

# Research in International Transfer of Vocational Education and Training – A Systematic Literature Review

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Received: 18 December 2020, Accepted: 4 Oktober 2021

## Abstract

**Context:** The transfer of vocational education and training (VET) has a long tradition and can be based on various conceptual and methodical approaches. Transfer process and success can be influenced by numerous factors at different levels (systemic, institutional and individual). However, the existing research on the challenges and success factors of VET transfer is very heterogenous and fragmented.

**Method:** To provide a comprehensive and structured overview of the current state of the international research on transfer in the context of VET, we conducted a literature review, which is presented here. Using the method of systematic literature review, a total of 231 studies were found and 41 studies were selected based on the defined criteria for full text analysis.

**Findings:** Various specific research foci and analytical approaches used on the included studies were identified and documented. The transfer of a dual VET system or its elements is based on different approaches and perspectives of the recipient country and the transferee. Major challenges for the transfer of dual VET systems include the social reputation of VET in the recipient countries and (language- and culture-related) communication difficulties between the involved parties. For a successful transfer of VET, a deeper knowledge of the contextual conditions in the recipient country are of particular importance, as well as a close, longstanding cooperation between the involved parties.

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**Conclusion:** The generated knowledge about key contextual conditions at the individual, company and systemic level in the context of VET transfer can provide a valuable basis for future VET cooperation.

**Keywords:** Vocational Education and Training, VET, Transfer, Literature Review, Professional Competence, Success Factors

## 1 Theoretical Background to Research in International 'VET Transfer'

The process of internationalization is becoming increasingly important in the area of vocational education and training (VET) (Frommberger & Baumann, 2019). In particular, international cooperation in VET has been regarded as an essential way of shaping internationalization for decades, as the practice of transferring educational structures internationally has a long tradition (Barabasch & Wolf, 2011; Frommberger & Baumann, 2019).

In this context, the transferability or exportability of VET systems or its elements to other countries has been investigated for many years, for instance (Barabasch & Wolf, 2011; Clement, 2012; Wiemann et al., 2019). Research and scientific studies in this area have increased in recent years (Dobischat & Düsseldorf, 2018), while numerous international cooperation projects have been ongoing for years, for example in the United States or India (Gessler, 2017; Pilz, 2016). In the literature, very different understandings, conceptualizations, and models of 'transfer' in VET research can be found. At the same time, rather limited knowledge about the heterogeneous models and approaches leads to a fragmentation of the research landscape (Wiemann et al., 2019). To bridge this gap, it is necessary to structure, systematize, compare and, if necessary, integrate different disciplinary research approaches.

In regard to the significance of the topic in terms of research, practice and policy, the primary goal of this article is to prepare a comprehensive, structured overview of the current state of international literature on transfer in the context of VET research. The authors systematically analyze the current international state of research on transfer with a multidisciplinary and multi-level perspective by using the method of "systematic literature review" (Gessler & Siemer, 2020; Grant & Booth, 2009). The identification of thematic and methodological foci and of semantic and/or structural links between the various approaches, theories and best practice models is a central focus of this article. Furthermore, indications of international networking and synergy potential in this field of research are taken into account.

### *Concept of (Professional) Competence and Understanding of VET Transfer*

To provide a comprehensive and structured overview of the current state of international research and to analyze the multidisciplinary perspectives on transfer in the context of VET,

in a first step, it is necessary to define the understanding of the two core concepts in VET research, namely "transfer" and "(professional) competence".

With the globalization of the labor market, an increase in the importance of harmonized educational, and especially VET, systems became evident. This refers to the international innovation and competitiveness of organizations involved in VET as well as to the importance of ensuring competences for (international) professional mobility and self-reliant living of citizens and enabling lifelong learning, which is necessary in an increasingly changing societal and technological environment (e.g., Baethge et al., 2006; DIHK, 2015).

The harmonization trends in VET call for an internationally comparable (high) level of qualification in the respective national VET systems (e.g., Cedefop, 2011; Dunkel & Le Mouillour, 2013). In the last decade, the European Union has intensified its efforts to create more transparency within the VET systems in Europe and to regulate the harmonization of vocational qualifications with the development of the European Qualifications Framework (EQF) and the European Credit Transfer System (ECVET). Furthermore, as part of an international comparative feasibility study on VET (the so-termed 'VET PISA'), a large-scale assessment framework was developed in response to the increased importance of the VET systems to assess their learning outcomes, i.e. professional competencies. This feasibility study impressively showed that competences targeted in VET have to tow the line between meeting the requirements for both national particularities and international comparability (Baethge et al., 2006).

This tension also applies to the sense of the *transferability* of nationally established VET concepts to other countries. Since in-company instruction and training programs tend to be heterogeneous and less formalized, teaching-learning and examination approaches, adaptation and transfer in VET systems are accompanied by a variety of challenges (e.g., Kuper & Schrader, 2013).

The concept of *transfer* is defined differently in various disciplines and contexts (Gräsel, 2010). Educational transfer is based on the conceptual nuance of transference and is defined by Gessler (2012) as the transfer of educational ideas, structures, and practices from one system or institution to another. The term *transfer* in an educational context is primarily a term used in German-speaking countries, although *export* is also frequently used as a synonym (Geiben, 2017). In the international context, the general term *policy transfer* is primarily used to describe this concept (Wiemann et al., 2019). While policy transfer encompasses educational transfer, it is often described in a broader sense as the transfer of concepts or procedures. In addition, policy transfer can be further differentiated to refer to policy learning, policy borrowing, policy diffusion, policy reception and policy lending, depending on the academic discipline and the scope of the transfer (Dolowitz & Marsh, 1996; Geiben, 2017; Wiemann et al., 2019).

Referring to the definitional approaches, Geiben (2017, p. 23) defines transfer in the context of VET cooperation as "the transfer of ideas, practices and products as well as assumptions from one or more countries to one or more different countries." This article, which aims to comprehensively review existing research literature on this topic, is guided by this broad definition.

