Antecedents and Outcomes of Competence Development in Organizations:

a Systematic Literature Review

Nienke Woldman MSc (corresponding author), dr. Piety Runhaar, dr. Renate Wesselink, 
& Prof. dr. Martin Mulder

Education and Competence Studies, Social Sciences Group, Wageningen University
P.O. Box 8130, 6700 EW Wageningen, the Netherlands.
Correspondence via: nienke.woldman@wur.nl

Keywords: Competence Development, Antecedents, Outcomes
Abstract

Assuming that employee performance is the key to organizational success, many organizations nowadays focus on stimulating employees to participate in competence development (CD) activities to improve their competences and, subsequently, their performances. Also in the scientific literature, increasingly, studies are conducted on employees’ CD in organizational settings, its outcomes and antecedents. However, we observed that this literature on CD is spread over a wide range of research domains – related to various professions or functions that are subject of study. The present systematic literature review aimed at collecting research about antecedents and outcomes of CD published in different research domains and to provide suggestions for future research. To gather data, one search string was put in three databases (Scopus, Web of Science and ERIC), together resulting in 909 unique empirical studies. Via different phases of analysis, this selection was narrowed down towards 30 publications spread over different relations presented in our conceptual model (see Figure 2). We observed that the heterogeneous character of the publications was even larger than expected, and we elaborated on trends recognized in the publications in general, and within each category in a narrative way. We concluded that no single study focused on both antecedents and outcomes of CD, with outcomes specifically referring to performances of employees via their competences. The research domain of antecedents and outcomes of CD is in its infancy and we propose for future research to focus on studying multiple CD-activities and its effects on multiple outcomes in terms of competences and performances. (250 words)
Introduction

Along with the on-going substantial changes in our society in which economic growth originates to a large extent from knowledge instead of “traditional” resources such as money, natural resources and man power (Drucker, 1993; Machlup, 1980), organizations increasingly depend on human capacities. Employees’ performances are perceived to be the key to organizational success (cf. Rothaermel & Hess, 2007), which makes that organizations also increasingly pay attention to employees’ competence development. That is, competences, referring to integrated clusters of knowledge, skills and attitudes to successfully perform these tasks (Mulder, 2001, 2014), are inextricably linked to performance. Competence development (CD), referring to the process of acquiring competences by means of formal and informal learning activities in the workplace (cf. Tynjälä, 2008), is a current topic in scientific literature (Kock, Gill, & Ellström, 2008). However, given the variety of professions that are subject of study, literature on CD is spread over a range of research fields (Tynjälä, 2013), like medical and health care professions (Kearney & Kenward, 2010), entrepreneurs (Mulder et al., 2007), library staff (Tammaro, 2007), or teachers (Grangeat & Gray, 2007). Besides, we observed that CD is studied from different perspectives, including a managerial (or: strategic) perspective in which often the focus is placed on improving employees’ performances and, ultimately, organizational performances (Bowen & Ostroff, 2004), or an educational perspective focusing on the possibilities of learning at the workplace (Billett, 2004, 2008; Tynjälä, 2013). Together, these aspects of fragmentation create a research field that is very broad.

In the present systematic literature review, we want to gain insight in factors influencing CD (referred to as antecedents) and also in outcomes of CD, in terms of (improved) competences and subsequent performances at the work floor. Specifically, we believe that CD can make a difference in improving employees’ competences and subsequent
performances, and we also acknowledge that different antecedents might contribute to or constrain the involvement of employees in CD-activities (Kyndt & Baert, 2013). As such, this study combines a managerial and educational perspective, and aims to collect publications spread over different research domains in order to provide a complete picture of relations between CD, and its antecedents and outcomes as studied to date. Besides, we want to map the terrain of research and provide suggestions for future research. Hence, our research questions read: (1) *What antecedents and outcomes of employee’s competence development have been studied?* (2) *What are important directions for extending our knowledge in this field of research?* Figure 1 presents the conceptual framework along which we organized literature.

