integral part of strategic management that needs to be considered when dealing with strategic initiatives. Since Porters' seminal work (Porter, 1979) CA is closely affiliated with strategic decision making. According to Porter an essential goal of a competitive strategy is to position a firm on a market and distinguish it from its competitors. A company should be aware of the current strategy and future goals of the competitors, as well as assumptions about capabilities and priorities leading to scenarios of how a competitor is likely to respond (Porter, 1980).

CA is also rooted in the marketing management literature. The American Marketing Association defines marketing management as "the process of setting marketing goals for an organization (considering internal resources and market opportunities), the planning and execution of activities to meet these goals, and measuring progress toward their achievement" (AMA, 2018). A strategic analysis of the environment, the market and the situation of the company is the starting point for the formulation of alternative marketing strategies, their assessment, selection, implementation, as well as control (Homburg, 2017), analogous to the strategic management process. The analysis of the corporate environment is therefore a central fundamental requirement, both in strategic management and in marketing management.

CA can also be considered as a subset of environmental scanning (Aguilar, 1967). The external environment of a firm can be separated into its general environment and its operating environment. The first consists of background factors such as social or political conditions, and the second of customers, competitors, suppliers, investors, and other entities that the firm interacts with (Thomas, 1974). As such, the analysis of competitors is part of the environmental scanning process.

There are other literature streams in which CA also occurs, such as with focus on different analysis units as in the strategic group analysis (e.g. Porter, 1980) or with focus on actions and reactions as in the competitive dynamics literature (e.g. Chen & MacMillan, 2017; Chen & Miller, 2012; Derfus et al., 2008). However, it is not our objective to go into each of these streams in detail, as this would clearly go beyond the scope of this review. With regard to the review and given this paper's research motivation, it should be noted that we do not exclude certain theoretical bases or research streams in order not to limit the range of possible outcomes.

The literature has adopted several different definitions of the term CA (Bennett, 2003). For the purpose of this study, we define CA as a process embodying the collection of data on rivals as well as their analysis and interpretation for managerial decision-making (Bennett, 2003; Zahra & Chaples, 1993).

2.2 Start-ups

A start-up can be defined as a "temporary organization in search of a scalable, repeatable, profitable business model" (Blank & Dorf, 2012, p. xvii). However, a start-up is not just a "little big business" (Welsh & White, 1981, p. 18), and must be clearly distinguished from established companies (Achleitner & Bassen, 2002; Sutton, 2000). Several characteristics are specifically assigned to start-ups such as a decision-making process, that is strongly influenced by the founders' personalities, a short existence, a dynamic environment, resource scarcity (Achleitner & Bassen, 2002), or changing organizational structures, and the lack of defined processes (Schoss, 2013). Given these differences, one can assume that the conditions and particularities for performing CA vary for start-ups and incumbents respectively. Thus, differences may occur, that discern incumbents from start-ups with regard to CA activities. To begin with, in start-ups is usually no dedicated department for performing CA, they have limited connections to trade associations, and very limited lobbying power to change environmental factors (Smeltzer et al., 1988). Furthermore, the reasons why start-ups perform CA may differ from those of incumbents. As business model creation forms an essential element for the enactment of opportunities, the assessment of viable business models based on actions in the market, and the response to those models, play a crucial role (Ojala, 2016). CA can serve as an effective means for scanning and analyzing market information in a structured way. This market information helps the entrepreneur to develop or validate their business model with regard to its feasibility and identify potential needs for changing strategies (Wirtz, 2018, p. 270 ff.). Start-ups also need to carry out a CA if they prepare a business plan, which may be necessary, for example, to attract investors or acquire subsidies. A typical structure for a business plan includes an analysis of the competition (cf. Ripsas & Zumholz, 2011). Other purposes may address the selection of a market entry strategy (Ojala & Tyrväinen, 2006), or finding a position in the market (Byers et al., 2015). Established companies, on the other hand, may be more interested in assessing potential competitor's responses to market actions (Porter, 1980) or evaluating their strengths and weaknesses (Aaker, 2013).

Hence, we argue that the analysis of competitors might have different benefits and, thus, may vary in design at different life-cycle stages of a firm. Causational, as well as effectual reasonings, can influence the underlying purposes for conducting CA, its benefits, and designs. Thus, we do not only aim at understanding the status quo of research on CA but are specifically interested in exploring relevant CA aspects for start-ups.

3 Methodology

Given this research context in which this study is positioned, the literature review is performed in order to explore CA processes and methods, underlying purposes of conducting CA, quality criteria for CA, and start-up specifics. Across all research streams a comprehensive framework is to be compiled.

This study is performed as a SLR according to Kitchenham & Charters (2007) and Kitchenham et al. (2009). Based on the taxonomy of Cooper (1988) this SLR is organized conceptually, with representative coverage and focus on research outcomes. It addresses the general scholar as its audience and takes a neutral representation perspective.

To begin with, the keywords of the SLR are conceptualized based on the core concepts occurring in the research questions (cf. Table 1). In order to cover a wide range of potentially relevant terms, an additional synonym search for the core concepts is performed using a thesaurus to complement the keywords.

Table 1 Core concepts of the research questions and derived keywords for search query

Core Concepts	Keywords
Competition	Compet*, Rival
Analysis	Analy*, Synthesis, Evaluation, Intelligence, Assessment, Mapping
Process/ Method	Process*, Step*, Guide, Procedure, Technique, Framework, Model, Method, Principal, Rule, Review
Quality	Validity, Factor*, Element*, Component*, Criteria, Evaluation, Test*, Approach
Objective	Objective, Reason, Purpose, Goal, Target, Aim

On this basis, we used the following combination of keywords in the article's title, abstract, keywords, or subject term:

Any of the words competition, competitor, competition, rival, competitive, competitive landscape, competitive environment, AND analysis, analyses, synthesis, assessment, evaluation, intelligence AND process*, step*, guide, procedure, technique, framework, model, method, principal, rule, review OR validity, factor*, element*, component*, criteria, quality, evaluation, test* OR objective, reason, purpose, goal, target, aim (see Table 2 for the search formula).

The journals were selected using the internationally recognized German VHB-JOURQUAL 3 ranking by the German Academic Association for Business Research. This ranking is published by the association of business professors from German-speaking countries (Germany, Austria, Switzerland, Liechtenstein). According to the outlined research context the following research areas were identified as relevant: Business Economics, Entrepreneurship, Marketing, and Strategic Management. For the initial search query only A+, A, and B rated journals, according to VHB JOURQUAL 3 are selected. We did not limit the search on a specific

date range in order to avoid a too narrow result in the initial search and given the fact that we already know of Porter's publications in this field in the 1980s. Hence, the initial search query covers 43 academic journals published until March 2017.

Table 2   Search query (for database Scopus)

Query
FIND (competitor OR competition OR rival OR competitive OR competitive landscape OR competitive environment) AND (analysis OR analyses OR synthesis OR assessment OR evaluation OR intelligence) AND ((process* OR step* OR guide OR procedure OR technique OR framework OR model OR method OR principal OR rule OR review) OR (Validity OR factor* OR element* OR component* OR criteria OR quality OR evaluation OR test*) OR (Objective OR reason OR purpose OR goal OR target OR aim)) IN (Abstract OR Title OR Subject OR Keywords)

The SLR is initiated by applying the composed search query (Table 2) to the search engine Scopus, revealing 1,949 articles The Scopus coverage is reviewed and an additional manual search for missing years is performed in Google Scholar, adding 2,294 studies. This initial search led to a total of 4,243 primary articles.

Before the search process, study selection criteria (cf. Table 3) were defined based on the research questions, and refined during the search process (Kitchenham & Charters, 2007).

Table 3   Study selection criteria applied in this SLR

Inclusion Criteria	Exclusion Criteria
• Research study creates or covers CA methods or systems, information requirements, CA quality criteria or purposes • Aims at the application of a CA through a business	• Not available in English • Mathematical models • Focus is on factors that create competitive advantage • Acquiring, analyzing or using information about competitors plays only a minor role in the respective study • Access to full paper not available • Fulfills none of the quality criteria

After the initial query, each study is first analyzed based on the relevance with regard to the selection criteria of its title and, if not dismissed, of its abstract to refine the search results. The conclusion was also taken into account in cases where title and abstract provided insufficient information, as suggested by Brereton et al. (2007). Within this process step studies are excluded either due to the irrelevance of their title or abstract (4,144), access to the full paper not being available (4) or duplicates being detected (12), which results in 83 remaining studies. Those 83 papers are analyzed on full text basis, inclusion and exclusion criteria further applied, as well as quality assessment criteria assessed. Articles were included if they cover a

specific area related to the research questions. They must cover contents related to the creation or application of CA methods, systems, information requirements, quality criteria or purposes. Articles were excluded if they were not available (in English), cover mathematical models or if their main focus is on specific factors that create competitive advantage.

Additionally, the articles must at least fulfill one of the predefined quality criteria developed according to Kitchenham & Charters (2007). We defined five quality criteria, that ensure that one of the research questions is answered or provides additional quality information with regard to bias or validity of the study. The applied quality questions are:

- Q1: Does the research study create or extend a CA method or process and describes it clearly?

- Q2: Does the research study provide a purpose, reason or objective for why CA is conducted?

- Q3: Does the research paper critically reflect existing CA methods or processes?

- Q4: Does the study provide quality aspects for conducting CA?

- Q5: Was the suggested CA method or process applied in a real-life scenario?

