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RESEARCH ARTICLE

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The typology of vocational education and training cooperation between Germany and China

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Abstract

Germany and China have been engaged in a wide range of vocational education and training (VET) cooperation activities since the 1980s. To clarify what organizations have been involved and what project types exist within VET cooperation, a semistructured survey had been conducted for collecting data. By this approach, 99 VET project profiles with 258 organizations related were detected. To analyse these projects and organizations, the 'general key factor model of sustainability' is used to structure the analysis framework. In this framework, 'cooperation type', 'content type' and 'project duration' were considered as the three fundamental criteria for further categorization. On this basis, seven cooperation types were created by the organizations involved, three content types were established by the goal of the project and three project duration were distinguished by the time planned for the project. The result shows that governmental organizations are the main actors who play a major role in the Sino-German VET cooperation. However, numerically, German private organizations participated more in VET cooperation rather than Chinese

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private organizations. Civil social organizations show no significant function. Meanwhile, different cooperation types show different projects' emphasis: Type G (Governmental) projects focus on building or promoting on the organization level; Type G + P (Governmental + Private) projects tend to objectives on the individual and system level; Type G + C (Governmental + Civil) projects occur more often at an individual level; Type G + P + C (Governmental + Private + Civil) projects tend to pursue goals on organizational or system level.

INTRODUCTION

Germany's dual vocational training system attracts worldwide attention, and the promotion of vocational training has traditionally played a major role in Germany's development cooperation (Xiao, 2017). Accordingly, the Federal Republic of Germany and the People's Republic of China have been engaged in a wide range of vocational training cooperation activities since the 1980s (Liu, 2017). To clarify the status of those Sino-German vocational education and training (VET) cooperation, it is of great interest for project donors and partners to know what organizations have been involved and what project types exist in VET cooperation between Germany and China.

The existing lists of project actors (e.g., Bundesinstitut für Berufsbildung [BIBB], 2017; German Office for International Cooperation in Vocational Education and Training [GOVET], 2019) are limited to German organizations. These lists described the actors who participate in international VET cooperation, but show no typology or categorization. They offered a wide range of special expertise and specific services for a wide variety of initial requirements, which can be used as a guide toolbox for related organizations to develop the initial practice of VET projects. In addition, companies are not individually identifiable on these lists. On the Chinese side, there is no available list systematically, particularly not for Sino-German cooperation. Thus, in this study, a cooperation organizations list has been created and cooperated with the Sino-German Institute of Vocational Education (CDIBB) of Tongji University; however, this is regionally focused and not representative nationwide.

This paper studies VET cooperation in the last decades, focusing on the following issues:

- What organizations are involved in Sino-German VET cooperation in China?
- What project types exist in the Sino-German VET cooperation in China?

By answering these questions, two reviews were conducted for collecting data during the last 2 years. The first data collection step included systematic literature research, resulting in a literature database with 87 publications on VET projects (Literature database section). In the second data collection step, a semistructured e-mail survey had been conducted for collecting 99 VET project profiles in a project database (Project database section). A new typological

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analysis framework for these projects is established (Analysis framework section), to categorize these 99 projects.

This new typological analysis framework is derived from Stockmann (2013), cf. the key factor model of sustainability section. Therefore, three criteria as cooperation type, content type and project duration are considered, respectively, according to the three different evaluation levels: institutional level, systematic level and design-implemental level.

From the project base mentioned, 258 organizations were founded in these 99 projects. These organizations were divided into three groups: governmental organizations, private organizations and civil society organizations. Therefore, seven cooperation types can be calculated, by identifying the actor types of the organizations involved in the cooperation. Apart from cooperation type, content type and project duration were also considered. The final result of this analysis framework was shown in different types of Sino-German VET cooperation section.

THEORETICAL BACKGROUND

Brief introduction of Sino-German VET cooperation

The Sino-German VET cooperation was started with the 'reform and opening up' in 1978; it has devoted considerable effort to transferring the traditional Chinese education system and adapting various foreign VET models to a particular situation (Jiang, 2009).