The VET system, for instance in German-speaking countries, represents a historically evolved complex constellation of participating institutions and actors that cannot easily be exported (Geiben et al., 2017; Strittmatter & Böhner, 2019). In the context of international VET research, many studies therefore concluded that the transfer of a VET system cannot take place as a one-to-one transfer (Stockmann, 2013; Stockmann & Silvestrini, 2013). In this regard, the transfer process cannot be seen as a copying process but needs to be designed as a selection and adaptation process that supports partner countries in adapting elements of their existing systems (Euler, 2013).

In this context, another important core concept in VET research, also at the international level, refers to the concept of competence. The term *competence* has become a fashionable term in the social and educational sciences (Klieme & Hartig, 2007). A broad use of this term can also be found in educational policy and research. However, the term *competence*, has different meanings in literature and everyday understanding, and it is neither used nor applied consistently in research and practice. Even in research dealing with educational and learning processes, *competence* is not defined synonymously, and is conceptualized and operationalized differently (Hartig, 2008; e.g., contributions in Blömeke et al., 2013).

The definition of the construct *competence* is a fundamental prerequisite for empirically sound investigations of learning and educational processes. However, it is precisely in the definition of competence as well as in the development of well-founded theoretical competence models that the challenges of empirical competence research become evident (e.g., Blömeke et al., 2015). These difficulties are partly due to the different and partly incompatible roots of the concept of competence across disciplines (Klieme & Hartig, 2007).

This is particularly true for VET that is characterized by a high heterogeneity of domains as well as participating institutions and actors. Moreover, the VET research is based on different (in parts nation-specific) traditions and conceptual and theoretical approaches, leading to a variety of (domain-specific) definitions of competence, including (i) competence in a purely organizational sense with regard to responsibility in an institution, (ii) psychological understanding of competence as disposition (e.g., professional knowledge), (iii) general understanding of competence as expertise, (iv) specific vocational skills or a holistic concept of (professional) performance (e.g., Shavelson, 2013).

In German-speaking countries, competence is often understood as the comprehensive ability to act and to master a specific (e.g., professional) situation, which can be subdivided, for instance, into domain-specific, personal, and social competence. This triad is specifically

taken up and further developed in German VET with the concept of 'vocational action competence' (Jude & Klieme, 2008; BiBB, 2010). In this context, action- and problem-oriented learning, the orientation toward professional competence in the sense of a broad holistic understanding of competence, as well as the training of trainers, and the development of cooperation between institutions involved in VET are established as core elements in the German dual training system (Angles & Lindemann, 2019).

In the current research, the German funding program ASCOT (Technology-based Assessment of Skills and Competences in VET) systematically analyzed, among others, competence characteristics of trainees at the end of their training. Based on technology-based assessment instruments for competence diagnostics (mostly computer-based simulations), evidence on the performance of trainees at the end of their VET is available for various occupations. The findings from the assessments indicate that the required higher-order skills such as problem-solving and reflective competencies are not consistently achieved in VET (see contributions in Beck et al., 2016; Seeber & Seifried, 2019).

Not only on a national level but also on an international level, there is a great variety in usage of the term *competence*, of definitions of competence, and its modeling. The diverse conceptualization of this term on an international level is also reflected in the various classification systems and systematizations of definitional approaches (e.g., Le Deist & Winterton, 2005; Mulder et al., 2007). In this context, classification systems for countries and regions show different approaches to defining competence with regard to VET, such as behavioral competencies including functional and cognitive competencies (USA), an occupational (functional) competence model including cognitive and behavioral competencies (UK), and more holistic approaches (France, Germany, and Austria) (Le Deist & Winterton, 2005).

To summarize, the concept of competence in international VET research is a prominent yet relatively new paradigm that is anchored in the respective socio-cultural context and, thus, shaped by national or even regional context- and domain-specificity. This makes the transfer of VET systems even more challenging.

## 2 Methodological Approach

### 2.1 Systematic Literature Review

The aim of a systematic literature review is to provide an overview of the current state of research on a particular topic and to draw theoretical and/or practical implications from it (Kitchenham & Charters, 2007; Xiao & Watson, 2017). In this context, Oakley (2017, p. xiii) highlights the benefits of a literature review compared to a single study: "The aim of syste-

matic research synthesis is to generate a more comprehensive and trustworthy picture of the topic being studied than is possible from individual studies".

This article presents a systematic analysis of the current international state of research on VET transfer with a multidisciplinary and multi-level perspective by following Gessler and Siemer (2020). According to their categorial definition, a systematic literature review covers the four following steps: (1) Definition of the scope, (2) data selection, (3) data processing, and (4) data reporting (Gessler & Siemer, 2020). The following part presents the literature review and its results according to these four categories.

## 2.2 Scope Definition

The *scope definition* specifies the research problem and derives central research questions. Within this literature review, the authors systematically analyze theoretical-conceptual as well as empirically oriented research on VET transfer with a multidisciplinary and multi-level perspective (Euler, 2019; Phillips & Ochs, 2003; Rapple, 2006; Tanaka, 2005). The identification of thematic and methodological foci as well as semantic and/or structural links between the various approaches, theories and best practice models are a central focus of this article. Furthermore, indications of international networking and synergy potentials in the research field are taken into account. The central research aim of this literature review is to analyze the international state of research and to structure the knowledge base for the description of the object of investigation, "transfer research in VET," as well as a downstream analysis of its contextual conditions and determinants (i.e., major challenges and key success factors of transfer in international VET research).

## 2.3 Data Selection

The next step, *data selection*, entails a systematic search and eligibility screening. The sources and search terms have to be defined and the relevant research has to be selected, screened and read, whereas the ineligible research should be excluded. The determination of relevant sources to be included was done through a multi-step approach. To ensure a systematic and replicable approach to the analysis of the international state of research, central relevant literature databases such as Education Resources Information Centre (ERIC) and Google Scholar were used. In addition to the systematic literature search, the "snowball technique" was applied to collect additional references from identified papers (Waddington et al., 2012): After reviewing the first set of relevant literature, keywords and keyword combinations were determined to find further relevant publications. Thus, the approach of the review presented here is based on an extensive search from central education-research-specific online databases: Fachinfor-

mationssystem Bildung [Education Research Portal] (FIS Bildung), ERIC as well as the VET Literature Database of the BIBB [Federal Institute for VET] (LDBB) and Google Scholar.