To address the issue of inaccurate inclusion or exclusion, each article was analyzed by two researchers who discussed and clarified their classification to reach an agreement whenever a discrepancy arose. This process led to 32 primary studies. In 83% of the cases the researchers gave a consistent opinion on the selection of the study. That means, that in 15 out of the 83 primary studies a discussion among the two researchers was necessary to decide about inclusion or exclusion of the respective study, achieving an acceptable interrater reliability (Cohens Kappa) of over 65% (Cohen, 1960; Döring & Bortz, 2016).

As it is likely that not all of the relevant literature may be published in high-ranked publications, a forward and backward search was also performed. The rationale for this extended search is that relevant research has been previously identified and, thus, referenced by authors in high-ranked journals (cf. Frehe & Teuteberg, 2017) or is based on high-ranked journals. Thus, relevant but not high-ranked papers (i.e. not necessarily from A-or B- ranked journals) are also included in our research. The forward and backward search was performed in the months after the initial search query and ended in May 2017. We used Google Scholar as a search engine for the forward search. The forward and backward search led to another 4,022 articles to be assessed with regard to relevance via study selection and quality criteria. The selection process was performed analogous to the selection process of the primary studies. Additionally, non-peer reviewed journals were excluded. 46 articles of the forward and backward search set were added to the set of studies to be included in the further analysis. The overall search process led to 78 studies (i.e. 32 from the primary search and 46 through the forward and backward search), which we refer to as the final set.

On the final set, data extraction is performed by two researchers. Again, discrepancies and ambiguities were discussed, whenever they arose. The data extracted are:

- Author, title, year, journal
- Research area, research focus, research method, sample (if applicable)
- Research contribution
- CA method type / name / objective – if applicable
- CA purpose
- CA quality element
- Considered start-up needs / resources
- Main findings

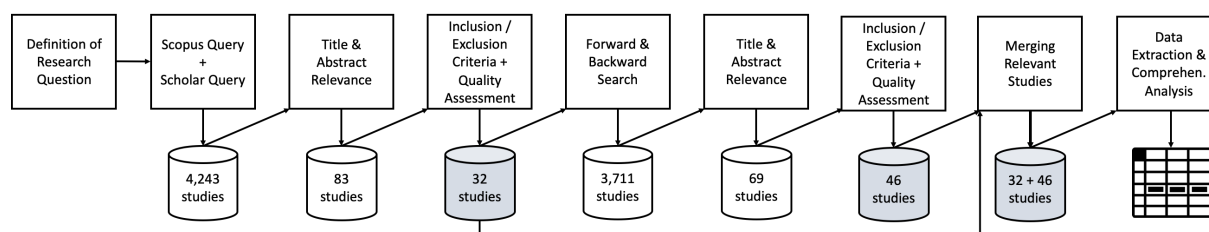The overall process of the SLR is visualized in Figure 1.

| Definition of Research Question | Scopus Query + Scholar Query | Title & Abstract Relevance | Inclusion / Exclusion Criteria + Quality Assessment | Forward & Backward Search | Title & Abstract Relevance | Inclusion / Exclusion Criteria + Quality Assessment | Merging Relevant Studies | Data Extraction & Comprehen. Analysis |

| | 4,243 studies | 83 studies | 32 studies | 3,711 studies | 69 studies | 46 studies | 32 + 46 studies | |

Figure 1   SLR process - visualization adapted from Petersen et al. (2008)

4 Results

The 78 relevant studies of the final set originate from 43 different journals. The distribution across journals reflects the importance of CA across research fields. Long Range Planning holds the most matches with 15 studies, followed by the Strategic Management Journal (seven studies), Journal of Small Business Management (five studies), and the Journal of Marketing (four studies). All other journals represent between one to three studies respectively. The earliest study in the final set was published in 1964 and the latest in 2014. In 1998 the highest number of relevant studies was identified (seven studies). In the majority of years, one (in eight years) or two studies (in 12 years) were published per year.

The following analysis process was conducted by the first and second author in close exchange. Each categorization was discussed in detail among each other and in cases of ambiguity also discussed with the third researcher until agreement was reached. With the use of content analysis over the extracted data, and especially the main findings of the studies, the studies were analyzed with regard to the research questions to discover classes. Parsons & Wand (2008, p. 839) state that "classification holds that classes do not exist independently, but are constructed as useful abstractions of the similarities of the classified phenomena". Following the evaluation function of Al-Debei & Avison (2010, p. 364) to discover clusters or classes, the following criteria are applied:

1. Covered topics are "thematically similar to each other, that is, they communicate same or very similar semantics and ideas."

2. Covered topics "have contextual relationships that complement each other, thus they become more useful if clustered."

3. The clustered topics "as a whole articulate a unique compositional aspect" of the CA theme.

The following section first categorizes the relevant literature according to their research contributions in order to get a first understanding, description, and overview about the contents of the studies included in the further analysis. Hereafter, the contents will be analyzed according to the research questions. At the end, a conceptual framework integrating the findings and giving a holistic view of the field will be deduced.

4.1 Research Contributions

To gain a first overview of the field of CA literature we categorized the research contributions of the final set studies after reading through each of the studies at least once. We find six types of research contributions across the studies in our final set (cf. Table 4).

Table 4   Identified research contributions

Contribution Type	Number of Studies	Description
Competitor identification and analysis approaches	22	Creates, extends and/or evaluates competitor identification and/or analysis approaches
CA practices	20	Surveys attitude and real-life practices with regard to CA
CA as part of an organizational system	16	Deals with the process, design, and characteristics of CA in an organizational system
Competitor information requirements	10	Provides requirements about which information to collect about competitors
Reviews	6	Reviews a specific CA related topic
Applications	4	Applies a CA method
SUM	78 studies	

Competitor identification and analysis approaches (22 studies) The majority contributes to research by creating, extending and/or evaluating competitor identification and/or analysis approaches or provides support in choosing a CA method. As such, the Two-stage framework for competitor identification and analysis proposed by Bergen & Peteraf (2002), the TOWS (threats, opportunities, weaknesses, strengths) Matrix by Weihrich (1982) or the SPACE (Strategic Position and Action Evaluation) Matrix by Radder & Louw (1998) are examples for methods to identify or analyze the competition. Prescott & Grant (1988) evaluate 21 competitive analysis techniques along a set of 11 dimensions to help managers to choose an appropriate technique. A full list of the CA methods of the final set studies is provided in Table 5.

CA practices (20 studies) Studies in this contribution type category survey real-life CA practices and attitudes with regard to CA. Recurring themes include the information sources used for CA, e.g. newspaper, annual reports (Bennett, 2003; Jennings & Jones, 1999), the type of information obtained for analyzing competitors, e.g. new product development plans, pricing, patents (Subramanian & Ishak, 1998; Wall, 1974) or the methods used to collect these data, e.g., telephone, one-on-one networking, surveys (Bennett, 2003; Brush, 1992).

CA as part of an organizational system (16 studies) The third largest category deals with the process, design and characteristics of CA in an organizational system. Exemplary representatives of this category are the project-based approach to CA by Prescott & Smith (1987) or the five phases of the intelligence process proposed by Bernhardt (1994) comprising planning and direction, collection, processing, analysis and production, and dissemination. Also, characteristics of CA systems, also belong to this category. For instance, Zahra et al. (2002) investigate the impact of comprehensiveness, formality, and user orientation of CA on firm performance.

Competitor information requirements (10 studies) Studies in this category provide requirements about which information should be collected about competitors, such as key people (Ball, 1987), brand (Dillon et al., 2001), business philosophies (Press, 1990) or product quality (King & Cleland, 1974).

Reviews (6 studies) The six studies of this category each provide a review on a specific CA topic. Deshpandé & Gatignon (1994) provide a conceptualization by summarizing major perspectives in the literature of how competitive analysis can be framed by decision makers, emphasizing the impact of human biases in decision making and corporate culture on the nature and use of competitive analysis information. Other authors review special CA practices such as benchmarking (Dattakumar & Jagadesh, 2003; Yasin, 2002) or the SWOT (strengths/weaknesses/opportunities/threats) framework (Ghazinoory et al., 2011).

Applications (4 studies) The last and smallest category deals with the application of a CA method. For example, Evans & Varaiya (2003) perform a CA for a biotechnology service firm, consisting of a list of sources of pre-emptive competitive advantages and a table of key strengths and weaknesses of potential competitors. Rodríguez Pomeda et al. (2001) apply the Strategic Matrix of Technological Competencies in the Spanish electricity industry which displays the existing relationships between the technological competencies already mastered by the focal firm, and those considered determinant in order to achieve a privileged position in the market.

4.2 Methods and Processes

To explore the scientific state of the art with respect to CA methods (RQ1), Table 5 provides an overview of competitor identification and analysis methods created, extended

and/or evaluated (cf. RQ1). 74 identification or analysis approaches are discussed in the papers considered.