At the beginning of the early 1980s, cooperation focused on activities involving direct workforce training, such as training projects for skilled metal and electrical workers in Tianjin, Beijing and elsewhere. After that, the following activities focused on the development of educational and training staff have become increasingly prominent; for instance, training projects for teachers, instructors and headmasters of VET schools. Further activities include a support service for establishing a nationwide examination and certification system, to enable a more standardized labour market (Yu, 2018). In addition, Sino-German cooperation has enabled the establishment of several academic research institutes in VET (e.g., Central Institute of Vocational and Technical Education in Beijing).

Generally, the development of Sino-German VET cooperation can be separated into the following three phases in China: the introduction and promotion phase; the coaching and training phase; the innovation and application stage. In the phase of introduction and promotion (1980–1999), the cooperation was mainly 'imported' into China. German experts were invited and assigned to carry out training for VET teachers and managers in various parts of China. Within these policies, *The Sino-German Joint Statement on Strengthening Cooperation in the Field of Vocational Education (1994)* and *The Sino-German Vocational Education Initiative Joint Communique (1994)* played a very important role to promote cooperation (Stockmann et al., 2000).

In the phase of coaching and training (2000–2008), Sino-German VET cooperation has changed from 'import' to 'export', transferred from passive acceptance to active acquisition and, meanwhile, the policy-making has altered from 'supply-oriented' to 'demand-oriented'. The amount of international cooperation projects is funded by the government, allowing the VET teachers and managers to travel from China to Germany for the furthermore coaching and training.

In the phase of innovation and application (2009–present), the Sino-German VET cooperation has developed to be gradually diverse, and VET schools, enterprises and governmental organizations have interacted with each other. *The Sino-German Vocational*

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Education Cooperation Agreement (2010) is a successful symbol of VET policy within this period (Stockmann & Meyer, 2017).

Among those Sino-German VET cooperation, various organizations were involved, which played an important role in promoting China's relevant VET policy making (BiBB, 2016). Concerning this, China's VET policy transfer is manifested in the diversification of VET participants, the standardization of qualification certification and the legalization of related VET regulations. The long duration of cooperation and the big number of projects make it valuable to use China as a particular field for research on international VET cooperation and to explore the topology system for VET projects in one national setting with similar framework conditions.

The key factor model of sustainability

Success factors are variables in a project, which contribute to the achievement of project success through their influence on project planning and project activities. Despite a high interest in identifying such factors for international VET projects and a wide range of German, English and Chinese publications on this topic, the derivation of success factors from systematic, empirical assessments is still a rarity. In 2013, Stockmann and Silvestrini conducted a systematic meta-evaluation of VET projects and developed a generalized 'key factor model of sustainability', which will be presented here for the first time in English.

According to the key factor model (Figure 1), three clusters of success factors significantly influence the sustainability of international vocational training projects.