Based on the research question, keywords were extracted to specify the search and to thus make it easier to identify relevant publications. Different authors (Bayliss & Beyer, 2015; Xiao & Watson, 2017) emphasize the importance of keywords in the search for relevant literature. In addition to the degree of precision of keywords, the use of the Boolean operators "AND" and "OR" is also crucial for a targeted search (Ritschl et al., 2016). In our search, the keywords listed below were combined by means of these logical links. Furthermore, the use of different terms within the national and international research landscape was taken into account, as the term transfer has different variations (see Table 1).

The identification of relevant studies was also complemented by drawing on project publications and reports as well as the "snowball system" to find additional literature to complement the formally published research (Adams et al., 2017). Especially in the context of vocational education, Haßler et al. (2019, p. 34) emphasize the importance of including different publication outlets, as "numerous important activities are not covered in professional journals." To find publications of this kind as well as other relevant studies, Google Scholar was used. In addition, using the snowball system meant that references in previously identified papers were sifted through, further contributing to the completeness of the documentation of the current state of research (Waddington et al., 2012; Xiao & Watson, 2017). Related terms and synonyms in the context of VET transfer were therefore also searched for. This approach led to the definition of a number of German and English keywords (see Table 1). This procedure also resulted in a large number of search results, as irrelevant literature could not be avoided in the hit list. Furthermore, due to searching several databases and using similar search strings, duplicates were also elicited, which were excluded in a first step (Sturma et al., 2016; Tonhäuser & Büker, 2016).

*Table 1: List of Keywords in German and English*

German Keywords:	English Keywords:
International	"Vocational Education and Training"
Berufsbildung	VET
Transfer	TVET
"internationale Zusammenarbeit"	"Dual Apprenticeship"
"Berufliche Bildung"	"Transfer of VET"
Internationalisierung	Transfer
Berufsbildungszusammenarbeit	"Policy Transfer"
Berufsbildungsexport	"Transfer of Training"
Berufsbildungstransfer	"German Dual System"
Berufsausbildung	International



"Duales Ausbildungssystem"	Internationalization
"Duales System"	"Comparative education"
Deutschland	"Educational transfer"
"Internationalisierung der Berufsbildung"	
"vergleichende Berufsbildungsforschung"	
Transferforschung	

## 2.4 Data Processing

The third step, *data processing*, focuses on critically assessing the quality of the selected literature to exclude unsuitable search results and to select the relevant data from the consulted resources, and then critically evaluate the (preliminary) selection of sources. This step also involves synthesizing and re-analyzing the selected data.

Accordingly, the next step of our literature review was to analyze the titles and abstracts of the publications identified by the database search with regard to their relevance. Obviously thematically irrelevant papers could then be excluded, while publications that were significant for answering our research question were examined more closely in their entirety. In addition, the relevant publications that were identified using the "snowball system" and the search for "gray literature" were also read in full.

Finally, the remaining articles were selected based on predefined inclusion criteria (Kitchenham & Charters, 2007; Sturma et al., 2016). To be included in the next step of the systematic review, studies had to meet the inclusion criteria listed below (see Table 2). Consequently, the criteria also served as exclusion criteria, i.e., if a study did not meet these criteria, it was excluded.

Table 2: Criteria for the In- and Exclusion of Studies

<ul style="list-style-type: none"> <li>– The study is written in German or English.</li> <li>– The study was published between 2010 and 2020.</li> <li>– The thematic focus of the study is on transfer of VET systems and/or elements.</li> <li>– The study has been published in a peer-reviewed journal or book</li> </ul>
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The final selection and systematization of the studies is based on a criterion-guided classification into several higher-level categories such as study focus, research method, sample, participating countries (for an overview, see Table 4 in appendix).

In the course of the systematic literature search, the selected search terms (see Table 1) were entered and combined both as keywords and as free text, as this approach proved to be particularly effective. In this way, a total of 331 studies were identified. Of these, 325 studies had been found through the database search, while the remaining studies resulted from the "snowball system" and the search engine Google Scholar. Since the databases are constantly updated, this can lead to a different number of hits for the search query at later dates.

Doublets were checked using the reference management program Citavi, and we subsequently conducted a duplicate comparison. This eliminated 100 doublets of potentially relevant and irrelevant studies, which resulted in a remaining number of 231 studies for the title–abstract screening, in which the relevance of the studies was assessed based on their titles and abstracts. After this screening, 140 publications were excluded from the review as it was evident from the title and/or abstract that they did not address the topic of VET transfer in a narrow sense. Among the remaining publications were studies that, for example, dealt with the transfer of knowledge from theory to professional practice (Frey et al., 2014) or focused on the international mobility of apprentices in the context of internationalization (Friedrich et al., 2010).

As a result, 91 studies remained that were deemed relevant. The full-text versions of these studies were obtained and read. Based on the predefined inclusion criteria (see Table 2), 41 relevant studies were identified that proved to be thematically and methodologically relevant and were therefore included in the present literature review. Thus, 50 publications were excluded which could not yet be rejected during the title–abstract screening, but which turned out to be less relevant in the full-text review. In addition, the analyses of the full texts revealed that relevant information ensuring the research quality of the studies, i.e., basic information on the method, sample size, and analysis approach, was often missing or not described sufficiently. Hence, about one dozen of the studies that initially appeared relevant could not be included in the review due to fundamental information missing and/or obscured.

Table 3: Criterion-Guided Literature Selection

Database	Hits	Doublets	Abstract Screening	Full-text Screening	Inclusion
FIS Bildung	59	100	231	91	41
ERIC	157				
LDBB	109				
Google Scholar	6				

## 2.5 Data Reporting

The final step of our systematic literature review focuses on *data reporting*, and it involves presenting the findings and implications as well as the limitations of the review and discussing the conclusions.

In the following section, an exemplary selection of the included studies is presented, taking into account theoretical or conceptual and application-oriented studies. The key findings and implications are presented and discussed as well. The final part of the step *data reporting*, namely presenting the limitations, is presented in Section 4.