Analyzing and synthesizing the main findings with regard to the process of CA, we find that CA includes planning, implementing and deriving implications for action and dissemination (Bernhardt, 1994; Dishman & Calof, 2008; Prescott & Smith, 1987). Within the implementation phase, an iterative procedure of identification, collection of information and their analysis takes place. Competitors can be identified by means of market definition (Patterson & McCullough, 1980), demand-side approaches, i.e. consumer perceptions (Shocker et al., 1990), supply-side approaches, including competences (Gorman & Howard, 1997) and resource similarity concepts (Bergen & Peteraf, 2002), or managerial perceptions (Mohammed et al., 2014). Thereby, direct, indirect, potential and historical competitors are of interest (Bergen & Peteraf, 2002; Chen, 1996; B. H. Clark & Montgomery, 1999; Peteraf & Bergen, 2003; Zahra & Chaples, 1993). In a next step, the required information is collected through specific methods and sources. This obtained information can then be analyzed with the use of a specific CA method, such as predicting rivalry according to resource equivalence (Bergen & Peteraf, 2002), benchmarking (Anand & Kodali, 2008) or assessing threats, opportunities, weaknesses, and strengths (Weihrich, 1982).
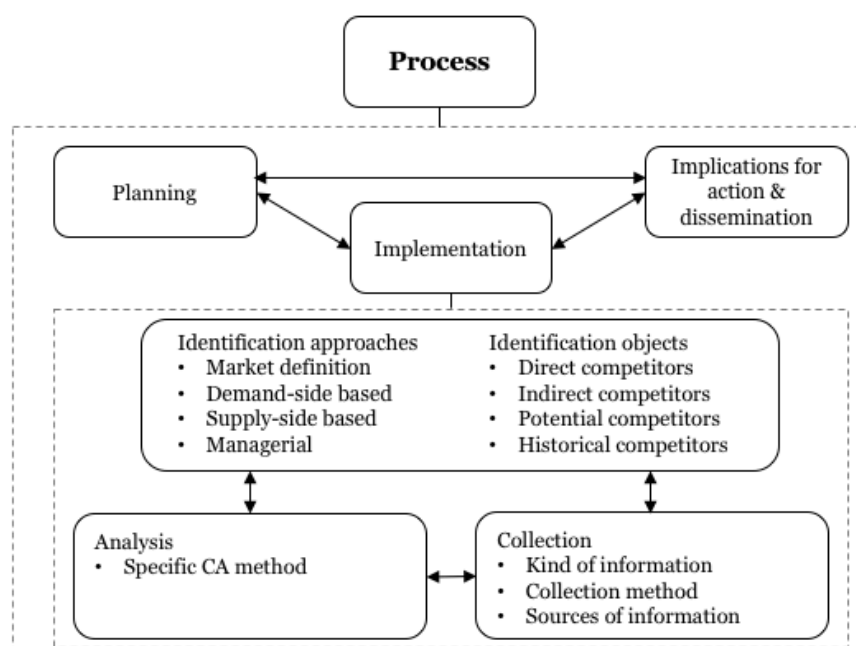
Figure 2   The process of CA - stylized representation

Throughout the process of collecting information, e.g. when talking to customers, more competitors can be revealed which were not identified in the first step, thus requiring more research to be conducted. Also, different CA methods may require different types of information, thus influencing the collection process. Outcomes of the analysis may also reveal insights which necessitate a restart of the process. The CA process then concludes with implications derived for actions and/ or a dissemination of results. Figure 2 displays this process in a stylized form.

Table 5 Competitor identification and analysis approaches

	Name of method or approach	Main findings/ contribution	Contribution	Start-up
(Porter, 1979)	Forces governing competition in an industry	Identification of the five forces that drive the competition in an industry. The state of competition depends on five forces: the threat of new entrants, the bargaining power of customers, the bargaining power of suppliers, the threat of substitute products or services, and the jockeying for position among current contestants.	-	no
(Day, 1981)	Multidimensional market analysis model	Definition of market along four dimensions: 1. Technology, 2. Customer Functions, 3. Customer Segment, 4. Level of Production-Distribution. A multidimensional market definition and analysis model that integrates the common top-down and bottom-up approaches is discussed.	Model	no open
(Weihrich, 1982)	TOWS (threats opportunities weaknesses strengths) matrix	The TOWS matrix is a tool for situational analysis and matching the environmental threats and opportunities with the company's weaknesses and strengths. A key step for using the matrix is inter alia an assessment of the competitive situation taking into account key success factors (such as price, quality, cost, service, innovation, distribution, facilities, locations) to evaluate the position of the firm. The competition needs to be identified and analyzed with regard to their strengths and weaknesses to find out how to compete with them.	Matrix	no open
(McNamee, 1984)	Three types of matrices	Describes three types of matrices (the directional policy, the Hofer, and the Patel and Younger matrix) and discusses how each can contribute to strategic planning. Advantages and disadvantages of matrices displays are outlined.	Discussion	no open
(Prescott & Grant, 1988)	Utilization profiles of 21 competitive analysis techniques	21 techniques (political and country risk analysis, industry scenarios, the economists' model of industry attractiveness, BCG industry matrix, industry segmentation, PIMS, technological assessment, multipoint competition analysis, critical success factor analysis, strategic group analysis, experience curves, stakeholder analysis, market signaling, portfolio analysis, strength and weakness analysis, synergy analysis, financial statement analysis, value-based planning, value chain analysis and field maps, management profiles, reverse engineering) are evaluated along 11 dimensions (time, financial resources, managerial skills, sources, availability, timeliness, accuracy constraints, updating requirements, advantages, limitations, references).	Reference guide	no open
(Day & Wensley, 1988)	Framework for diagnosing competitive superiority	The framework for diagnosing competitive advantage takes into account competitor centered as well as customer focused methods for diagnosing points of superiority. The competitor centered approach includes analysis of strengths and weaknesses, relative size of resources and value chain comparison.	Framework	no open
(Shocker et al., 1990)	Taxonomy of market definitions/ structure method	A taxonomy of market definitions/ structure methods is elaborated by analyzing competitive relationships analysis tools. Market structure analysis is separated in two stages: definition of competition and assessment of the nature and strength of competitive relationships. The methods for market definition and structure are distinguished into behavioral (brand switching, similar interpurchase time, similar price elasticity, variety-seeking, cross-elasticity) and judgmental (attribute similarity, similarity of evoked/ consideration sets, product deletion, overall similarity, substitution-in-use). Representations of the market structure (spatial and non-spatial) techniques are outlined.	Taxonomy	no open

Table 5 Competitor identification and analysis approaches - continued

	Name of method or approach	Main findings/ contribution	Contribution	Start-up
(Singer & Brodie, 1990)	Evaluation of alternative ways of analyzing business competition and forecasting competitors' actions	22 theories and methods for analyzing competition are identified and grouped into five source disciplines Microeconomics, industrial economics, strategic management and business policy, behavioral decision making, other social-psychological considerations and competition models in other fields. Those are evaluated along six criteria: information about competitors, nature of competitors, nature of competitive behavior analyzed, participant perspective, decision content, decision process. Established forecasting techniques for each approach are identified. Expert opinion, intentions surveys, role playing and expert systems are recommended	Evaluation	no open
(Shetty, 1993)	Benchmarking	Distinguishes three types of benchmarking: strategic (involves the comparison of different business strategies to identify key elements in a successful strategy), operational (competitive cost and competitive differentiation), management benchmarking (benchmarking support functions). Benchmarking is comprised of five basic steps: (1) Identification of the function to be benchmarked, (2) Selection of the superior performers, (3) Collection and analysis of data, (4) Establishing performance goals, and (5) Implementing plans, and monitoring results.	Process	no
(Chen, 1996)	Framework for competitor analysis: Market commonality and resource similarity	In a four quadrants matrix the two dimensions market commonality and resources similarity are mapped and can be either manifested as high or low to illustrate a focal firm's relationship with a competitor based on a firm-specific and pair-wise analysis.	Framework	no open
(Gorman & Howard, 1997)	Theory of competence-based competition	The theory suggests not to look only at direct product market competitors, but to use competences as unit of analysis for the identify and analysis of current, potential and desired competitors. An analysis process is suggested.	Theory	no open
(Fong et al., 1998)	Benchmarking process model	Provide a classification of benchmarking; nature of referent other (internal, competitor, industry, generic, global), the content of benchmarking (process, functional, performance, strategic) or the purpose for the relationship (competitive, collaborative). A benchmarking process model is developed with 5 phases and 10 steps.	Process	no open
(Stabell & Fjeldstad, 1998)	Value chain analysis framework	Three alternative value configurations (the value chain, the value shop and the value network) are analyzed along eight dimensions, i.e. value creation logic, primary technology, primary activity categories, main interactivity relationship logic, primary activity interdependence, key cost and value drivers and business value system structure. The activities and the cost/ value drivers are the means to turn the configuration analysis into a competitive strategy. The configurations have different focuses in terms of cost or value.	Framework	no open
(Lemos & Porto, 1998)	Technological forecasting techniques	Five technological forecasting techniques (such as consensus method, Delphi method, structural models, scenarios, technological vigil) are seen as competitive intelligence. Their advantages and disadvantages are discussed.	Techniques	no
(Radder & Louw, 1998)	SPACE (Strategic Position and Action Evaluation) Matrix	The strategic posture of a firm (aggressive, competitive, conservative and defensive) is determined by two internal dimensions (financial strength and competitive advantage) and two external dimensions (industry strength and environmental stability).	Tool	no