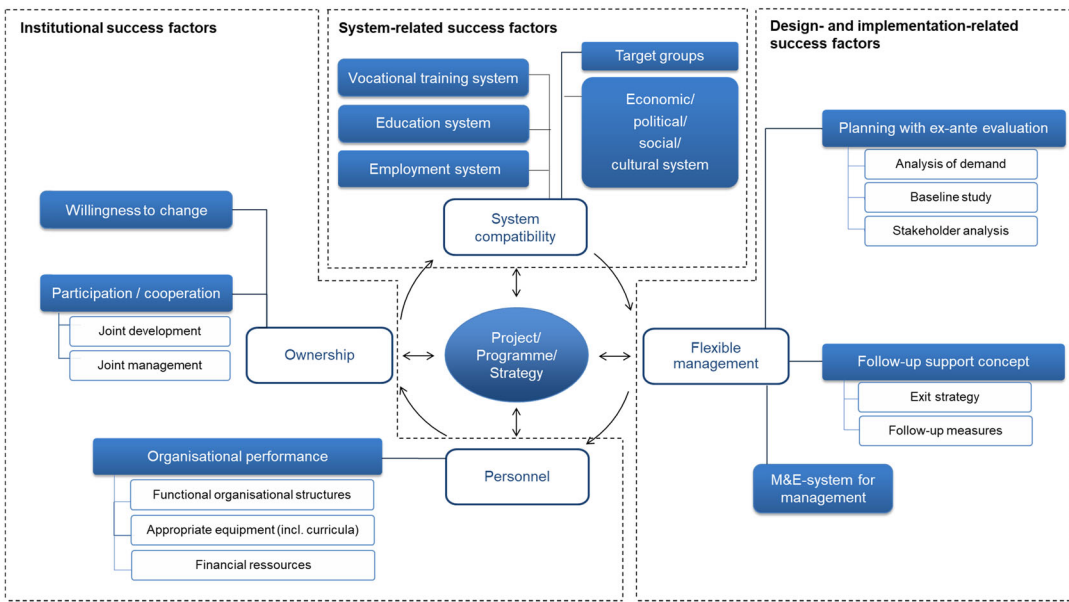

FIGURE 1 The key factor model comprises three components, namely, influences that arise from the (vocational training) system, project design, and implementation and the participating organizations. *Source:* Stockmann (2013, 142ff.). M&E, monitoring and evaluation. [Color figure can be viewed at wileyonlinelibrary.com]

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Design- and implementation-related factors

- A good project start requires thorough project planning, ideally with an ex-ante evaluation with a needs and baseline study that includes a stakeholder analysis. A follow-up concept with exit strategies and follow-up measures should also be considered at this stage.
- In the further course, however, this planning must respond openly to knowledge growth and system (environmental) changes at all levels (micro, meso and macro). This requires management-relevant data, which is best obtained through a manageable, impact-oriented monitoring and evaluation (M&E) system.
- With flexible management, even projects with planning weaknesses can be led to success. On the other hand, good planning without flexible management does not lead to success.

System-related factors (framework conditions of the project)

- Projects with a claim to broad impact and systemic change must be compatible with the system, that is, reconcilable or at least connectable to existing structures. Unfavourable framework conditions can rarely be changed in the course of the project and cannot be overcome—even not by flexible management or ownership. Therefore, when planning such projects, precise analysis and realistic assessment of the framework conditions and potential design options in the partner country must be carried out. Only a concept adapted to the framework conditions can anchor project effects in the system in the long term.
- The education system in general, the vocational training system in particular and the employment system, the economic system, the political system, the social system, the cultural system and target groups are to be considered.

Institutional factors

- The organizational performance of the partner organization(s) determines the sustainability of the project. Performance is defined by functioning organizational structures, adequate technical equipment and sufficient financial resources— however, only motivated personnel who have acquired problem-solving capacities in their administrative and professional qualification are indispensable. A critical 'mass' of people with these skills is needed at all levels if the organization is to develop further (i.e., taking new developments into account through changes in measures or goals) or if problematic internal issues (inefficient structures, outdated equipment, financial bottlenecks) are to be compensated for. Staff turnover should therefore be kept to a minimum through appropriate incentives.
- Just as indispensable as personnel is the ownership of the partner organization(s) and political leaders, defined as absolute consensus on what is to be achieved and how (which goals or changes with which strategies and measures). This also includes the active (not just rhetorical) willingness to want to change something. Numerous studies have shown that early active participation of partner organizations in the steering of a project/programme increases ownership.

Accordingly, four key factors should always be present if a project is to achieve sustainability: flexible management, system compatibility, qualified and committed personnel,

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and ownership. Since the evaluations used to generate the key factor model refer exclusively to governmental or government-civil society VET cooperation, the validity of this model could be significantly strengthened, especially by empirically testing and expanding it to include projects with private-sector participation. In addition, there is the empirically untested assumption that the success factors identified in previous research are also permanently valid outside development cooperation and under changed framework conditions (such as those in the People's Republic of China). To date, however, no studies have been published that empirically test the key factor model or develop a theoretically substantiated alternative.