![Conceptual model](image)

*Figure 1.* Conceptual model, showing the initial conceptualization of competence development, its antecedents and outcomes in terms of employee’s competences and performances. Note that, purposively, we used generic concepts that need to be specified by means of the review, and that we left out the direction of the relations among concepts.

In the next section presents the search strategy for collecting publications, the process of distracting relevant publications, and the way the publications were analysed.

**Methodology**

**Searches and Search Strategy**

Related to the heterogeneity of the data, our review served both a configurative and an aggregative function and as such can be characterized as a “thematic summary” (Gough,
Oliver, & Thomas, 2012). A search was conducted in three different electronic databases: Scopus, Web of Science and ERIC. ERIC was chosen for its focus on studies in the field of education and learning. Since our topic is studied in various research domains, we considered it appropriate to search for literature as well in the multidisciplinary databases Scopus and Web of Science. In all databases the same search string was used (see Table 1). Specifically, the search string was refined with document type, which limited the search to articles, conference proceedings, and articles in press. Besides, as we wanted to gather empirical studies, we excluded review studies. No limitation was set regarding the time span.

Table 2 presents the results of the searches in the different databases. It shows that there was hardly any overlap between the publications found by Scopus and those found by Web of Science, and also in ERIC the majority of publications included unique hits (N=909 publications).

<table>
<thead>
<tr>
<th>Set</th>
<th>Search terms in “title”/”topic”, “abstract”, and “key words” field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence</td>
<td>(competenc* OR ”professional competenc*” OR ”individual capabilit*”)</td>
</tr>
<tr>
<td>Performance</td>
<td>(performance* OR outcome* OR result* OR productivit* OR effect*)</td>
</tr>
<tr>
<td>Competence development</td>
<td>(growth OR learning OR development)</td>
</tr>
<tr>
<td>Employee</td>
<td>(worker* OR employee*)</td>
</tr>
<tr>
<td>Other</td>
<td>Search was refined with ‘document type’ limited to: article, conference paper, article in press.</td>
</tr>
<tr>
<td>Excluded terms</td>
<td>AND NOT (“organizational performance*” OR “firm performance*” OR “business performance”)</td>
</tr>
<tr>
<td></td>
<td>AND NOT (child* OR adolescent* OR student*)</td>
</tr>
<tr>
<td></td>
<td>AND NOT “organizational competenc*”</td>
</tr>
<tr>
<td></td>
<td>AND NOT education</td>
</tr>
</tbody>
</table>

*Note1.* An asterisk (*) refers to a place in the search term that can be replaced by any outcome possible. A question mark (?) can only be replaced by one single letter.  
*Note2.* The search was conducted on 3 July 2013.
### Table 2. Results of the Search in Scopus, Web of Science and ERIC

<table>
<thead>
<tr>
<th>Database</th>
<th>Amount of publications</th>
<th>Overlap with …</th>
<th>Overlap within database</th>
<th>Unique hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scopus</td>
<td>718</td>
<td>-</td>
<td>3</td>
<td>715</td>
</tr>
<tr>
<td>Web of Science</td>
<td>120</td>
<td>2 publications overlap with Scopus</td>
<td>1</td>
<td>117</td>
</tr>
<tr>
<td>ERIC</td>
<td>97</td>
<td>20 publications overlap with Scopus</td>
<td>-</td>
<td>77</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>909</td>
</tr>
</tbody>
</table>

*Note. Review studies are excluded from these numbers (N=101).*

### Analysis

The analysis of publications occurred via three successive phases. Below these phases are explained in detail.

**Phase 0: selection of relevant publications.** The first author of this paper open coded the publications (in Endnote X5), based on their titles and abstracts. A division was made between “relevant” and “irrelevant”, on the base of content. As we aimed to focus on English publications\(^1\), eleven non-English publications were excluded from the sample. This resulted in a first selection of 295 relevant publications.

**Phase 1: open coding of relevant publications.** Codes provided to the publications typified the subject of the publication and were formulated as specific as possible. To check the procedure, the second author of this paper open coded a sample of the publications as well, including all publications that had a first author name starting with the letter S (85 publications, 9.4% of the total sample). With the coding of the first author as a starting point, the coding strategies of both authors were compared, and the decisions that were taken with regard to specific publications were reported in a log file. After replacing several categories and specific publications, the selection was narrowed down to 71 publications.