## 3 The Current State of Research in VET Transfer

The aim of international VET research is to identify the central challenges in implementing innovation potentials in VET and to develop concrete action points to improve the structures of VET. Research on international VET is generally conducted at discipline level and national level, with corresponding delimitations, exclusions and limitations resulting in the fragmentation of the research landscape. VET research is highly diverse, which is reflected in the fragmentation of research approaches and disciplines, which are organized in very different ways internationally. Overall, limited international resources are available in the VET research field. The rather few available systematic reviews and evaluations of VET at the international level reveal significant research gaps. Furthermore, strong political and economic interests have led to the dominance of application-oriented research foci in VET research. Methodological research questions concerning the optimization of transfer possibilities outweigh fundamental theoretical and conceptual reflections on the nature of transfer processes in the present research landscape. With regard to specific topics, in recent years, international VET research has focused primarily on dual VET as well as "training-on-the-job" approaches, while hybrid qualifications with university and vocational components (Deißinger, 2015; Powell et al., 2012) have only recently received (renewed) attention.

The central research aim of our literature review is to analyze the international state of research and to structure the knowledge base for the description of the object of investigation "transfer research in VET", as well as to conduct a downstream analysis of its contextual conditions and determinants (i.e., challenges and success factors of transfer in international VET research). In the following part, the central key findings will be summarized and their implications for our research question will be discussed.

### 3.1 Key Findings

In the following, we present an exemplary selection of the included studies consisting of theoretical or conceptual and application-oriented studies. The 40 studies included in this research literature review (see Table 4 in appendix) address the topic at different levels. The majority of studies included (approximately three-quarters) deal with transfer processes on a systemic level and approximately one third examine transfer from a corporate or entrepreneurial perspective and/or at a VET institutional level; approximately one-sixth of the selected studies considered both levels. As defined in Section 2, all studies, regardless of their specific focus in the area of transfer research in VET, were initially included in the mapping procedure. To structure and systemize the studies and their findings, we summarize them and present key challenges and key success factors of VET transfer as stated in the research papers. Thereafter, the studies were categorized and classified according to their methodological approach, identifying six studies that addressed the topic of transfer on a theoretical-conceptual level, 30 studies that dealt with the topic empirically, and four meta-studies that examined transfer processes based on literature reviews or a meta-analysis (see Table 4 in appendix).

In the literature review, we identify several studies dedicated to the implementation of a dual VET system with different approaches. In addition to ideas for a possible business model to promote and commercialize dual vocational education (Jonda, 2012), other studies focus on VET policy transfer (Barabasch & Wolf, 2011), on piloting a scientific transfer model in practice (Bohlinger & Wolf, 2016), or they identify training strategies used by German companies abroad (Körbel et al., 2017).

Another central focus in various studies is the transfer recipient country and the perspective of the transferee (Barabasch & Wolf, 2010; Bohlinger & Wolf, 2016; Euler, 2019). Here, a common finding is that the understanding of duality needs to be clarified and core challenges need to be addressed as part of the design of the transfer process. The insight that the transfer cannot take place as a one-to-one copy is the result of many studies (Euler, 2013; Hummelsheim & Baur, 2014; Stockmann, 2013). Instead, VET transfer is about adapting to the context of the recipient country and introducing appropriate, for instance, dual training elements (Euler, 2013; Ramasamy, 2020).

The analysis of the research literature shows that there is not just one way of implementing specific, for example competence-oriented, training structures. Rather, there is a variety of different approaches to establishing VET elements (that are based on, e.g., the German model). Different VET elements can be introduced at different levels. The examined implementation approaches range from the development of a business model idea at the system level (Jonda, 2012) to the establishment of an autonomous qualification center at the individual company level (Krzywdzinski & Jürgens, 2019). Therefore, the analysis of the transfer conditions plays a major role in transfer approaches. These strategies include a systematic further

development of vocational education at the micro, meso and macro levels. According to the analyzed studies, the development of legal frameworks could be identified as an implementation measure on the macro level (Barabasch & Wolf, 2010, 2011; Krzywdzinski & Jürgens, 2019); on the meso and micro level, measures included the modification of certifications and curricula and the creation of further training measures for students and teachers (Bohlinger & Wolf, 2016; Krzywdzinski & Jürgens, 2019). The choice of the respective strategy is conditioned by internal as well as external influence factors, i.e., that the implementation or transfer approaches can vary considerably from country to country or even from company to company (Körbel et al., 2017).

### 3.2 Key Challenges in VET Transfer

One of the key challenges in the transfer of VET elements is the low social standing of the VET system in many countries. In this context, the included studies observed that the acceptance of VET institutions as an equitable alternative to academic education is low in many target countries (Fraunhofer MOEZ, 2012; Van der Burgt et al., 2014; Welfens, 2016). As a consequence, companies are less willing to invest in complex VET elements, which results in generally low investments in the VET system in the respective countries (Wiemann, 2020; Wiemann & Pilz, 2020).

Furthermore, a central challenge in VET transfer is rooted in communication difficulties (Fraunhofer MOEZ, 2012; Haering et al., 2014; Pfaffe, 2019). These communication barriers can be attributed to both linguistic and cultural differences (Li, 2017). For example, in many target countries there is a lack of English language skills on the part of trainees, trainers and project officers, which can have an aggravating effect on transfer activities (Haering et al., 2014). Since the transfer process requires a great deal of coordination between the involved parties, successful communication is essential (Peters, 2019a). Here, the support of technical, linguistic, and cultural experts in both the recipient and transferring countries is needed (Li, 2017).

In addition, some studies indicate that transfer activities can be met with distrust and resistance from different stakeholders (Bohlinger & Wolf, 2016; Krzywdzinski & Jürgens, 2019; Pfaffe 2019). This skepticism can be attributed to different causes: In addition to different traditions in the recipient countries to which the participants want to adhere, negative previous experiences with transfer activities can also lead to resistance (Bohlinger & Wolf, 2016; Krzywdzinski & Jürgens, 2019; Eichhorst et al., 2012).