MATERIALS AND METHODS

Analysis Framework

Based on the general key factor model, three dimensions could be considered to evaluate a project, which are institutional related, system related and design and implementation related. Therefore, three categorizations were established to analyse those 99 projects. For the institutional dimension, it is the cooperation type, which is regarding the actors who are involved in the project. For the system-related dimension, it is the content type of cooperation, which is regarding the goal of the project. For the design and implementation dimension, it is the project duration that indicates whether the implementation of the project was less than 5 years or longer.

On the institutional dimension, the ownership and organizational performance are the main factors; thus, the actors who cooperated in a specific project should be considered. Therefore, the 'cooperation type', which shows what organizations are involved in the project, is regarded to be the criterion at this level.

Since the organizations are grouped into three types, 'G' for governmental, 'P' for private and 'C' for civil society, seven potential types of cooperation can be distinguished (cf. Table 1).

On the system-related dimension, the target group is the main factor; thus, the goals of a project are chosen to be analysed. Therefore, the 'content type', which distinguishes the levels of intervention or at least the level of goals or intended impacts at the beginning of the projects, is regarded to be the criterion in this level. The following table shows the three different content types that can be found in China and a reasonable number of cases in our project database (cf. Table 2).

These three categories can be understood as an ordinal scale: projects targeting the VET system surely include measures both on the organizational and individual level and projects with limited goals on the organizational level also includes measures on the individual level. For sure, the intervention level is also linked to the size of the project (or the programme, respectively), but the analysis revealed that the content is of higher importance for the classification process.

On the design and implementation dimensions, planning with ex-ante and follow-up support are the main factors, and it can be reflected in the project duration. Since the project duration is closely related to the implementation of the project, it reflects the project actor's expectation of the results in the time dimension. This means the duration of the project can reflect the connection between the 'ex-ante' and 'follow-up' of the project. Therefore, 'project duration', which indicates how long the cooperation has been designed, is regarded to be the criterion at this level.

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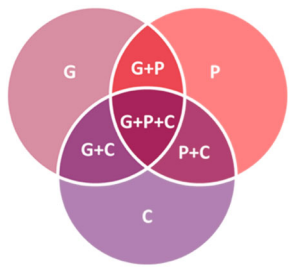
TABLE 1 Categorization by cooperation type

Cooperation types found in the project database

G	Cooperation of governmental organization(s)
G + P	Cooperation of governmental organization(s) and private organization(s)
G + C	Cooperation of governmental organization(s) and civil society organization(s)
G + P + C	Cooperation of governmental organization(s) with private organization(s) *and* civil society organization(s)



Cooperation types not found in the project database

P	Cooperation of private organization(s)
P + C	Cooperation of private organization(s) with civil society organization(s)
C	Cooperation of civil society organization(s)

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TABLE 2 Categorization by content type

System	Goals/impacts for improving the regional system (e.g., VET employment system)
Organization	Limited on goals/impact for schools or companies that participate
Individual	Limited on impact for students and teachers

TABLE 3 Categorization by project duration

Long term	At least 5 years
Short term	Less than 5 years
Unknown	Insufficient time data (residual category)

TABLE 4 Numbers of publications in the literature database by publication language

	German	English	Chinese	Total
Database	50	24	13	87
Synthesis selection	6	2	1	9

To specify the project duration in this research, long term, short term and unknown is defined as follows (cf. Table 3):

The differentiation at 5 years of duration is also derived during the analysis. While from the German side, most state-financed projects are limited to 3 years, they are classified as short projects. However, in many cases, such projects are prolonged or had been delayed, so they cannot be finished precisely after 3 years. The duration of longer programmes (or follow-up projects) is in most cases much longer than 5 years. The residual category reveals the poor information state because it was not even possible to find out in some projects how long they had been run. Furthermore, this category also includes some 'open-ended' projects and it is not yet possible to estimate how long they will last.