Upon closer inspection, we excluded conference papers (19) based on the assumptions that (a) the quality of these papers was expected less than the peer-reviewed publications, and that (b) important conference proceedings would have been published elsewhere in a peer-

\(^1\) We purposively did not exclude non-English publications on beforehand, to get insight in the amount of non-English publications in our sample.
reviewed contribution. Moreover five articles were excluded because full text not available after several attempts to get it. As such, a selection of 47 publications were used for further analysis.

**Phase 2: in-depth analysis of selected publications.** A narrative approach was used to create an overview of the research field. The first and second author conducted the narrative part of the analysis, in which the second author replicated the analyses of the first author for a random selected sample (n=8) of the 47 publications. This replication included reading and analysing the full texts independently. Afterwards, the findings of the first and second author were compared and discussed. Of the 47 publications, 17 publications were excluded from further analyses, because, after reading the full texts, it turned out that publications were out of scope (13) or because they turned out to be conceptual papers (4). The final selection included 30 publications, spread over the different relations of the conceptual model (see Figure 2).

Besides, the first author coded the methods of the publications by means of a coding scheme, to allow for comparisons between the publications regarding its methodological quality. A coding scheme was developed, existing of eleven methodological aspects, including codes for indicating sample size, research design, instruments used, functions/roles of participants, impact factor of the journal².

---

² The complete coding scheme can be obtained from the corresponding author.
Results

In this section, we first provide a general overview of the publications to illustrate the diversity of the selection. Second, the results of the narrative analysis are presented along the relations between antecedents (ant), competence development (CD), competences (C) and Performances (P), as depicted in Figure 2. Specifically, each relation is treated as a different category (e.g., publications about the relation between a CD-activity and a competence, are presented as ‘CD-C’).

General Overview and Category-Transceding Findings

Of the thirty studies, 28 were published after 2000, and sixteen of these publications were published after January 2010. The studies were conducted in various countries, spread over all continents (Africa: 1, Asia: 10, Australia: 4, Europe: 6, Northern America: 6, Southern America: 1). One study was conducted across three different countries, including Denmark, U.S.A. and Hong Kong, and in one study no country was described. Besides, studies were conducted in various sectors, as illustrated in Table 3.
Table 3. Overview of Sectors in which the Selected Studies were Conducted

<table>
<thead>
<tr>
<th>Sector</th>
<th>Amount of Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial</td>
<td>3</td>
</tr>
<tr>
<td>Industrial</td>
<td>4</td>
</tr>
<tr>
<td>Retail</td>
<td>1</td>
</tr>
<tr>
<td>Service</td>
<td></td>
</tr>
<tr>
<td>Medicine &amp; health care organizations</td>
<td>6</td>
</tr>
<tr>
<td>Education</td>
<td>2</td>
</tr>
<tr>
<td>Governmental organizations (local or central)</td>
<td>3</td>
</tr>
<tr>
<td>Other profit service organizations</td>
<td>8</td>
</tr>
<tr>
<td>Sector unclear</td>
<td>3</td>
</tr>
</tbody>
</table>

Studies focused on various functions/roles, like administrative and clerical personnel, blue collar workers, extension workers, IT-specialists, pharmacy assistants, software engineers, or trainers. Still, a large amount of the studies (12) focused on employees with a managing or supervising role (in diverse levels of the organization). As Table 4 shows, some studies focused on one group of employees with the same function/role, where other studies focused on employees with different functions/roles. Moreover, a distinction was recognized between studies that were conducted within one organization, or in multiple organizations.

Table 4. Overview of Studies Conducted in One or in Multiple Organizations, and with a Focus on Employees with One or with Multiple Functions/Roles

<table>
<thead>
<tr>
<th>Focus on employees with the same function/role</th>
<th>Within one organization</th>
<th>In multiple organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on employees with different functions/roles</td>
<td>10</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. In three publications it was unclear on which function/role it focused. One of these studies included a simulation study. The other two studies were conducted within one organization.