### 3.3 Key Success Factors in VET Transfer

Beside the challenges listed above, the literature reviewed also reveals success factors for the transfer of VET elements to other contexts. According to numerous reviewed studies, knowledge of the contextual conditions and the resulting adaptation to the conditions in the target country is a prerequisite for the successful implementation of VET elements (Bliem et al., 2014; Fraunhofer MOEZ, 2012; Peters, 2019a, 2019b; Pfaffe, 2019). This is consistent with the notion that transfer must be a process of adaptation and adjustment. In this context, the example of Stockmann (2019) points to the importance of flexible project management that reacts to changing environmental conditions and does not stick too rigidly to the original model.

Furthermore, close cooperation between the involved parties is stated as an important basis for successful VET transfer (Aring, 2014; Gessler, 2019). Therefore, constant communication is necessary to prevent misunderstandings and conflicts of interest. Furthermore, a reliable basis of trust between the participants can be established through constant exchange (Peters, 2019b). This relationship-building is not limited to bilateral cooperation between national and international partners. All stakeholders involved should also cooperate closely with each other and show a similar understanding of as well as trust in the targeted transfer project.

In addition, the role of individuals and the competence of instructors as well as other decision-makers is an important influencing factor (Dowling et al., 2008). In particular, knowledge of how the relevant VET system works has a significant impact on the success of the transfer process (Wiemann & Pilz, 2020). Here, the participation of trained and experienced expatriates or trainers, especially at the beginning of the transfer activities, constitutes a positive influencing factor for a successful transfer (Körbel et al., 2017).

Another success factor consists of having a goal-oriented organization with transparent structures. In this context, it is important to clarify responsibilities and the associated accountability at both state and private-sector level (Bliem et al., 2014; Peters, 2019b; Stockmann, 2019). Considering the large number of actors involved in VET transfer, it is of great importance that the organizational structures and the distribution of tasks are presented transparently to create binding framework conditions for the dual system (Krekel & Walden, 2016).

A number of studies also draw attention to the importance of companies' willingness to provide training (Bliem et al., 2014; Gonon, 2014; Krekel & Walden, 2016). Only if companies are willing to invest in training activities can the potential of VET structures be tapped. To ensure the commitment of involved companies, the training costs incurred must be outweighed by corresponding training benefits for the companies (Bliem et al., 2014; Krekel & Walden, 2016; Langthaler, 2017).

### 3.4 Implications

The systematic literature review of international VET research indicates that ex-ante evaluations of key concepts and approaches underlying one particular VET system and its central contextual (e.g., socio-cultural) factors should be conducted before beginning a transfer process to assess the transfer project's chances of realization and at the same time to be able to provide effective training in accordance with the local labor market (demands) (e.g., Stockmann & Silvestrini, 2013). The primary objective of this evaluation is to provide a broad prospective analysis of both the situation in the transferee and recipient country before the transfer activities begin, so that possible barriers can be identified before they occur (Wiemann, 2020). In this context, an analysis of the various local institutions and actors involved should take place (e.g., Pilz, 2017). Gessler (2017) suggest that by analyzing the financial situation of potential trainees in advance, effective measures could be developed to create an incentive to take up and complete training. Furthermore, the respective national framework conditions must be examined, as these in turn impact the demand for specific training structures and targeted outcomes (Pilz, 2017). In addition, legal regulations and institutional responsibilities in the transferee countries must be evaluated in terms of whether they are compatible with the system in a recipient country.

The adaptation of VET approaches to the actual conditions in the target countries is closely linked to the aforementioned ex-ante evaluation of the contextual conditions. Adaptation processes require, in particular, flexibility in transfer that responds to the changing influencing factors (e.g., Stockmann, 2019; Wiemann & Pilz, 2020). It is essential that the reference model is not followed too rigidly and that appropriate adaptations are developed within a local cooperation (Wiemann & Pilz, 2020). As part of the adaptation processes, for instance the infrastructural requirements or the economic structures of the target country must be taken into account to adapt the transfer approach accordingly.

The results of the present analysis of the state of international VET research clearly show that individual persons involved in the transfer process, can have a great influence on VET transfer. The findings indicate that the professional expertise of the actors involved should be examined and, if competences are lacking, measures should be established to effectively address these deficits. In particular, the training of teaching staff is of great importance in the context of VET transfer. The quality of trainers can be consequently improved through higher-level training or education opportunities based on international standards (e.g., Gessler, 2019; Körbel et al., 2017; Peters, 2019b).

Another important aspect to ensure successful international cooperation and VET transfer is the communication between participants involved. Particularly with regard to the sustainability of the transfer process, continuous communication and cooperation between VET practitioners from various institutions is required. In this context, the socio-cultural impact of communication is often underestimated, giving way to misunderstandings (e.g., Lange &

Hohnwald, 2008). As a result, in the course of VET transfer, the communication culture of the countries and institutions involved should be examined and considered in the adaptation to the recipient country (Li, 2017). For instance, when translating into local languages, it should be ensured that the translators are familiar with the cultures involved and can thus assure a translation that is appropriate to the meaning, i.e., functional equivalence (Li, 2017).

The research analysis suggests that communication is a central influencing factor in VET cooperation and transfer on several levels. For example, transparent organization of responsibilities should ensure communication between various stakeholders, including the state, private businesses, trade unions, educational institutions, educational staff, and trainees. Therefore, instruments that enable or promote the exchange between the participants involved are required, and relatively flat hierarchies and constant communication should be paid attention to (Kenzhegaliyeva, 2018). In the future, digital solutions to support supra-regional communication and cooperation in VET should be further developed and systematically implemented.

## **4 Limitations and Outlook**

This section outlines limitations of the presented literature review in terms of theoretical and methodological issues as well as regarding the systematic processing and analysis of the studies. Finally, an outlook on further research needs is provided.

Although the review was guided by established methodological and research standards to ensure a methodologically sound approach, it cannot be ruled out that some relevant studies were not found and included (Sturma et al., 2016). Although the systematic search approach using several keyword combinations in different databases reduced the likelihood that relevant studies were disregarded, there is still a risk that relevant publications were not included in the present literature review (Ritschl et al., 2016). In general, using the inclusion criteria applied may be accompanied by the exclusion of potentially relevant studies. This might be due to the fact that only publications in German and English were included in the review, thus possibly leading to an exclusion of relevant literature in other languages. In addition, only studies published in a specific time period (2010-2020) were considered. These decisions were necessary due to time and cost constraints and for efficiency reasons, as a translation of studies published in other languages would have exceeded the available scope. However, since the transfer of VET is controversially discussed internationally and hence there may be literature available in languages other than German or English, it would be interesting to consider these studies in future work.