Table 5 Competitor identification and analysis approaches - continued

Author (s), year	Name of method or approach	Main findings/ contribution	Contribution	Start-up
(Shay & Rothaermel, 1999)	Multi-perspective and dynamic competitive strategy model	An integrated model for understanding the competitive environment is developed by overlaying existing strategic analysis models (i.e. as the Boston Consulting Group's Growth Share Matrix, D'Aveni's Hypercompetition Model, Ohmae's Four Routes to Competitive Advantage, and Hamel and Prahalad's Core Competency Agenda Matrix). The unit of analysis is a firm's product or service. The model distinguishes between for stages (introduction, growth, maturity, decline) along a sigmoid curve.	Model	yes
(Bergen & Peteraf, 2002)	Two-stage framework for competitor identification and analysis	Competitor identification requires the simultaneous consideration of both demand side and supply side attributes and a clear consideration of customer needs in the analysis. The first stage identifies direct, indirect and potential competitor according to market commonality and resource similarity. In the second stage the competition is evaluated and rivalry predicted according to resource equivalence.	Framework	no open
(Peteraf & Bergen, 2003)	Framework for competitor identification	The framework assigns competitors in a 2x2 matrix, by comparing market needs served and existing capabilities, into different groups, e.g. vertical differentiators, direct rivals, weak competitors, potential direct rivals.	Framework	no open
(Anand & Kodali, 2008)	12-phase, 54-step benchmarking process	The authors propose a simple classification scheme of benchmarking: external and internal benchmarking. There are different models of benchmarking. The models are highly dissimilar in terms of number of steps, number of phases and application. The models can be categorized into academic/research-based, consultant/expert-based, and organization-based, extended by industry-based models. The Xerox benchmarking model is reviewed and used as basis for benchmarking the other models. The authors identified 18 best practices and 40 unique practices steps for benchmarking and propose a universal 12-phase, 54-step benchmarking process.	Process	no open
(Rugman et al., 2012)	Modified CSA and FSA matrix	The CSA and FSA matrix: Is a 2x2 matrix combining weak and strong country-specific (CSA) and firm-specific advantages (FSA).	Matrix	no
(Mohammed et al., 2014)	Framework for managerial competitor identification	A three-step process for competitor identification is observed: (1) defining the corporate identity (including the actual, communicated identity, ideal and desired identity) (2) scanning the market for potential competitors, that resemble the own identity and (3) matching and choosing firms with similar corporate identities.	Framework	no
(Sohel et al., 2014)	Competitive Profile Matrix (CPM)	Review of the CPM technique: Internal and external key success factors are identified and weighed according to their relative importance. Competitors and the focal firm are rated along these factors. Strengths and weaknesses of CPM as a CA tool are discussed.	Matrix	no open

start-up= start-up context considered; open = no particular application specified

4.3 Purposes

With regard to the second research question *Which purposes for conducting CA are mentioned in the literature? (RQ2)* we find a variety of purposes for conducting CA. After extracting, reviewing and content-analyzing all of the mentioned objectives of CA in the final set studies, we categorized the purposes. We suggest the following clustering into four main purpose categories:

- ***Understanding of current situation.*** The understanding of the current situation comprises purposes, that are static and anchored in the present. The motive is to understand, define or identify market and competitors and does, at this point, not aim at reacting to this understanding or deriving strategies.

- ***Definition of strategy.*** This purpose category, on the other hand, comprises all future-oriented decisions based on the understanding.

- ***Legitimation, motivation & communication.*** CA may also serve to confirm decisions. Thereby, it supports the communication of these decisions and evokes the motivation and commitment of executives and staff.

- ***Inspiration & learning.*** The fourth category comprises objectives related to the generation of new ideas gained through the analysis process, either through a learning process or through inspiration.

On closer examination, we identified subcategories within the main purpose categories, which are listed in Table 6 with the respective main references.

Table 6   CA purpose categories

Purpose Category	Subcategories	Main References
(1) Understanding of current situation	• Understand and define market & competitors	(Chen, 1996; Deshpandé & Gatignon, 1994; Goshal & Westney, 1991; Singer & Brodie, 1990; Yasin, 2002)
	• Benchmarking	(Bennett, 2003; Pirttilä, 1998)
	• Identification of competitive advantage	(Bennett, 2003; Deshpandé & Gatignon, 1994)
	• Assess and/or define strengths, weaknesses, opportunities & threats	(Babbar & Rai, 1993; Bergen & Peteraf, 2002; Gorman & Howard, 1997).
(2) Definition of strategy	• Exploit & react to strengths, weaknesses, opportunities & threats	(Babbar & Rai, 1993; Bergen & Peteraf, 2002; Gorman & Howard, 1997).
	• Concrete strategies	(Bergen & Peteraf, 2002; Gelb et al., 1991; Lemos & Porto, 1998; Wright et al., 2002).
	• Allocation of resources	(Rothman, 1964; Varadarajan, 1985)
(3) Legitimation, motivation & communication	• Legitimation	(Gelb et al., 1991; Pirttilä, 1998; Zahra & Chaples, 1993)
	• Motivation	(Pirttilä, 1998; Shetty, 1993; Zahra & Chaples, 1993)
(4) Inspiration & learning	• Problem-solving & learning	(McEwen, 2008; Zahra & Chaples, 1993)
	• Inspiration	(Bennett, 2003; Pirttilä, 1998)

The subcategories are constituted as follows (the number of mentions is given in brackets):

Understand and define market & competitors (26) A main purpose of CA is to understand and define the market and competitors the firm is competing with (Deshpandé & Gatignon, 1994), as well as to predict rivals' actions (Singer & Brodie, 1990). Representative statements are "Competitive analysis is useful in assessing one's position relative to competition" (Yasin, 2002, p. 217) or "A primary objective of competitor analysis is to understand and predict the rivalry, or interactive market behaviour,.." (Chen, 1996, p. 100). CA information is typically obtained in order to understand "the structure of the market (which brands compete against each other in a market) and competitive behavior (how do competitors make their decisions)" (Deshpandé & Gatignon, 1994, p. 272). Organizations can also benefit from CA through sensitization, i.e. "making people aware that the company faced significant and formidable competitors to whom it must respond" (Goshal & Westney, 1991, p. 24).

Benchmarking (3) Another mentioned purpose of CA is benchmarking, i.e. the comparison of performance, behavior, strengths, and weaknesses against external criteria and

competitors (Bennett, 2003, p. 341). Benchmarking can also include comparing other aspects to competitors, such as competencies (Pirttilä, 1998).

Identification of competitive advantage (10) Competing firms need to be known "so that competitive advantages can be assessed" (Deshpandé & Gatignon, 1994, p. 273). CA information is used for "identifying sources of competitive advantage" (Bennett, 2003, p. 341).

Assess and define / Exploit and react to strengths, weaknesses, opportunities & threats (18) The second most frequently mentioned motive for CA activities are reasons relating to strengths, weaknesses, opportunities and/or threats. These need to be defined, exploited, assessed, or reacted to. For example, Babbar & Rai (1993, p. 103) frame the purpose for scanning the environment as enabling "timely identification and quick response to 'windows of opportunity' ". Other examples summarized in this category are statements such as "One important objective of competitor identification is to increase managerial awareness of competitive threats and opportunities" (Bergen & Peteraf, 2002, p. 158) or "Knowing your own organization's resources and capabilities and identifying those of other organizations [...] is a necessary component in defining actual and potential competitive threats." (Gorman & Howard, 1997, p. 617). With regard to the main categories we subdivided this category into the static part of assessing and defining and the dynamic part of exploiting and reacting.

Concrete strategies (10) Several studies refer to the creation of concrete strategies with the support of information obtained through CA. These can be "pricing policies, product design, development and positioning, communications strategy, and channels of distribution" (Bergen & Peteraf, 2002, p. 32). New product development decisions, the change of type or mix of marketing activities or pricing adaptions are also depicted as the most relevant tactical and strategical activities with the use of CA information by Wright et al. (2002, p. 356). Moreover, strategic decisions have to be made along the compete versus cooperate dimension (Lemos & Porto, 1998, p. 330). Another strategy that can be pursued and is included in this purpose category is the strategy of imitating competitors "in areas where they are successful" (Gelb et al., 1991, p. 44).

Allocation of resources (5) Conducting a CA helps to allocate resources effectively. As Varadarajan (1985, p. 373) states: "An assessment of the relative competitive position [...] can aid in the resource allocation process". The information obtained by CA "should indicate where and how firms can best apply their resources and energies among customers, retailers, and middlemen" (Rothman, 1964, p. 15).

Legitimation (7) CA can serve as a means to legitimate decisions. Pirttilä (1998, p. 82) frames it as "legitimation of proposals and decision and getting personnel committed to decisions and solutions made". Also, Gelb et al. (1991, p. 45) argue that CA information is "useful in confirming decisions already made". Zahra & Chaples (1993, p. 8) put more emphasis on the commitment and consensus building component, stating that "the analysis aids in

building consensus among executives on the company's goals and capabilities, thus increasing their commitment to the chosen strategy". For building consensus internal communication is necessary. Thus, communication is an immanent part of the legitimation purpose, because the findings of the analysis itself need to be communicated and also support the communication of other decisions to be legitimated.

Motivation (3) Motivating personnel is also a motive for conducting CA activities (Pirttilä, 1998)**.** The awareness of the competitive challenge (Zahra & Chaples, 1993) as well as the findings of a CA (Shetty, 1993) may also serve as motivation for employees to become better than the competitors. For the motivation of employees, just as for the legitimation of decisions, the communication of CA findings is necessary.

Problem-solving & learning (5) This category includes purposes with regard to problem-solving and learning abilities through CA. It comprises statements such as "Competitive analysis enables companies to learn from rivals" (Zahra & Chaples, 1993, p. 8) and "Entrepreneurs' environmental scanning can enhance the entrepreneurs' knowledge and lead to improved problem solving" (McEwen, 2008, p. 5).

Inspiration (6) Assessing competition has the potential to serve as a source of inspiration. CA information is used as "source of ideation and innovation" (Pirttilä, 1998, p. 82) and for "generating new ideas" (Bennett, 2003, p. 341).

It seems obvious that the purposes cannot always be clearly distinguished from each other but are often overlapping and intertwined. Also, it seems obvious that not always only one goal is pursued at a time. The purposes may complement each other.