Table 5 shows that within each category a variety of research designs was used. A quantitative cross-sectional design appeared to be the most popular research design (14). Moreover, the majority of the publications used a pure quantitative research design (20). In two cases, simulation studies, the research design was unclear.
### Table 5. Overview Research Designs of Thirty selected Publications

<table>
<thead>
<tr>
<th>Research Design</th>
<th>Amount of Publications per category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ant-C</td>
</tr>
<tr>
<td>Quantitative / cross-sectional</td>
<td>2</td>
</tr>
<tr>
<td>Quantitative / longitudinal</td>
<td>2</td>
</tr>
<tr>
<td>Qualitative / cross-sectional</td>
<td></td>
</tr>
<tr>
<td>Qualitative / longitudinal</td>
<td></td>
</tr>
<tr>
<td>Quant. + Qual. cross-sectional</td>
<td>1</td>
</tr>
<tr>
<td>Quant. + Qual. longitudinal</td>
<td>3</td>
</tr>
<tr>
<td>Research design was unclear</td>
<td>2</td>
</tr>
</tbody>
</table>

Relations between concepts

In all categories of publications, we observed the trend that relations between concepts were primarily studied linearly in terms of single or multiple regression analysis (i.e., Dysvik et al., 2013; Papa, 1989; Rowold & Kauffeld, 2009; Schulz & Stamov Roßnagel, 2010; Tharenou & Harker, 1982), or without direction in terms of bivariate correlations (i.e., Palo & Padhi, 2003; Tiraeyari et al., 2011). For example, Rowold and Kauffeld (2009), studied the relative impact of formal and informal career-related continuous learning (CRCL) activities (treated as CD) on work-related competencies (C) by means of multiple regression analyses. These authors concluded that informal CRCL-activities, such as “discussing work-related problems with colleagues” (Rowold & Kauffeld, 2009, p.94), had a relatively high impact on the development of employees work-related competencies compared to formal CRCL-activities and organizational tenure. No conclusions could be drawn with regard to the possible reciprocal relation between these concepts, which was also the case for the other studies in our selection.

The next section presents the narrative analysis of our study.

Narrative analysis

Antecedents of Competences

Two publications, both operating from a management perspective, focus on contextual factors and their influence on manager’s competences. Ooi and colleagues (2012) studied the
relation between Total Quality Management (TQM) practices and knowledge sharing of middle managers working in manufacturing sectors. Based on a Confirmatory Factor Analysis that showed significant influence of three out of five measured TQM-aspects (i.e., ‘teamwork’, ‘training and development’, and ‘costumer focus’), the authors concluded that TQM is positively related to knowledge sharing. The other study in this category was the one by Page and colleagues (2003). These authors studied the influence of sixteen environmental variables (related to interpersonal context of the organization, other resources of the organization, and the organization’s structure and culture) on managerial competences. The authors report on an exploratory factor analysis and concluded that eight perceived contextual factors explained manager’s competences, including: ‘negative organizational culture’, ‘positive organizational culture’, ‘good support from supervisors, subordinates, consultants and professional services’, ‘poor professional services’, ‘management development’, ‘SME management’ and ‘personal characteristics’. Specifically, organizational culture appeared to be an important determinant of management effectiveness. As both studies were not clear about the methods they used to analyse the relations they propose, results of both studies have to be treated with some caution.

**Competence Development and Competences**

Seven publications reported on the relation between CD and outcomes in terms of competences. The publications in this category differed with regard to a focus on either formal or informal CD-activities, or both. Tebes and colleagues (2011), for example, studied the effectiveness of a formal CD-activity, namely a competence-based training on three supervisory competencies (i.e., ‘managing supervisory relationships’, ‘managing job performance of supervisees’, and ‘promoting professional development of supervisees’) of clinical supervisors. In a small-scale longitudinal study the participating supervisors (N=34)
reported significant increases in all three types of supervisory competencies after the training was finished. The largest gains were observed seven months after the training had started.