As a further general limitation, Sturma et al. (2016) emphasize that the involvement of several people in the search, selection and evaluation process can significantly increase the objectivity and thus the quality of the literature review. Thus, the objectivity of the sub-pro-



cesses of the present review must be considered critically, as both the choice of databases and the formulation of the inclusion criteria are based on the national perspective of the authors. The same applies to the definition of the keywords and the literature search itself. The objectivity of the present work could have been increased by involving external experts from the same research discipline in the process, especially when creating the search terms (Klatt, 2019).

There might also be limitations regarding the processing and analysis of the included studies. As the literature review using a narrative approach by Li and Pilz (2021) has shown, VET transfer research is based on various academic disciplines. Overall, Li and Pilz (2021) provide a broad understanding of VET transfer and underline the high complexity and challenges of VET transfer. In the review presented here, we used a similar broad approach to transfer in VET in our analysis. The studies included here can certainly be analyzed in greater depth. One common finding regarding the methodology of the assessed literature is that the majority of the included publications is based on a case-study approach (Gessler et al., 2019; Krzywdzinski & Jürgens, 2019; Peters, 2019a). This method is not without controversy, and its representativeness and generalizability are often challenged (Hildenbrand, 1991; Simons, 2009). In addition, there is criticism that case studies often show a certain inaccuracy and lack of objectivity (Rowley, 2002; Yin, 2009). However, case studies allow for "deep insights into the object of investigation" (Peters, 2019b, p. 83) and accurate and in-depth research in socio-political contexts (Kelle & Kluge, 2010).

Overall, the studies examined differ in their methodology and in their sample composition, in some cases considerably. The broad mapping approach was chosen to obtain a comprehensive overview of the current state of research. However, this affects the comparability of the results. Even though the present study attempted to systematically arrange the studies according to the level at which they address transfer, it cannot be assumed that their respective results are directly comparable with each other. For future reviews, it would be conceivable to include only those studies that are based on the same methodology and/or focus on the same source and recipient countries.

Furthermore, our analyses demonstrate a general limitation: a significant number of the studies screened during the literature review did not provide sufficient fundamental information that would be expected by any research publication, i.e., precise descriptions of research methods, procedures used, sample descriptions, materials, and evaluation approaches (see also Section 2.4). This limitation indicates that higher compliance with research quality standards need to be ensured for the future publication of research results in this area. This is also a necessary prerequisite to ensure stronger connectivity of studies to the current state of research as well as replicability of the findings. A greater emphasis should be placed on the call for these requirements in the future research in this field.

One focus of this review was the German dual VET system as a transfer object. In future research, it would be useful to compare the implementation approaches and success conditions for the transfer of the German VET system to those for the transfer of comparable dual vocational training systems. In this way, fruitful findings regarding the respective vocational training transfers could be made compatible for practitioners in the field of VET cooperation.

In general, the majority of the included studies is based on an investigation of a recipient country or company. Future research activities should therefore focus more on a comparative approach that compares and analyzes the transfer of dual vocational training in different countries and/or companies.

Despite these limitations, the present work succeeded in combining and analyzing research publications on the transfer of VET systems with regard to implementation approaches and the framework of conditions at different levels of observation. Thus, a comprehensive overview of implementation approaches and conditions for success was provided, which offers important insights for VET practitioners. The generated knowledge about important contextual conditions on an individual, company and systemic level in the context of vocational training transfer can offer numerous starting points for future vocational training cooperation or vocational training export to make transfer even more target-oriented. There is no single solution – but versatile approaches and strategies can serve as orientation aids to enable the successful transfer of vocational training systems across borders in the future.

## Acknowledgement

This work has been supported by the German Federal Ministry of Education and Research (BMBF) [grant number 01BF19001A].

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## Appendix

Table 4: Overview of the Included Studies

No	Aim of the Study	Method	Sample	Countries Involved	Reference
<b>Theoretical-conceptual</b>					
1	Identifying key processes related to the transfer of core elements of the German dual training system to the SENATI training program	Document analysis	Documents and studies of SENATI; Comprehensive documentation of the vocational education and training cooperation (1998-2003)	Germany, Peru	Angles & Lindemann (2019)
2	Investigating the policy transfer process in the context of vocational training cooperation in three countries	Analysis of the VET policy transfer process		Germany, Egypt, Malaysia, Korea	Barabasch & Wolf (2010)
3	Further developing and applying a theoretical model for the analysis of the policy transfer process using three examples	Document analysis of gray and scientific literature; filtering for relevant topics using "indexing" method		Germany, China, Turkey	Barabasch & Wolf (2011)
4	Examining how CARICOM members relied upon the policy tool of 'cooperative educational transfer' at the regional level; Analyzing how authoritative action in the movement of policy ideas is undertaken across national educational policies	Case study: Summative content analysis of policy discourse	Educational policies of 13 CARICOM members	Caribbean Community (CARICOM)	Jules (2015)
5	Answering fundamental questions related to the transfer of German vocational training in the context of the project "WEB-TT" in Egypt	Practice-oriented analysis (demand pull and technology push)	3 inter-company training centers for the construction industry; further partners: Factories construction industry in Egypt	Germany, Egypt	Meyser (2014)
6	Presenting lessons learned from the experiences, results and successes of the work performed by the "Regional Association for Technical and Vocational Education" (RAVTE) in the ASEAN region; perspectives for the use and development of regional structures for VET research, systems, and cooperation	Descriptive report	27 member universities from 8 countries in the ASEAN region	Asian countries (ASEAN countries)	Schröder (2019)