For the sake of completeness, it should be noted that we also found explanations of CA objectives, which were rather abstract. The first category of general objectives is related to the general improvement of a company, its success or survival. For example, McEwen (2008, p. 10) points out "a positive influence on the firm's performance". Another overarching objective, that was mentioned by several authors, is that of the CA support for informed decision-making displayed for example as "interpretation of the data for managerial decision making" (Zahra & Chaples, 1993, p. 8). Likewise, strategy and planning, in general, was mentioned as objective, as for example by Goshal & Westney (1991, p. 23) as "contribution of formal competitor analysis to strategic, operational, and tactical decision-making" or by Prescott & Smith (1987, p. 411) with "the use of competitive information as an essential input to strategy formulation and implementation". However, we do not think that these overarching objectives provide additional insights into the question of why CA should be conducted. As for improvement, success and survival should be a main goal of every business activity and is also the main goal of strategy formulation itself, it can be summarized under the 'definition of strategy' category. The same applies to strategy and planning in general statements. Informed-decision making

can be seen as part of the 'understanding of current situation' or 'definition of strategy' category as it constitutes the underlying rationale.

4.4 Quality Criteria

After having analyzed the CA purposes we proceed to answer the next research question concerning quality criteria for conducting a CA (RQ3). We are interested in the question what constitutes and influences the quality of a certain CA method or process. By quality we refer to the degree to which the CA method provides best possible and valuable results. A variety of CA quality elements were discussed within the studies of our final set. These can be clustered into four categories concerning the design of a method, its selection, the organizational and cultural setting and CA output-related elements.

Method design. Several authors define quality criteria that are related to the design of the respective CA method. With regard to the design of a method, we find notions on:

The scope of a method. The scope of the analysis needs to be defined (Jennings & Jones, 1999), including for example clear objectives (Prescott & Smith, 1987), the product-market scope (Shocker et al., 1990) or the level of analysis, such as firm, group, market, industry, or competitive move (Chen, 1996).

The source of information used for collecting the CA information. For a high-quality CA different sources of information should be used, such as competitors itself (Jaworski et al., 2002), customers and suppliers (Zahra & Chaples, 1993). Informal sources, in contrast to open sources, yield a higher information value and should be considered more (Bernhardt, 1994; Jennings & Jones, 1999).

The format of CA. Prescott & Smith (1987) advice to avoid an overconcern for style. The chosen format needs to be effective with regard to the presentation of data (Gelb et al., 1991) and actionable (Cartwright et al., 1995) for the respective planning function. Too much volume is to be avoided (King, 1978) and an appropriate dissemination method is to be set (Goshal & Westney, 1991)

The point of view for analyzing CA information. The point of view for analyzing information needs to be changed and must take into account either individually or both the customer's view (Day & Wensley, 1988), or the competitor's view (Tsai et al., 2011; Zahra & Chaples, 1993).

The content to be analyzed. As such Zahra & Chaples (1993) suggest to analyze reasons for an entrant's failure and, on the other hand, how rivals intend to compete and to position themselves. The analysis should include financial as well as non-financial (i.e. customer-focused processes) measures (Phillips & Appiah-adu, 1998) and tangible and intangible resources (Babbar & Rai, 1993). In Table 11 the research dealing with information requirements for a CA are compiled.

The frequency of the analysis. CA can be either performed as a continuous process (Zahra & Chaples, 1993) or as a project (Prescott & Smith, 1987).

   Method selection. The quality- influencing variables with regard to the selection of a method are either related to:

The selection of the method itself. The selection of an appropriate method influences the quality of the CA result. The decision for a specific CA method should be made consciously and according to the objective of the assignment (Prescott & Grant, 1988). Prescott & Smith (1987) encounter methodological inertia as a pitfall in CA, meaning that an inflexible pursuit of known methods leads to invalid outcomes.

The combination of methods. The combination of methods can be beneficial (Lenz & Engledow, 1986; Prescott & Grant, 1988; Shocker et al., 1990).

The determination of one method. In contrast to the preceding emphasis on the need to combine methods, several authors suggest that the usage of the proposed method itself grants CA quality (Bernhardt, 1994; Dishman & Calof, 2008; Gilad et al., 1993).

   Setting. Elements in the area of how the setting within the organization is designed are mentioned as having an impact on the quality of CA activities. These elements can be structured into the following two spheres:

The cultural sphere. The appropriate culture to establish within the organization should allow for continuous improvement and learning and promotes engagement from the employees (Babbar & Rai, 1993). The organizational culture should also allow for the acknowledgment that there is competition in the market rather than neglecting its existence (Zahra & Chaples, 1993). Open-mindedness helps to overcome possible faulty assumptions (Zahra & Chaples, 1993). Criticalness, as well as creativity are identified as necessary traits for a valuable analysis (Gorman & Howard, 1997). The culture should encourage "trust, facilitate communication and encourage the easy flow of information" (Wright et al., 2002). Jaworski et al. (2002) also stress the importance of building awareness among internal sources about the significance of the knowledge they possess.

The organizational sphere. The organizational setting is essential for CA activities (Bernhardt, 1994; Jain, 1984). Organization-wise several suggestions exist to ensure CA quality. Zahra & Chaples (1993) suggest to include different groups in the CA process, teach employees about competition and integrate CA with the managerial decision-making process. A proximity to the decision-making process (Cartwright et al., 1995; Day & Wensley, 1988; Jennings & Jones, 1999; King, 1978) and top management involvement is suggested (Babbar & Rai, 1993; Francis & Holloway, 2007). Staffing of the CA function is crucial for the provided analysis quality (Goshal & Westney, 1991). Suggested are heterogeneous groups with regard to their hierarchy level, opinions and views (Goshal & Kim, 1986; Jaworski et al., 2002; Zahra & Chaples, 1993). Intraorganisational communication networks should be established (Jaworski et al., 2002; Pirttilä, 1998). Wright et al. (2002) find that a designated location, i.e. a specific competitive

intelligence function with full-time staff, rather than an ad hoc location, in combination with management support for this function and the realization that additional, sustained effort is required for the collection and analysis of information, has the most positive impact. However, other organizational settings exist, such as special project teams, joint theme-related presentations, and CA support groups (Goshal & Westney, 1991).

Output. Referring to the output of CA, criteria for ensuring or defining quality are defined in the areas of:

Review of results and learning. The knowledge created through the use of CA has to accumulate and the creation of a "knowledge bank" is necessary to ensure future use of the information (Prescott & Smith, 1989, p. 13). The current system needs to adapt and allow for learning and development (Day & Wensley, 1988; Goshal & Westney, 1991).

Result characteristics. CA results can be assessed according to their relevance and usefulness (King, 1978), as well as to their comprehensiveness, accuracy, timeliness, confidence (Jaworski et al., 2002).

Table 7 summarizes the identified quality elements according to the suggested four categories.

Table 7   Identified quality elements for CA in four categories

Quality Categories	Quality Elements	
(1) Method design	• Scope • Source of information • Format	• Point of view • Content • Frequency
(2) Method selection	• Selection • Combination	• Determination of one method
(3) Setting	• Cultural • Organizational	
(4) Output	• Review results/ learning • Result characteristics	

4.5 Start-up Related Contributions

With regard to CA methods and processes which consider the resources and needs of start-ups (cf. RQ4), there is no clear focus on this subject in research apparent yet. Only four out of 78 studies provide start-up specific information in their CA research. The earliest paper was published in 1992 the latest in 2008.

The latest study is from McEwen (2008), which discusses a model explaining how environmental scanning enhances knowledge, leads to improved problem-solving, strategic planning and finally new venture success. Implications for entrepreneurs and entrepreneurial education are derived. Entrepreneurs should be continuously learning from the environment and the knowledge base should be growing on an individual and on an organizational basis.

Entrepreneurship programs should include environmental scanning training. A second study performs a case study on a biotechnology services new venture. In this study, Evans & Varaiya (2003) conduct a market opportunity assessment, including a CA. The applied method is to list sources of competitive advantage and determine key strengths and weaknesses of potential competitors. Zahra et al. (2002) use survey data from 228 new manufacturing ventures aged up to 8 years to conclude that inter- and intra-industry comprehensiveness, formality, and user orientation are positively related to new venture performance. The fourth and earliest study by Brush (1992) reports on the marketplace scanning activities in a sample of 66 manufacturing ventures aged between three and six years. The used sources, e.g. customers and competitors, used information collection methods, gathered information type, e.g. competitors' products, customer needs, market growth, and the frequency of scanning activities, were studied.

Of these four contributions specifically assigned to start-ups, none dealt with a CA method or competitor identification approach. No study dealt with any start-up lifecycle related CA specifications. Out of the 22 studies of the contribution type 'competitor identification and analysis approaches' only the model of Shay & Rothaermel (1999) integrates four competitive strategy analysis models and is constructed along the lifecycle of a product, which starts with the offering of a new product. This lifecycle stage might be comparable to a start-up beginning. Although the early stage of a start-up is more dedicated to the conception and development of idea and prototype and finding financial backers (Kazanjian & Drazin, 1989). Also discovering whether they are solving a meaningful problem and whether anybody would hypothetically be interested in the developed solution is conceptualized as early stage (Marmer et al., 2011). The offering of the product is not necessarily the start of a new venture. 15 out of the 22 studies specify no particular use case for the presented approach (indicated as 'open' in Table). It remains unclear whether these approaches meet the requirements of an entrepreneurial setting. However, the research on evaluation and selection of methods (Prescott & Grant, 1988; Singer & Brodie, 1990) can also be consulted by start-ups teams to select the appropriate methods. In the remaining studies, the approaches are applied or derived from different samples ranging from Fortune 500 firms (Rugman et al., 2012) to a hotel in Hong Kong (Mohammed et al., 2014), none of them having an entrepreneurial setting.