Literature database

The first review collected literature on international cooperation in the field of VET, especially on cooperation between Germany and China, China and other countries and Germany and other countries. The research covered all major databases (e.g., ECONIS, FIS, google scholar, IBSS, UNEVOC TVET Online Library) and VET journals (e.g., ERVET, IJRVET, JVET) in three languages (Chinese, English and German). The substantial majority of German-language literature on this topic is followed by English-language literature. Internet research in Chinese (e.g., CNKI database) revealed only a few publications in this language with a suitable topic focus—possibly due to different boundary conditions (e.g., publication landscape, search engine algorithms) (cf. Table 4). The database contains 50 publications in German, 24 publications in English and 13 publications in Chinese; from these publications, 9 were investigated within the success factor synthesis summarized.

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Among the publications listed, only a few derived factors of international VET cooperation from systematic, empirical assessments. The literature synthesis is based exclusively on publications that meet this criterion. Conversely, factor descriptions of unknown origin, as well as completely experience- or citation-based factor descriptions, are excluded from this analysis.

When looking into the study of typology for the VET projects, the existing research mainly focuses on the VET system in different countries. However, rarely have scholars developed the typology for a specific VET project, especially by empirical research. From a multiperspective, those typology approaches can be classified as macro-level, meso-level and micro-level. The macro-level indicates skill formation and stratification, the meso-level indicates standardization and the micro-level indicates the practice of learning (Pilz, 2016). Another study focuses on the ideal types of VET programmes, which examines the linkage between actors in the education and employment system. The result shows the transparent typological progress between 'ideal types' and 'real types' in the VET programme (Rageth & Renold, 2017).

Project database

The projects collected were Sino-German vocational education cooperation projects in recent 20 years. To fulfil its primary function—to enable a well-founded case selection on the one hand and to collect background knowledge for expert interviews on the other—this database was intended to map the diversity of German–Chinese vocational education cooperation projects present in China.

Since relevant projects were not consistently and completely documented on the Internet, organizations involved in VET projects (actors) and respective contact persons (from ministries, commissioners, associations, universities, schools, training centres and companies) were first identified by telephone calls or internet research, and then they were asked to check and complete research results on their projects in a personally addressed e-mail survey. Since larger actors had numerous projects to list, the responses could take several weeks. If the survey remained unanswered, a reminder was sent.

Depending on the location of the actor, the survey was in German or Chinese. A response form translated into English (a so-called project profile) is shown in Supporting Information: Appendix 1. If respondents repeatedly mentioned a new actor or if a higher-level actor asked for direct contact with funded actors, these actors were also researched and contacted.

Participation was voluntary for all organizations. Accordingly, the responses varied from organization to organization. Some were positive and reported many projects, others were quite simple and still others did not respond. The response rate resulting from this procedure amounts to 41% for German actors and 56% for Chinese actors (cf. Table 5), providing a project database with 99 project profiles of German–Chinese vocational training cooperation over the last 20 years.

TABLE 5 Features of the project database by survey language

	German	Chinese	Total
Project profiles received	77	22	99
Organizations responded	12	10	22
Organizations contacted	29	18	47

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In general, there are certainly some biases to be mentioned here. There is a selection bias because there is no complete list of Sino-German vocational training projects. Although the project tried to be as accurate as possible, there might exist some projects who are not known by the resource persons. Therefore, a bias towards renowned, well-respected and sufficiently equipped projects has to be expected. Moreover, those who have not replied to the survey are mainly people from private organizations. The reason for this might be the limited benefits of academic research for these organizations and some fear to reveal business secrets. In opposite, most governmental organizations gave a positive response. As a result, there is a definite bias in the database toward public projects. However, there is no evidence of any self-selection bias regarding the private projects—all investigations on missing projects did not reveal any other type or structure than the one covered in the project database. On average, responses included five projects per organization. German organizations reported up to 29 projects and Chinese organizations up to 10 projects. These projects are surely not complete nor intended to be a representative sample. Nevertheless, this is the most comprehensive list of Sino-German vocational training projects for the last decade.