Beausaert and colleagues (2013), in contrast, focused on the relation between Professional Development Plans (PDPs) and job competencies in the context of Pharmacy assistants. PDPs were in this study defined as ‘an assessment tool embedded in a larger assessment cycle of development and performance interviews’ (Beausaert et al., 2013, p. 146) and, as such, can be defined as a tool to manage more non-formal learning activities. The authors compared a group that used PDPs to report on their learning activities, compared to a group non-users and concluded that users of the PDPs did not plan more training activities in the future compared to the group of non-users.

Rowold and Kauffeld (2009) studied the effectiveness of career-related continuous learning (CRCL) activities on three types of work-related competencies (i.e., ‘social’, ‘method’, and ‘professional’ competencies), and distinguished between formal and informal CRCL-activities. The authors concluded that informal CRCL-activities (e.g., ‘reading’ or ‘discussing new ideas with colleagues’, p.92) had a relative large contribution to the three work-related competencies, compared to formal CRCL-activities.

Two publications in this category included simulation research and, as such, comprised a special sub-group in this category. One of these simulation studies, conducted by Kantola and colleagues (2011), studied the expected impact of development activities of operators of a nuclear power plant (N=84), on their occupational competences. The authors used a ‘soft-computing method’ in which the operators can roughly test the impact of a particular training possibility for themselves. The authors argued that this type of simulations create the possibility for involving employees more in their own development programme which, in turn, improves their commitment to the organization and motivates to develop their capacities.
Within these eleven publications, we observed two distinct types of research. On the one hand, we found studies that primarily focused on the development and evaluation of a particular CD-activity; in all cases a training programme (i.e., Arlbjørn et al., 2006; Braun et al., 2005; Casado-Lumbreras et al., 2009; Hayes, 2007; Hynes, 2012; Palo & Padhi, 2003; Sail & Alavi, 2010). These studies reported on participants’ learning outcomes as a means to evaluate the training and focus on the design of the training programme, rather than focusing on the effectiveness of this training for the employees. We observed that these studies show less complicated analyses – publications mostly rely on mean scores of employees of particular course aspects, percentages showing the amount of satisfaction, or correlations between different course aspects – and show less transparency regarding the used methodology.

On the other hand, we found studies that focused on the effect(s) of a certain CD-activity on employee’s performances (i.e., Bapna et al., 2013; Beausaert et al., 2013; Dysvik et al., 2013; Papa, 1989; Saravani & Abbasi, 2013). It is this type of research on the relation between CD-activities and performances we were initially interested in. Table 6 shows the relations studied in these four publications.

<table>
<thead>
<tr>
<th>Authors (year)</th>
<th>Measured CD-activity</th>
<th>Measured Outcome of CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bapna et al. (2013)</td>
<td>Two types of ICT-training (general vs. specific)</td>
<td>Job performance</td>
</tr>
<tr>
<td>Dysvik et al. (2013)</td>
<td>Perceived training intensity</td>
<td>Work effort</td>
</tr>
<tr>
<td>Papa (1989)</td>
<td>Training programme on communicator competence</td>
<td>Employee performance</td>
</tr>
<tr>
<td>Saravani &amp; Abbasi (2013)</td>
<td>Job rotation</td>
<td>Job performance</td>
</tr>
</tbody>
</table>

Three of these publications studied the influence of a training – a formal learning activity – on employee performance (i.e. Bapna et al., 2013; Dysvik et al., 2013; Papa, 1989).
Specifically, Papa (1989) examined the impact of a single communication training on employee’s performances in their use of new technology. Bapna et al. (2013), distinguished between two types of competence (domain versus technical) and also distinguished between two types of training (general versus specific). Both studies found positive significant relations between the conducted training and employee’s performances. In contrast, Dysvik and colleagues (2013) did not find significant relations. They investigated the relation between perceived training intensity (PTI) on work effort of employees (N=323), defined as ‘the amount of energy put in a task per unit of time’ (Seo et al., 2010, as cited in Dysvik et al., 2013, p. 1). Moreover they studied the moderating role of perceived supervisor support in this relation. Hierarchical moderated regression analyses were used to study the relations between the concepts. The authors found no significant relation between PTI and work-effort, and also the moderating role of perceived supervisor support showed to be non-significant.