4.6 Conceptual Framework

One can notice that research with regard to CA is vast and manifold. One aim of this paper is to provide a cohesive understanding of the CA concept (RQ5), thus, supplying a solid and holistic foundation for (future) researchers and practitioners. Such a synthesis of the findings and their relationships represent a useful and original research contribution (Corley & Gioia, 2011; Whetten, 1989). To this aim, the studies of the final set are analyzed and a synthesis of their findings related to the CA concept is reflected in a conceptual, integrated framework.

The conceptual framework (see Figure 3) provides the following fundamental issues in a simple, but tight and comprehensive form (cf. Al-Debei & Avison, 2010):

(1) The dimensions and elements of the CA concept, that is, what constitutes CA, or what aspects need examining when designing, evaluating, and performing a CA.
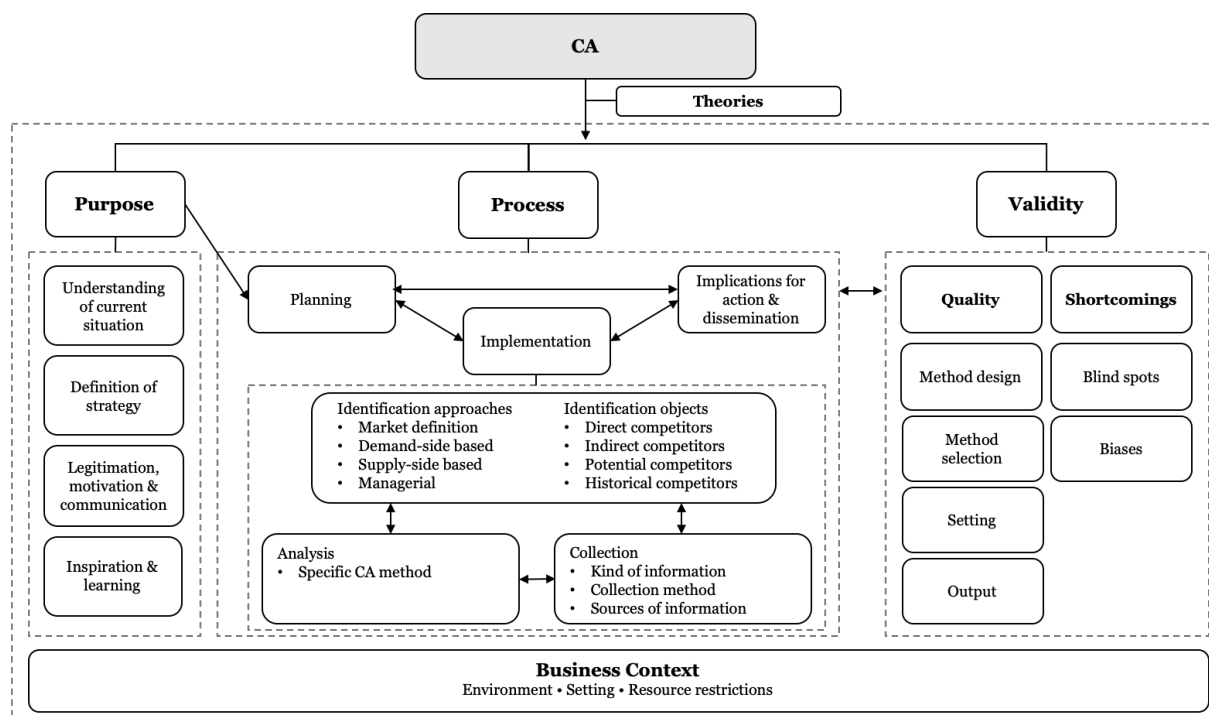
(2) The relationships between theses CA dimensions.

Figure 3   Conceptual framework of CA

The conceptual framework of CA as displayed in Figure 3 comprises five mutually exclusive but complementary and interacting CA facets, i.e. the lens through which CA is studied as well as underlying assumptions (Theories), the purposes for conducting CA (Purpose), the process of conducting CA (Process), the validity of CA based on quality criteria or recognition and remedy of shortcomings (Validity), as well as the contextual factors influencing the purpose, process, or validity (Business Context) . The analysis conducted in this paper suggests that the five facets contain 19 subclasses that emerge from the data, also revealing important interrelationships.

The purposes are clustered into four categories as suggested earlier in this paper (cf. Table 6). The process of CA is displayed as derived in Figure 2. The quality categories and its elements were discussed in detail in a previous section and displayed as proposed in Table 7. However, shortcomings of CA and its quality are two sides of the same coin. The validity of CA can be either assessed through the lens of increasing quality or identifying and decreasing shortcomings, such as biases and blind spots. Such biases and blind spots, e.g. through the poor design of the CA system, or faulty assumptions about the competitors (Zahra & Chaples, 1993) can be reduced through the effective implementation of the quality elements and vice versa. We

categorize quality and shortcomings under the concept of validity. Moreover, the attitude towards CA, the organizational culture, as well as the location of CA within the organization (i.e. the setting), the environment and the resource restrictions of the focal firm potentially impinge on the purpose, process, and quality. The studies analyzed in this work emphasize one or more facets of these CA themes.

5 Discussion and Limitations

5.1 Discussion

At first glance, the topic of CA seems to be of great interest to researchers as can be seen from the sheer number of search hits. Within the strategic management and marketing literature, gaining a competitive advantage or being successful in relation to competitors constitutes a fundamental part. The importance of knowing your competitors and the necessity to analyze them is widely accepted. However, when looking in detail, CA itself was not the main focus of many studies. A possible explanation for the high number of primary search hits seems to be more the subsumption of CA within the broad literature of strategic management or marketing, rather than the substance of the matter itself. The overarching high presence of the search for competitive advantage in many studies without focusing on CA as a process or method also contributes to this phenomenon. In total, we found 78 studies explicitly dealing with CA.

Of these relevant studies, 22 studies create, extend and/or evaluate a competitor identification and/or analysis approach. Yet several questions with regard to their practical usefulness remain unanswered. Most of these studies do not provide indications on which kind of firms, in which industry, in which lifecycle stage it makes sense to apply the approaches, i.e. which one is appropriate in which situation, which goals are being pursued, and how they can be combined. However, two studies strive to support the decision on which method to choose. Prescott & Grant (1988) evaluate 21 techniques along 11 dimensions including resource and data needs. Singer & Brodie (1990) evaluate theories and methods with six criteria that are important when rivalry among a few major competitors is analyzed. However, given the date of these publications, one can doubt the practical usefulness of these tools in today's economy (Sheehan, 2005).

From a start-up's point of view, the results are even more sobering. In the analyzed literature CA is scarcely examined in a start-up context. Only 4 out of the 78 studies are specifically dedicated to start-ups. None of the identified CA methods were designed for start-ups, none of the studies examining how CA is done in practice had start-ups as the object of investigation. Therefore, start-ups' purposes for conducting CA, their specific needs, quality aspects for CA in start-ups might be underrepresented in the results. Keeping in mind the

differences of start-ups and incumbents as outlined in the research context, e.g. the limited resources or potentially divergent CA goals, there is no indication as to what extent the methods and processes are applicable in a start-up context.

One can argue that the emphasis on the mentioned purposes is distributed differently in start-ups and incumbents. Recent literature suggests that finding, understanding and refining a competitive position in the market, where the customer's perception is key, is a main task of an entrepreneur (Aulet, 2013). This can be categorized as part of the identified purposes of finding a competitive advantage and understanding your market. These are purpose subcategories with a high number of mentions. With regard to the definition of strategies, any relevant information eliminates uncertainty and reduces risk when exploiting a business opportunity and make decisions, but the entrepreneur must find the correct balance between ill-informed and ill-judged (Wickham, 2006). Defining concrete strategies is, thus, also a relevant goal for start-ups. On the other hand, purpose subcategories that were not mentioned as often might be more emphasized for start-ups. Legitimation, motivation and communication could be regarded as a major goal of start-ups to perform a CA, as the results may serve to justify the start-up's right to exist towards the founders themselves, investors and employees. Initial reflections on the current entrepreneurship literature indicate that learning and problem-solving could be of high priority for conducting a CA in start-ups. As such, the lean start-up and effectuation perspectives, offer an interesting basis for further discussion.

The Lean Startup approach (Blank & Dorf, 2012; Ries, 2011), a contemporary management methodology, encourages start-ups to develop their product or service iteratively taking into account the fact that they operate in an environment defined by high uncertainty and turbulence (Gruber, 2004), often without a full understanding of the customer problem and the required solution (Giardino et al., 2015). Its goal is to maximize learning while keeping the resource investment low. Based on these validated learnings, the existing development path is being continued or changed. This procedure constitutes the Build-Measure-Learn cycle which iteratively creates knowledge using resources efficiently (Shahid Bajwa et al., 2016). Thus, the goal of the Lean Startup methodology and its predecessor, discovery-driven planning, is to allow for fast and resource-saving learning cycles in order to avoid business failure (McGrath & MacMillan, 1995; Ries, 2011).

The Lean Startup approach finds support in different existing literature areas, such as effectual thinking (Frederiksen & Brem, 2017). Effectuation (Sarasvathy, 2001b, 2001a) is a concept introduced while studying expert entrepreneurs and their approaches to bringing a product to the market. Effectuation processes are specified as taking "a set of means as given and focus on selecting between possible effects that can be created with that set of means" (Sarasvathy, 2001a, p. 245). However, effectuation logic stands in contrast to the underpinning logic of traditional planning, also termed causation (Sarasvathy, 2001a, 2008). Accurate

predictions of the future and careful planning are underlying principles of causation logic. Activities associated with the causation logic are writing a business plan or conducting a CA.