RESULTS AND DISCUSSION

The organizations involved in Sino-German VET cooperation

By analysing the project sample obtained in the course of the e-mail survey, governmental, private-sector and civil-society actors in Sino-German VET cooperation can be listed by name for the first time. The diversity is well indicated by the frequency of the actors mentioned, consisting of third-party nominations as 'project partners' and—where available—also self-nominations. However, the frequency with which an actor is named should not be misunderstood as an indication of its importance compared to other actors named less frequently. The organizations represent only a small sample of the VET actors' activities in China and Germany, and it cannot be assumed that they are representative or complete.

There are several reasons for this limitation:

- Through internet research, mainly state-funded projects can be identified and contacted, as these projects are more frequently listed in public project databases.
- Participating organizations are usually mentioned more often than nonparticipating ones, as in the case of nonparticipation, only third-party nominations are made. Accordingly, the request to contact donor actors individually also leads to fewer mentions.
- Participating organizations may not list all projects that have been carried out in the last 20 years, but limit themselves to a selection. This may be due to a lack of in-house project databases, the protection of financial interests or a lack of time.

Compared to other lists, there are also certain advantages. The lists published by state organizations both in Germany and in China are limited to those activities supported by state money, primarily from development cooperation or Federal Ministries. Activities done by Federal States (in Germany particular Bavaria) are not included as long as they are not linked to national activities and it is the same for China. Some of these activities had been covered through the last stocktaking on behalf of the Hanns-Seidel-Stiftung (Stockmann & Meyer, 2017), but this also revealed the importance of a much broader approach in collecting

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information, including private organizations, and particular companies. This is the first trial to bridge this gap— although it may not be perfect because it had not been the main objective of this project.

With these limitations in mind, findings from the list of actors portrayed can be summarized as follows: In general, 258 organizations have been mentioned within these 99 projects. Those organizations are grouped into three categories: governmental, private and civil society. From the numbers of German actors, 99 organizations are represented in the project database: 51 private sector organizations, 36 governmental organizations and 12 civil society organizations. From the Chinese side, 148 organizations are represented: 11 private sector organizations, 126 governmental organizations and 11 civil society organizations. In addition, 11 international organizations were identified in the project database (cf. Table 6).

Governmental organizations are dominant in the projects collected. Looking at the German governmental side, VET schools and (technical) universities build the largest group in terms of numbers. They are followed by ministries at the federal and state levels, education providers and other government actors, including primarily implementing organizations. Unlike the group of private-sector organizations, there is a strong centralization around a few actors: The Federal Ministry for Economic Cooperation and Development (BMZ), Credit Institute for Reconstruction (KfW) Development Bank, the Bavarian State Ministry for Education and Cultural Affairs (StMUK) and the Federal Ministry of Education and Research (BMBF) are most frequently mentioned by far.

On the Chinese side, governmental organizations are the numerically largest group of all actors. Most of them are vocational schools and training centres, which are almost exclusively governmental owned or funded in China. Besides that, ministries including the education bureau and municipal government are also frequently mentioned during this cooperation: for example, the Ministry of Education and Education Commission in a specific city are often mentioned as a local partner. Some universities and research institutes are also involved in these projects. For the rest of which, state companies and education providers participated sometimes as well.

Among the private sector organizations, the largest group are German manufacturers producing in China. Additionally, there are commercial education providers, trading companies/retailers, consultants, chambers and other private sector actors (mostly for-profit service providers) implementing German–Chinese vocational training projects. Overall, these activities do not centre around one specific actor. Even the most frequently mentioned actor from the German private sector—the AHK Shanghai—is mentioned only five times. Among the remaining civil society actors, Sequa GmbH stands out as a central contractor for many

TABLE 6 Numbers of actors in German Chinese VET cooperation projects

	Governmental organizations	Private organizations	Civil society organizations	Total
German	36	51	12	99
Chinese	126	11	11	148
International	3	6	2	11
Total	165	68	25	258

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BMZ-funded projects. However, the major grouping of German civil society is noncommercial education providers.