Saravani and Abbasi (2013) investigated the influence of job rotation on job performance, in which job-rotation can be perceived as a more informal learning activity. The authors found a significant positive relation between job rotation and performance, and also found that this relation was mediated by job satisfaction.

As such, despite all four publications in this category measure the relation between a CD-activity and performance, they all have their own focus. Where the one study distinguishes between different types of trainings, the other distinguishes types of outcomes such as job performances or job satisfaction.

Competences and Performances

The nine publications in this category showed a variety of competences and performances as objects of study (see Table 7). Where some studies focused on ‘general’ competences employees – referring to competences one needs for performing (m)any kind(s) of functions/roles, such as ‘social competence’ or ‘learning competence’ – other studies
focused on specific competences – referring to competences that are needed for a particular function/role, such as ‘virtual competence’, or ‘leadership development competency’.

<table>
<thead>
<tr>
<th>Publication</th>
<th>Competences</th>
<th>Performances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson et al. (2010)</td>
<td>Service action, promotability, team focus, commitment, personal leadership, driving business performance, focus on results</td>
<td>Work outcomes</td>
</tr>
<tr>
<td>Kagaari &amp; Munene (2007)</td>
<td>Engineering lecturer’s competencies</td>
<td>Organizational citizenship behaviour</td>
</tr>
<tr>
<td>Porath &amp; Bateman (2006)</td>
<td>Social competence</td>
<td>Job performance</td>
</tr>
<tr>
<td>Schulz &amp; Stamov Roßnagel (2010)</td>
<td>Learning competence (consisting of: cognitive, metacognitive and motivational dimensions)</td>
<td>Informal learning success</td>
</tr>
<tr>
<td>Shepherd et al. (2000)</td>
<td>Industry-related competence</td>
<td>Assessment of profitability</td>
</tr>
<tr>
<td>Tiraeyari et al. (2010)</td>
<td>Human development competencies (split into: leadership development competency, and decision making competency)</td>
<td>Work performance</td>
</tr>
<tr>
<td>Tiraeyari et al. (2011)</td>
<td>Nine technical competencies (i.e., leadership development competency, problem solving/decision making, SALM* certificate competency, social, cultural, program planning, program implementation, program evaluation, and extension teaching methods competencies)</td>
<td>Job performance</td>
</tr>
<tr>
<td>Want et al. (2012)</td>
<td>Virtual competence. NB. Virtual competence is hypothesized to influence Self-regulated Learning strategies which, in turn, is hypothesized to influence e-learning outcomes.</td>
<td>E-learning outcomes</td>
</tr>
</tbody>
</table>

*Note. *SALM* = Scheme for Good Agricultural Practice, referring to extension workers’ knowledge on the roles of Malaysian Farm Certification Scheme for Good Agricultural Practice.

The same held for performances. Five studies investigated the influences of competences on ‘job performance’ (or ‘work’ performance) in general, where four other studies investigated more specific kinds of performances, such as ‘informal learning success’, specifically ‘e-learning’ outcomes, or the ability to assess new venture’s profitability.

Besides, in five studies, other factors were investigated as predictors of performances, next to a particular competence (i.e., Porath & Bateman, 2006; Schulz & Stamov Roßnagel,
In these studies, competence was thus perceived as one of different factors that influence employees’ performances. Porath and Bateman (2006), for example, studied the influence of Self-Regulation (SR) tactics on job performance, and see ‘social’ behaviour as one of these SR-tactics. Other SR-tactics they studied, included pro-active behaviour, feedback-seeking, and emotional control. Except from emotional control, all variables appeared to have a significant positive relation with job performance. In a study by Tharenou and Harker (1982), ‘sense of competence’ was theorized as a type of self-esteem, next to ‘global self-esteem’. Both types of self-esteem were significantly and positively related to job performance of electrical apprentices, all working in a large semi-public electricity authority, and also to job level, complexity and satisfaction.