No	Aim of the Study	Method	Sample	Countries Involved	Reference
<b>Empirical</b>					
7	Examining the effectiveness of dual vocational education in the U.S. through an analysis of case studies with a focus on their strengths and weaknesses	Case study based on literature review; interviews with various parties; site visits	Various participants in apprenticeship training at BMW, Siemens, and VW in the USA	Germany, USA	Aring (2014)
8	Describing and reflecting on practical experiences regarding the feasibility of transferring the dual apprenticeship system to other countries	Observation; author acted as an external advisor or representative of the donor agency	Apprentices from: Nicaragua/the Philippines (small and micro-enterprises in the informal sector); Bolivia (local business associations); Burkina Faso (workshop/workplace of the master)	Nicaragua, Bolivia, the Philippines, Burkina Faso, Switzerland	Batliner (2014)
9	Identifying key success factors that are necessary for the successful and sustainable establishment of dual vocational training	Interviews; content analysis	Representatives of training companies and potential training companies as part of the SMART NET project	Austria, Germany, Switzerland, Slovakia	Bliem et al. (2014)
10	Investigating whether policy transfer can reduce structurally induced unemployment	Case study	Greek hospitality industry: 2 locations, i. e. Athens and Heraklion, 170 apprentices in 35 training companies	Germany, Greece	Bohlinger & Wolf (2016)
11	Investigating how partnerships have been developed between three major industry sectors and schools at a systemic level	Semi-structured interviews	50 school and industry members, e.g. school principals and teachers, workplace and school coordinators, or industry project officers	Australia	Flynn et al. (2015)
12	Analyzing how multinational companies (MNCs) implement dual training structures in the U.S.	Qualitative case study; interviews	Apprenticeship Network: network of 8 companies partnering with local community college, the State Department of Labor and High Schools n = 14 interviews and 167 documents	Germany, Austria, Switzerland, USA	Fortwengel & Jackson (2016)
13	Identifying and presenting driving and inhibiting factors in the export of German vocational training services	Interviews	14 collaborative projects (49 subprojects) as basis interviews with 39 subprojects participated 3 regionally oriented focus group meetings with the collaborative partners	Germany	Fraunhofer MOEZ (2012)

No	Aim of the Study	Method	Sample	Countries Involved	Reference
14	Examining the strategies of multinational companies (MNCs) for transferring strategies used in German vocational education and training to the international level	Expert interviews	Experts: Subsidiary managers, human resource executives, training managers Germany: n=15; Mexico: n=105; India: n=67; China: n=73	Germany, Mexico, India, China	Fuchs (2020)
15	Analyzing the transfer of competency-based education and training (CBET) to Namibia	Case study; analysis of registered unit standards in terms of level and credits provided by the NQA	Analyzing the registered unit standards of the National Qualifications Framework (NQF): (n = 1,277)	England (Germany), Namibia	Gessler & Peters (2020)
16	Investigating a vocational training transfer from a German company to a plant in the U.S.	Case study based on document analysis; expert interviews; site visits	Document: Tuscoloosa News, documentation from the factory itself (DaimlerChrysler) and academic studies of the factory, expert interviews (n=6); site visits (n=2)	Germany, USA	Gessler (2017)
17	Investigating whether vocational training transfer from Switzerland to India is possible	Document analyses; content analysis; interviews	Explorative interviews with the main project partners (n = 8) in Switzerland (e.g. directors, founders, ministries) Interviews with project partners in India (n = 80) Interviews with additional companies and associations (n = 7)	Switzerland, Germany, India	Haering et al. (2014)
18	Examining to what extent recruitment and qualification measures are adapted to the respective country-specific conventions	Case studies; semi-structured interviews; document analysis; observation at production level	2 medium-sized companies in China (automobile, textile, and consumer goods industries: Krones Machinery (Taicang) Co., Ltd. Kern-Liebers (Taicang) Co., Ltd); interviews with: German companies (n=4), Chinese vocational schools (n=2), Chinese company (n=1), Chamber of Commerce Shanghai (n=1)	Germany, China	Holle (2019)
19	Investigating the training strategies of German companies in emerging countries and identifying obstacles and success factors	Interviews	16 German companies with a foreign location in Southeast Asia, Africa or Latin America	Germany, developing and emerging countries in Southeast Asia, Africa and Latin America	Körbel et al. (2017)

No	Aim of the Study	Method	Sample	Countries Involved	Reference
20	Identifying possibilities and limitations of vocational training transfer to BRIC countries	Case study; interviews	11 VW and Toyota factories in BRIC countries: a total of n=353 interviews conducted by parties involved at different levels	Germany, Brazil, Russia, India, China	Krzywdzinski & Jürgens (2019)
21	Examining the impact of international technical standardization and regulation on the design, organisation and delivery of apprenticeships in the aeronautical and aerospace sectors in England and Germany	Observation of apprentices in the workplace; semi-standardised interviews with apprentices, trainers and managers	Large companies with well-developed apprenticeship programs: England: n=3 companies, Germany: n=4 companies	England, Germany	Lahiff et al. (2019)
22	Investigating the extent to which a comparison between the original policy in the donor country and the transferred policy in the recipient country could be used to further develop the policy	Ex-ante evaluation; using pilot studies as examples to analyze the implementation of the VET peer review process in the two countries	3 German schools (in North Rhine-Westphalia) and 4 Chinese vocational schools (in Shanghai)	Germany, China	Li (2019)
23	Policy transfer at the institutional level: examining the extent to which there is potential to transfer the evaluation concept of peer review in TVET to China; deriving supporting and inhibiting factors from the study	Participant observations; qualitative interviews	4 participating TVET schools providing teaching in administration, health care, and the craft sector; evaluation of peer teams comprising 4 members: the coordinator, the deputy coordinator, and one peer for each of the subject areas selected by the school	Germany, China	Li & Pilz (2019)
24	Obtaining information on the entire education and training landscape in Germany and using this information to gain important pointers for successful foreign business in the future	Interviews	164 education and training providers involved in education exports	Germany	Pfaffe (2019)
25	Investigating an education transfer within a company (Mercedes-Benz) and how success criteria can be defined and assessed in the context of international educational transfer	Case study; document analyses; semi-structured expert interviews; site inspections	Document analyses, expert interviews (n = 10), site visits (n = 3) Mercedes-Benz (MBSA plant in Germany, USA and South-Africa)	Germany, USA, South Africa	Peters (2019a); see also Peters (2019b)