Chinese private companies are hardly ever involved, as only two were found. While chambers, consultants and other education providers play a certain role, civil society organizations are rarely represented in the project database. Chinese–German Union for Vocational Education was most mentioned (five times), mainly because of its cooperation with StMUK (Bayerisches Staatsministerium für Unterricht und Kultus). All other associations and civil organizations show no distinctive features and have only been mentioned once.

Besides the organizations from China and Germany, foreign actors (i.e., organizations from other countries and international organizations) participate in Sino-German vocational training projects. Since only 11 organizations from this group are represented in the project database, no further groupings can be distinguished beyond the sector allocation. Since all actors are mentioned with the same frequency, there are no indications that vocational training projects are centred around one or a few international actors.

Different types of Sino-German VET cooperation

Based on the summarized types of actors in Sino-German VET projects, the question arises if it is possible to distinguish project types emerging from the interaction of these different actors. Are there projects with all actor types (governmental, civil society and private organizations) involved? Are there projects without any involvement of the German or Chinese state? What are the levels of the project goals? Are project periods short, even if far-reaching changes are intended?

These questions have been tried to answer by a qualitative cluster process of all projects in the collected database. In favour of quantitative cluster analysis, the method used is an open procedure and supports understanding the cluster mechanism and criteria developed during the exchange (Kluge, 1999). It is possible, for instance, to include or exclude variables due to the insights achieved during a round of qualitative analysis. The final solution presented here is based on three variables for identifying project types: actors, content and duration.

Considering all three categorizations mentioned in the analysis framework (Analysis Framework section), which are 'cooperation type', 'content type' and 'project duration', each project can be allocated into a project cluster. Project clusters and respective frequencies are depicted in Figure 2.

This overview reveals, on the one hand, the diversity of VET project profiles: one can find projects in 25 different categories. On the other hand, there is also a clear concentration on four categories that can be understood as focal points in the project portfolio of certain forms of cooperation. Overall, the clustered project database reflects a diverse project landscape in which public actors cooperate with each other or enter into collaborations with the private sector and/or civil society.

Purely governmental VET cooperation between China and Germany (Type G) merely focuses on building or promoting the development of organizations. Activities in this area include, for example, the granting of promotional loans to Chinese vocational schools and colleges to improve their teaching equipment in the area of practical training. Short project durations (of less than 5 years) are more frequent than long ones.

VET cooperation between public and private sector organizations (Type G + P) covers the entire spectrum of content levels and project durations, with a slight tendency toward individual and system objectives. One example of this is the supraregional cooperation between

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	cluster not found
	1-5 projects
	6-10 projects
	11-15 projects
	more than 15 projects

Type G, 38 projects

Short public cooperation (Type G) on individual level 3 projects	Short public cooperation (Type G) on organization level 22 projects	Short public cooperation (Type G) on system level 2 projects
Long public cooperation (Type G) on individual level	Long public cooperation (Type G) on organization level 9 projects	Long public cooperation (Type G) on system level 1 project
Public cooperation (Type G) on individual level with unknown duration	Public cooperation (Type G) on organization level with unknown duration	Public cooperation (Type G) on system level with unknown duration 1 project

Type G+P, 21 projects

Short public and private cooperation (Type G+P) on individual level 3 projects	Short public and private cooperation (Type G+P) on organization level 1 project	Short public and private cooperation (Type G+P) on system level 2 projects
Long public and private cooperation (Type G+P) on individual level 3 projects	Long public and private cooperation (Type G+P) on organization level 1 project	Long public and private cooperation (Type G+P) on system level 4 projects
Public and private cooperation (Type G+P) on individual level with unknown duration 4 projects	Public and private cooperation (Type G+P) on organization level with unknown duration 2 projects	Public and private cooperation (Type G+P) on system level with unknown duration 1 project