Schulz and Stamov Roßnagel (2010) investigated the influence of learning competence in terms of control strategies, and motivational orientation in terms of a learning-approach orientation, on informal learning success. Hence, also in this study other factors than ‘competence’ were expected to influence informal learning success. Besides, the authors investigated the extent to which the relation between learning competence and informal learning success was moderated by ‘occupational self-efficacy’, ‘learning opportunities at work’, ‘managerial support’, and job support’. Although the relation between learning competence and informal learning success appeared to be significant and positive, none of the moderating factors showed to significantly moderate the relation between learning competence and informal learning success.

**Conclusions and Discussion**

In the last two decades, increasing research was conducted to competence development (CD) of employees in organizations. It was more and more acknowledged that these CD-activities are a key factor behind productivity, innovativeness and competitiveness of organizations (cf.
Kock & Ellström, 2011), and also in the scientific literature increasing research was conducted to CD, its antecedents and outcomes. We recognized that research in the field of antecedents and outcomes of CD was fragmented and believed that it was needed to create an overview of the field to provide directions for future research. This made us to conduct the present systematic literature review. Specifically, our research questions read: (1) *What antecedents and outcomes of employee’s competence development have been studied?* and (2) *What are important directions for extending our knowledge in this field of research?*

Regarding research question one, this study confirmed our expectation that antecedents and outcomes of CD-activities are studied in relation to a variety of professions or roles in organizations and, as such are published in a variety of research domains. However, the diversity in the selected 30 publications (out of 909 unique hits) was even larger and thus exceeded our expectations. Apart from variety in professions, the publications also showed diverse research designs and focused on different aspects within the relation between antecedents and/or outcomes of CD. Next, the transparency of the used methodologies was highly variable. Because of this diversity it was to some extent difficult and inappropriate to compare studies. Rather, we believe it is appropriate to report on trends we recognized.

Based on this review study we conclude that no single study considered CD both in relation to antecedents and outcomes. Two studies come close to our line of reasoning (Porath & Bateman, 2006; Schulz & Stamov Roßnagel, 2010) as these studies do focus both on relations between antecedents-competence-outcomes and, as such, study a chain of influencing factors. However, these studies do not focus on a *CD-activity* in between. And it is specifically CD that we believe to make a difference in improving employee’s competences and performances.

With regard to antecedents, two studies were conducted to study a relation between antecedents and competences. Both of these studies used a management perspective and
focused on the influence of the *environmental context* on *manager’s competences*. However, no single study in our selection appeared to focus on a relation between a particular antecedent and CD. This is surprising as previous research stressed the need of studying the influence of contextual factors on CD-activities to increase our knowledge of the effectiveness of CD (e.g., Kock et al., 2008). Much more attention was given in research on the relation between CD and its outcomes in terms of competences or performances. In most studies a positive relation was found between CD and either work-related competence, or job performance.

Besides, in line with Kyndt and Baert (2013) we observed that primarily *formal* CD-activities were studied, such as a training programme for a group of employees with similar roles/functions within an organization. Studies that focused on informal CD-activities, or a combination of formal and informal CD-activities, appeared to be in minority. An exception in this respect is the study by Rowold and Kauffeld (2009), who did study such a combination of formal and informal CD-activities and, as such, were able to draw conclusions on the relative impact of these different types of CD-activities. Also the study of Bapna et al. (2013) provided interesting results in this respect. Although these authors explicitly focused on formal learning activities (i.e., training), they investigated the relative impact of training focused on domain-general competences, and training focused on technical competences. Bapna and colleagues (2013) found that both types of training have positive effects on individual’s performances, but that if these competences are combined in one training, the effects are detrimental.

Obviously, the results gained by the present review are subject to the used search terms. Although we deliberately chose these search terms based on their general character, possibly, using different search terms would have led to different contributions and new insights. Hence, future review studies could consider of conducting a search with a broader
scope of search terms.