However, Sarasvathy (2001a, p. 245) already states that "causation and effectuation are integral parts of human reasoning that can occur simultaneously, overlapping and intertwining over different contexts of decisions and actions". Chandler et al. (2011, p. 388) argue that both processes are "legitimate ways to initiate and grow businesses". Therefore, CA, although being an instrument of traditional planning, can support to prove and validate primary hypothesis through actual information, avoiding effort based on false assumptions in the mindset of the Lean Startup approach and effectual thinking.

With regard to the complementary properties of these two approaches in entrepreneurial settings (Chandler et al., 2011), we find some hints in the literature that CA (as a typical causational activity) is indeed useful in a start-up context (McEwen, 2008; Zahra et al., 2002). Moreover, since CA is a typical section of a business plan it is not surprising to find it as part of a standard procedure to assess a market opportunity (Evans & Varaiya, 2003). This observation is in line with recent business planning literature, which suggests that business planning in general enhances firm performance for new and established firms (Brinckmann et al., 2010).

Moreover, the lean start-up and effectuation approaches are dynamic and mostly hypothesis-driven. Thus, pivots might be performed and, therefore, adaptions of the business model and the market positioning might occur during the early start-up stages. As a consequence, more or other competitors are revealed or become relevant over time, making repeated CA cycles necessary. Hence, an eventual change of the starting point of the analysis might require an iterative analysis approach, that allows for validated learning cycles. Even though, in the papers we reviewed learning is mentioned as a purpose of CA, it is indeed not a prominent goal. Here we think that, it might be an interesting line of thought for future researchers to consider the high-priority of learning as a goal in the start-up context as a leading dimension for CA. With this in mind, one should be careful about the suitability of traditional CA methods for entrepreneurs or rather have in mind this priority when adapting these methods to the start-up context.

5.2 Limitations

The SLR procedure was performed according to Kitchenham and Charters (2007) and Kitchenham et al. (2009). Nevertheless, this research method has some limitations. The search was organized as a combination of an automatic and a manual search process of a specific set of journals. Relevant studies may therefore be missed due to the omission of potentially relevant journals or articles, and thus this study may lack specific CA methods, purposes, quality elements or reviews. With regard to the selection of journals, especially the focus only on journals ranked B and higher, one can argue that A+, A, and B rated journals might focus

more on theoretical rather than practical issues, such as creating or extending CA methods. We also might have missed CA methods treated in C or lower ranked journals or journals, that were not ranked in the VHB JOURQUAL 3 at all. However, the effects of the limitations due to the inclusion of only major international journals are countered through the forward and backward search. We also cannot be sure that we included all important publications in our search because their title or abstract lacked the applied keywords or they were not cited in any of the identified papers. Additionally, we cannot exclude that the list of keywords is incomplete. Thus, the results of this study are not exhaustive.

For the selection of candidate studies within the search procedures, two researchers decided which studies to include or exclude. After several jointly conducted data extractions to ensure basic consensus among the researchers, the suggestion by Brereton et al., 2007 is followed in the way that one researcher acted as data extractor and the other as data checker. Discussions among the researchers helped in clearing up ambiguities and inconsistencies in terms of mutual understanding of the process, quality and inclusion criteria, as well as data extraction. Erroneous data collection and analysis cannot be ruled out. With respect to the omission of relevant studies, given the subsumption of CA within the broad topic of strategic management, we are more likely to have erred on the side of caution by including studies that were not specifically dedicated to CA. We acknowledge that the validity of this study is based on the discussion and agreement among the researchers involved and that inaccurate categorization is possible.

With regard to the aforementioned design science research project an additional literature review going beyond scientific studies and including textbooks and non-scientific sources that deal with CA might be useful. Since CA is not only of scientific but also of highly practical relevance, these sources on the topic of CA exist and might enrich the knowledge base to build upon significantly, especially with regard to existing methods and their selection criteria.

6 Conclusion

In this paper we conducted a conceptually organized systematic literature review with representative coverage and focused on research outcomes addressing the general scholar as audience and taking a neutral representation perspective. We aimed to examine which CA methods and processes are recognized in the literature, and which purposes and quality elements for conducting CA are mentioned. Furthermore, we were particularly interested in finding studies that are relevant for start-ups.

Out of 78 studies we were able to extract six research contributions within the field of CA. Twenty-four studies review, create, extend and/or evaluate a competitor identification and/or analysis approach. Four main purpose categories could be identified: Understanding of the

current situation, the definition of a strategy, legitimation, motivation & communication, as well as inspiration & learning. These main categories are comprised of eleven sub-categories.

We also analyzed CA quality elements, that were dispersed throughout the studies, and gathered and categorized them into four CA quality element categories: the design of the CA method, its selection, the organizational setting, in which CA takes place, as well as criteria to ensure or define a good CA output.

Only four start-up specific studies were discovered, leading to a general underrepresentation of start-up particularities within the results. Given the great attention that start-ups have already received in the recent literature, as well as in education and practice, this finding is rather surprising.

A conceptual framework is derived that provides an overview of the fundamental issues in CA in a simple, but tight and comprehensive way. It comprises five mutually exclusive but complementary CA facets, and their 19 subclasses that emerge from the data. Important interrelationships are revealed and displayed. This hierarchical classification of components describes the CA theme comprehensively.

Based on the results of this study, further research in the field of CA can be suggested – especially for researchers in the entrepreneurship field. An elaboration of the specific requirements of start-ups with regard to the application and outcome of CA, considering their distinct characteristics such as limited resource availability, would be one avenue specifically worth exploring. This also implies to further develop an understanding about what it is that nascent entrepreneurs strive to find out through conducting a CA, what are their explicit and implicit purposes. Potentially interesting research questions might be formulated as: *"Why do nascent entrepreneurs conduct a CA?", "What are the antecedents and consequences of conducting CA?" or "What do start-up teams struggle with when conducting CA?"* The existing approaches should be analyzed according to their suitability for start-ups, in particular those supporting start-ups with their selection of CA methods. It might also be interesting to further explore if these requirements, purposes, antecedents and consequences of conducting CA are different in the lifecycles of a start-up, especially when regarding the early stages, that are dedicated to formulating and validating the value proposition and business model (Marmer et al., 2011). Because CA in entrepreneurial settings is a rather unexplored field, qualitative explorative research designs might be necessary to develop an in-depth understanding.

With regard to the aforementioned motivational design science approach a research gap worth exploring are research questions in the spirit of *"How can start-ups perform a viable CA?"*. However, the design science research field in the entrepreneurial context, including the understanding of the problems and specific requirements of start-up teams is not limited to CA. Other management tools, processes or artefacts are also worth exploring with regard to their suitability and improvement potential for start-up purposes. An example might be the financial

planning and budgeting for start-ups, as running out of cash is also one of the most common reasons for start-up failure (CB Insights, 2016).

With regard to entrepreneurship education, McEwen (2008, p. 1) speaks of a "capability gap because of the discrepancy between [the entrepreneurs'] current knowledge and the information that is relevant to the current business environment". Finding ways to close this capability gap are therefore important. In particular, such practices should be part of Entrepreneurship Education. CA is usually seen as part of the description of the market opportunity (Edelman et al., 2008), but this acknowledgement is not more than a starting point for the development of CA competences. As an example illustrating the current sense of priority for the topic, the "EntreComp conceptual model" – a model for entrepreneurial competences published by the European Commission's in-house science service – only mentions CA as a form of social skill under the section 'working with others' (Bacigalupo et al., 2016, p. 13). Similarly, in an OECD background paper on Entrepreneurship Education, CA is not mentioned at all (Lackéus, 2015, p. 13). Implicitly, CA may play a role in topics like "opportunity recognition", "business plan" or "marketing assessment", but this reflects a very low priority in the overall picture of entrepreneurship competences. Based on the observations, both in the field and in the role of CA in entrepreneurship education approaches, there seems to be a competence gap, which among other reasons, may relate to the lack of methods and tools for CA in the context of new ventures.

Thus, further research on the topic of CA might not only be interesting for researchers, but may serve as sound knowledge to support practitioners to teach entrepreneurship, build a start-up, or coach entrepreneurs for example in accelerator or incubation programs. Clearly, while CA in a start-up context has been more or less neglected in the literature, it seems worthwhile to scientifically explore this topic further and, thus, enhance entrepreneurial understanding of once traditional strategic management and other tools.

6.1 Theoretical contributions

In contrast to other studies analyzing different aspects of CA in detail, our findings considerably extend the knowledge by examining the relevant field of CA in a comprehensive manner and with a special view on entrepreneurship and start-ups. Our study results in the identification and clustering of CA purposes, methods and processes, as well as quality criteria. We combine the various identified aspects of CA into a unified framework and elaborate relationships between these aspects, thus, enhancing the understanding of the phenomenon (Whetten, 1989). The derived conceptual framework synthesizes the facets of the CA theme in a novel manner and not only highlights and structures the major facets and subordinated elements related to the CA concept but also reveals their interrelationships. It also provides a foundation and guidance for researchers within this field. It may provide support for the

scientific research community since it organizes the CA theme and enables to communicate, compare, classify, analyze, and evaluate their existing and future CA research.

The findings also reveal that research within the field of CA and entrepreneurship is scarce, but worth further exploring. Consequently, we believe that our findings extend the existing knowledge base in the domain of CA and may serve as a reference point for future research.

6.2 Practical contributions

The findings also carry relevant implications for practice. The new conceptual framework of the CA theme provides a foundation and guidance for educators and practitioners, who aim to gain an overview of the topic and teach or utilize CA. It may also serve as basis for entrepreneurship programs and education, where the curriculum can be enriched by suitable CA methods, their selection and application.