No	Aim of the Study	Method	Sample	Countries Involved	Reference
26	Investigating the training practices of German companies in the USA, China, India and Japan, focusing on initial training	Semi-structured exploratory expert interviews	Training experts as company representatives USA: n=10 China: n=11 India: n=15 Japan: n=5	Germany, China, USA, India, Japan	Pilz (2016)
27	Investigating the training strategies of German companies in the U.S. with regard to their convergence or divergence from strategies used in the U.S.	Expert interviews	Representatives of German companies in the U.S. (n=10)	Germany, USA	Pilz & Li (2019)
28	Analyzing the vocational and training behaviors of German corporations at their subsidiaries in the USA, China and India	Semi-structured exploratory expert interviews	Training experts as company representatives USA: n=10 China: n=11 India: n=15	Germany, China, USA, India	Pilz & Li (2014)
29	Analyzing the importance of the curriculum design and teaching-learning arrangements at the micro level in the curriculum development process from a comparative VET perspective	Qualitative semi-structured interviews; group discussions	11 focus group discussions and 15 one-to-one interviews in the villages with project partners at the local level; Expert interviews with 4 different categories of experts: Vocational training institutes (n=2); vocational training providers (n=2); garment industry (n=1); self-employed (n=1)	Western countries, India	Ramasamy (2020)
30	Transfer of a competency-based approach to rural Indian sewing courses; examined to what extent a competency-based sewing skills curriculum is beneficial for vocational skills development of (female) learners in rural areas	Group and individual interviews; questionnaire; pilot study of newly developed curriculum: 8-week courses in all 4 villages; evaluation	Pilot study - Phase 1: 4 villages in 2 rural areas in the state of Tamil Nadu in South India; Phase 2: 10 experts about individual sewing skills to explore curriculum framing and teaching-learning arrangements from a pedagogical perspective	(South) India	Ramasamy & Pilz (2019)

31	Investigating the transfer of a specific training system, the Manufacturing (M) Powered program, from Minnesota in the United States to South Africa; describing which features were important in the successful transfer of M-Powered to TDM-Powered	Case study: Questionnaires, interviews, documents	Stakeholders who undertook to transfer M-Powered over to South Africa: 6 from USA, 8 from South Africa, 1 South African expatriate living in Minnesota	USA, South Africa	Stuart (2013)
32	Analyzing the qualification practice of German companies in their foreign locations in Japan, India and China	Expert interviews	Interviews with decision-makers (e.g. HR managers, training managers) for the area of education and training in German companies in Japan, India, and China In Japan: 5 interviews In India: 15 interviews In China: 11 interviews	Germany, Japan, India, China	Van der Burgt et al. (2014)
33	Examining the effectiveness of the German model of dual apprenticeships when transferred to different national settings	Evaluation approach; interviews	Mexican Model of Dual Apprenticeships (MMFD): n = 32 2 phone interviews with apprentices who had graduated from the programme in 2015/16 (1 structured survey and 1 semi-structured interview)	Germany, Mexico	Valiente et al. (2020)
34	Investigating the transfer of dual initial training practices and further training measures in German multi-national companies	Expert interviews	46 training managers in 12 active companies in all 3 countries	Germany, China, India, Mexico	Vogelsang & Pilz (2020)
35	Investigating the extent to which German manufacturing companies have transferred the dual vocational training model to three countries and which influencing variables affect this possible transfer	Qualitative analysis; expert interviews	Interviews with 149 training experts and managers of the human resources departments of subsidiaries of German production companies; 86 companies in China, India and Mexico and responsible persons in public and private vocational training institutions	Germany, China, India and Mexico	Wiemann & Pilz (2019)

36	Describing and analyzing the educational transfer project with a private company WEB-TT in Egypt and the "Train-the-Trainer Made in Germany" interventions to investigate employment qualification in the Egyptian construction industry	Observations on construction sites; interviews with experts; evaluation of literature using methods of qualitative social and vocational training research; design and implementation of training activities	Interviews with managers and engineers of the construction company; expert-interviews with construction engineers from German companies; discussions with local engineers and managers to understand the structure and regulations of Egyptian construction work	Germany, Egypt	Wolf (2013); see also Wolf (2017)
<b>No</b>	<b>Aim of the Study</b>	<b>Method</b>	<b>Sample</b>	<b>Countries Involved</b>	<b>Reference</b>
<b>Meta-analytical</b>					
37	Analyzing the existing literature on VET reform implementation for key determinants, trends, and gaps using a determinant framework and synthesizing the available evidence on reform implementation in VET to summarize the work in this field	Systematic literature review of reports and studies accessible in electronic research databases on VET and general education, academic databases on related topics, or international organisations doing VET research	Literature review of 1,835 sources, coding 177 for 1,538 data points (including publications from 1984 - 2017). Of the 177 coded sources, 62 are peer-reviewed literature, and 115 are non-peer-reviewed sources including 49 books and 66 others (e.g. policy reports)	Europe, Asia, Africa	Caves et al. (2019)
38	Analyzing the constitutive elements of the German dual system and their (re-)design when transferred to other countries	Literature analysis of the relevant legal sources	Reflection of transfer examples from Switzerland, Austria, Netherlands, Denmark, Norway, Luxembourg, England	Germany	Euler (2013)
39	Analyzing the question to what extent dual vocational training can be exported and examining the future of dual vocational training in German-speaking countries	Meta-analysis of the current state of research on transfer (elements) of apprenticeship models		German-speaking countries with dual vocational training system	Gonon (2014)
40	Investigating how Germany, as a transferor, can transfer elements of the dual system to Asian countries	Meta-analysis; descriptive analysis	14 GIZ VET projects in 10 Asian countries: Afghanistan, China, East Timor, Indonesia, Laos, Mongolia, Myanmar, Pakistan, Sri Lanka, and Vietnam	Germany, various Asian countries	Hummelsheim & Baur (2014)
41	Developing a key variable model of central success factors for sustainable vocational training projects	Meta-evaluation	Vocational training projects between 1997 and 2010	Germany, Latin America, China	Stockmann (2019)