Regarding research question 2, we conclude that the research domain is upcoming but also still in its infancy. This conclusion is based on the highly heterogeneous character of the publications, and also on the fact that most publications were published during the last decennium. We would like to stress that we do not propose that this heterogeneity is bad. Rather, we believe that this diversity shows that CD is a topic that gains ground, both in research and in practice, and we believe it to be even more important to present the state-of-the-art in this domain in order to get direction for future research. To discuss the state-of-the-art, we link the maturity of this research domain to Borko’s (2004) theory on research maturity. She described three consecutive maturity phases of research in the specific context of teachers’ professional development (PD) and formulates them as follows:

- **Phase 1 research:** “existence proofs of effective PD” – focused on one PD-programme at one location, and primarily aiming at providing evidence for the effectiveness of that PD-programme.

- **Phase 2 research:** “well-specified PD-programmes” – focused on one PD-programme provided by multiple facilitators at multiple locations, and aiming at determining how a PD-programme can be enacted by multiple facilitators in multiple settings.

- **Phase 3 research:** “multiple effective PD-programmes” – focused on multiple PD-programmes enacted by multiple facilitators and located at multiple sites, and aiming at providing comparative information about the implementation, effectiveness and requirements of well-defined PD-programmes (Borko, 2004).

Although the research domain of antecedents and outcomes of CD is broader than the described (sub)domain of professional development of teachers, we see parallels between them in terms of the three phases of Borko (2004). Inspired by her work, we argue that research on antecedents and outcomes of CD can be characterised as being in the first phase
of its maturity. In our view, the characteristics of phase 1 research align with the foci of studies in our selection of publications, and especially with the publications focusing on CD and its outcomes. In most of the publications in these CD-C and CD-P categories the relation between one CD-activity and job performance or a particular competence is measured. Moreover, it appeared that the studies in our selection measured the relations between the CD-activity on the one hand, and the competence or performance on the other hand in a linear or even bivariate way – not taking into account a possible reciprocal relation.

Following Borko’s (2004) work, we have several suggestions for future research to bring research on antecedents and outcomes of CD to a next level and increase the maturity of the research domain. First, as in our selection only two publications studied a relation between antecedents and CD-activities, we propose that more research is needed in this area. For example, we could think of studies to find out the relative impact of personal characteristics such as learning motivation, learning conceptions, and personality traits, compared to context-related factors such as the physical work environment, policies toward professional development, or the role of the team manager, on the extent to which employees undertake learning activities. Besides, content wise, we would propose to pay more attention in research on the relative impact of different types of CD-activities on employee’s competences and performances. We believe that the findings of studies by Bapna et al. (2013) and Rowold and Kauffeld (2009) – as discussed earlier in this section – are promising and need to be enriched by future research in which the same kinds of phenomena in different working contexts, and focused on different roles/groups of employees are studied.

Second, we propose to measure outcomes of CD-activities from multiple perspectives. We recognized a trend of using ‘self-assessments’ of employees to report on the level of competence or performance as outcome of a particular CD-activity (e.g., Beusaert et al., 2013; Dysvik et al., 2013; Rowold & Kauffeld, 2009. Many of these studies report in their
discussion section the pitfall of this perspective themselves, being that self-assessments may not align with observed competences or performances (e.g., Tebes et al., 2011). Therefore, we would suggest for future research to make use of different methodologies (e.g., expert ratings or observations) and data sources (e.g., self-reports and supervisory ratings of employees’ competences, cf. Rowold & Kauffeld, 2009) to provide a more realistic representation of the outcomes of CD. The fact that many authors that reported on self-assessments referred to this recommendation themselves, stresses the need of making a methodological step forward in research on outcomes of CD.

Third, we propose to measure *multiple relations* between possible antecedents, CD-activities and outcomes both in terms of competences *and* performances, and to take into account possible reciprocal relations between antecedents, CD-activities and outcomes. Due to the complexity of the process of developing competences in order to increase performances at the workplace, we believe it is not enough to study the effect of one single CD-activity on one competence or performance. This process of development is subject to many different factors influencing each other.

We recognize these recommendations require massive samples and cannot be met in one single study. Still, we believe that all contributions in the directions we described would be beneficial for increasing our knowledge on antecedents and outcomes of CD.

**References**


---

*References provided with an asterisk (*) represent the publications included in the final selection of the review study.*


26


(6642 words)