Within the practice community the categories may serve as reference point for sharing, discussing, comparing and evaluating best-practices. The derived quality criteria might be of help to practitioners for assessing and designing new CA tools in a rigorous way. The findings, thus, can be utilized to design a viable and successful CA artefact that can be used by entrepreneurs, start-up coaches, and entrepreneurship educators alike.

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Appendix

Table 8   Research contribution: CA practices

Author (s), year	Sample	Reports on	Q1	Q2	Q3	Q4	Q5	Start-up
(Bamberger, 1989)	1,135 Small and Medium-sized Enterprises (less than 500 employees)	26 factors to gain competitive advantage out of six categories (competence and image, marketing capabilities, technological competences and service, financial capabilities, creativity and product differentiation, low cost and pricing policy)	n	n	y	n	n	n
(Goshal & Westney, 1991)	Three global companies	CA system assessment by user and creator; gaps between needed and delivered outcome	y	n	n	n	y	n
(Brush, 1992)	66 recently formed ventures, aged at least three years old but no more than six years old	Marketplace information scanning activities, the used sources, methods and frequency	y	n	y	n	n	y
(Porac et al., 1995)	89 Scottish Knitwear Producers	Market boundary definition through an industry model	n	y	y	y	n	n
(Jain, 1984)	37 executives/ managers in 11 large corporations	State of environmental scanning, techniques used to analyze the scanned information	y	n	y	n	y	n
(Jennings & Jones, 1999)	9 leading firms of the emerging traffic management technology industry	Importance given to task and general environment, scanning activities, techniques	y	n	n	n	y	n
(Subramanian & Ishak, 1998)	85 firms of 14 industries	Types and sources of information, Difficulties to obtain information	y	n	y	n	n	n
(Pirttilä, 1998)	A Finnish, multi-nationally operating forest industry corporation	Competitor intelligence process	y	n	y	n	y	n
(Gelb et al., 1991)	20 high-level executives from industrial manufacturers and service organizations	Factors the executives wanted to know about, sources, methods	y	n	y	n	y	n
(Bennett, 2003)	134 British charities	Formality and outcomes of CA system, sources and uses of information, type of competitor monitored	y	n	y	n	n	n
(Guilding, 1999)	217 of New Zealand's largest companies	Competitor-focused accounting practices	y	n	y	n	n	n
(Tarraf & Molz, 2006)	7 nightlife and 8 multimedia small companies in Montreal	The importance of CI, attitude towards monitoring the competition is either seen as strength and being in control or as weakness, personal contact to competitors	y	n	y	n	n	n

			Q1	Q2	Q3	Q4	Q5	Start-up
(Fann & Smeltzer, 1989)	48 owners/ managers of small businesses	Use of Information from and about competitors	y	n	y	n	n	n
(Smeltzer et al., 1988)	88 owner/ managers of small service and retail firms without planning departments	Environmental Scanning	y	n	y	n	n	n
(Callahan & Cassar, 1995)	127 owner/ partners of small business firms with 1-200 employees from different sectors	Market research behavior and its antecedents	n	n	y	n	n	n
(Prescott & Smith, 1989)	95 corporate CI practitioners	Components of CI programs	y	n	y	n	y	n
(Peyrot et al., 1996)	186 US industrial wholesaler firms, from small to large	Competitive intelligence behavior and barriers to it	y	n	y	n	n	n
(Clark & Montgomery, 1999)	qualitative study: 37 MBA students + 20 executives	Managerial competitor identification, attributes in identifying competitors	n	y	y	n	y	y
(Cartwright et al., 1995)	74 US based medium to large size companies	Competitive analysis and strategic orientation	y	n	y	n	y	n
(Wall, 1974)	1,211 respondents (mostly management positions)	Espionage, level of interest in competitive information, formality, sources of information, protective measures, kind of information management needs to know	y	n	y	n	n	n

y = yes; n = no; start-up= start-up context considered

Table 9   Research contribution: CA as part of an organizational system

Author (s), year	Contribution	Q1	Q2	Q3	Q4	Q5	Start-up
(Lenz & Engledow, 1986)	Five models of organizational environment analysis, i.e. 1. industry structure model, 2. cognitive model, 3. organization field model, 4. ecological and resource dependence model, and 5. era model.	n	n	n	n	y	n
(Prescott & Smith, 1987)	Framework for project-based competitive analysis	y	y	y	y	y	n
(Babbar & Rai, 1993)	Guidelines for the design and implementation of effective competitive intelligence systems and for the redesign of managerial processes for intelligence gathering and utilization	y	n	n	n	y	n
(Gilad et al., 1993)	Disciplined Approach to CI Analysis	y	y	n	y	y	n
(Bernhardt, 1994)	Description of the competitive intelligence activity	y	y	n	n	y	n
(Zahra et al., 2002)	Inter- and intra-industry comprehensiveness, formality, and user orientation of CA activities	y	n	n	n	y	y
(King, 1978)	Criteria for relevance and usefulness of information systems	y	n	n	n	y	n
(King et al., 1978)	Competitive profile subsystem/ intelligence subsystem / cost-benefit subsystem / strategic issue competitive information system (SICIS) / COSMOS (Competitive Scenario Modelling System)	y	n	y	n	y	n

		Q1	Q2	Q3	Q4	Q5	Start-up
(Dishman & Calof, 2008)	Model of competitive intelligence	y	y	n	n	y	n
(Goshal & Kim, 1986)	Design and problems in competitive intelligence systems	y	n	n	n	y	n
(Zahra & Chaples, 1993)	Blind spots in CA	y	n	n	n	y	n
(Jaworski et al., 2002)	Framework for generating competitive intelligence	y	y	y	n	y	n
(McEwen, 2008)	Conceptual Model of Entrepreneurs' Information Scanning Behavior and Entrepreneurial Success	y	n	y	n	n	y
(Wright et al., 2002)	Typology of companies reflecting four attributes of CI activity	y	n	y	y	y	n
(Tsai et al., 2011)	Competitor Acumen Framework	y	y	y	n	n	n
(Yasai-Ardekani & Nystrom, 1996)	Major design features and their adoption to contextual factors	y	n	y	n	y	n

y = yes; n = no; start-up= start-up context considered

Table 10   Research contribution: Review

Author(s), year	Review on	Q1	Q2	Q3	Q4	Q5	Start-up
(Deshpandé & Gatignon, 1994)	Literature on CA using an information focus about who competes (brands and firms), where they compete (market structure boundaries) and how they compete (behaviors and strategies). Methods for understanding the competitive structure (three approaches: analysis of actual consumer purchases, analysis of consumer judgments, and an approach based on inferences made from the competitors' strategies) and methods for understanding competitive behaviour, such as Porters five forces, are outlined. Human and cultural biases are discussed. These include a lack of or overemphasis on competition, organizational or cultural biases.	y	n	y	n	n	n
(Fahey et al., 1981)	A conceptual typology of environmental scanning and forecasting systems is developed as an extension of an earlier model. The systems are characterized as irregular, periodic or continuous according to their sophistication and complexity. Relating to potential usefulness and actual usage of various scanning/forecasting methodologies scenario writing is deemed as the single most important technique.	y	n	y	n	n	n
(Yasin, 2002)	Benchmarking in general organizations/ applications, support functions, manufacturing, services, public sector.	y	n	y	n	n	n
(Dattakumar & Jagadesh, 2003)	Growth and development of the benchmarking concept.	y	n	y	n	n	n
(Francis & Holloway, 2007)	Typologies, criticisms, and the evaluations for the effectiveness of benchmarking, and the demarcation of best-practice benchmarking.	y	n	n	n	y	n
(Ghazinoory et al., 2011)	Literature review of SWOT analysis based on a 557 papers	n	y	y	n	n	n

y = yes; n = no; start-up= start-up context considered

Table 11   Research contribution: Competitor information requirements

Author(s), year	Type of contribution	Information requirement	Q1	Q2	Q3	Q4	Q5	Start-up

(Rothman, 1964)	Checklist	Competitive Marketing Audit	y	y	n	n	n	n
(King & Cleland, 1974)	System	Competitive Information Subsystem	y	y	n	n	y	n
(Patterson & McCullough, 1980)	Procedure	A market study methodology for small businesses	y	y	n	n	n	n
(Moyer, 1982)	List	Competitor analysis information list	y	y	n	n	n	n
(Farmer, 1984)	Framework	Approach to competitive analysis in supply markets	n	y	n	n	n	n
(Carpenter & Lehmann, 1985)	Model	Model of brand switching	n	y	n	y	n	n
(Varadarajan, 1985)	Classification	Two-factor classification of competitive strategy variables	y	y	n	y	n	n
(Ball, 1987)	Outline	Competitor profiles of human factors	y	y	n	y	n	n
(Press, 1990)	Framework	Management philosophies. Goal orientation by type of measurement	n	y	n	y	n	n
(Dillon et al., 2001)	Model	Decompositional model for analyzing brand ratings	n	n	n	y	n	n

y = yes; n = no; start-up= start-up context considered

Table 12   Research contribution: Application

Author(s), year	Applied in	Application of	Q1	Q2	Q3	Q4	Q5	Start-up
(Evans & Varaiya, 2003)	Biotechnology Services Investment Firm	Market opportunity assessment, including competitive analysis	n	n	n	y	y	y
(Rodríguez Pomeda et al., 2001)	Spanish electricity industry	Strategic matrix of technological competencies (SMTC)	n	y	n	y	n	n
(Lema & Price, 1995)	Discussion about the application in several large firms	Benchmarking in total quality management	y	n	y	n	n	n
(Phillips & Appiah-adu, 1998)	63 UK Hotels	Benchmarking of strategic planning design parameters	n	n	y	y	y	n