Type G+C, 10 projects

Short public and civil society cooperation (Type G+C) on individual level	Short public and civil society cooperation (Type G+C) on organization level	Short public and civil society cooperation (Type G+C) on system level

FIGURE 2 Project clusters. [Color figure can be viewed at wileyonlinelibrary.com]

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3 projects	1 project	
Long public and civil society cooperation (Type G+C) on individual level 3 projects	Long public and civil society cooperation (Type G+C) on organization level 1 project	Long public and civil society cooperation (Type G+C) on system level
Public and civil society cooperation (Type G+C) on individual level with unknown duration 2 projects	Public and civil society cooperation (Type G+C) on organization level with unknown duration	Public and civil society cooperation (Type G+C) on system level with unknown duration

Type G+P+C, 30 projects

Short public, private and civil society cooperation (Type G+P+C) on individual level 2 projects	Short public, private and civil society cooperation (Type G+P+C) on organization level 13 projects	Short public, private and civil society cooperation (Type G+P+C) on system level 12 projects
Long public, private and civil society cooperation (Type G+P+C) on individual level	Long public, private and civil society cooperation (Type G+P+C) on organization level 1 project	Long public, private and civil society cooperation (Type G+P+C) on system level
Public, private and civil society cooperation (Type G+P+C) on individual level with unknown duration 2 projects	Public, private and civil society cooperation (Type G+P+C) on organization level with unknown duration	Public, private and civil society cooperation (Type G+P+C) on system level with unknown duration

FIGURE 2 Continued

German manufacturers based in China and selected public vocational schools. Through practice-oriented training, a win-win situation is intended for all sides: students, schools and companies. Depending on whether the aim is merely to improve the competencies of graduates or even to introduce and establish a new occupational profile in China, an individual or system focus can be assumed.

Cooperation between public and civil society organizations (Type G + C) occurs more often at the individual level than at the organizational level. Changes at the system level are not targeted by any of the projects covered. Projects at the individual level include, for example, teacher training and preparing graduates to obtain recognized certificates. There is no discernible tendency toward shorter or longer project durations.

In comparison, projects in which public organizations, the private sector and civil society cooperate (Type G + P + C) tend to pursue objectives that are at the organizational or system level. Projects of this type focus, among other things, on conceptualizing and building specific

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practice-oriented educational institutions in China. This initially organization-centred objective can also aim to bring about more far-reaching changes (e.g., the establishment of new job profiles or higher quality standards). However, the project periods used or (in the case of ongoing projects) planned for this purpose tend to be short.

As already mentioned, cooperation projects without the participation of the Chinese or German state (Type P, Type C and Type P + C) cannot be found in the entire project sample. This may be because vocational training projects are usually linked to specific (predominantly governmental) educational institutions and donors. The group of state actors is generally strongly represented in the project sample, especially on the Chinese side.

Pure private cooperation projects cannot be found in China due to the state-controlled system of VET schools and training centres as well as the small number of private companies and civil society organizations involved. Although there is a certain risk of missing such cases caused by (self-) selection effects, it is very unlikely that such kind of cooperation exists because they have to exclude the school system then. Nevertheless, there might be some transnational cooperation of private companies including VET components that could not be found in the review process.

In general, the limitations must again be taken into account, as the frequencies of individual project clusters are neither exhaustive nor necessarily representative. Unoccupied or weakly occupied clusters cannot be interpreted as sufficient evidence for systematic neglect of certain project clusters. Furthermore, nonresponses and refusals to the survey tended to come from the private sector and civil society, which reduces the likelihood of receiving projects of these types, if these types exist.

CONCLUSION

This research aims to explore a new typology for the Sino-German VET cooperation projects. In the first step, 99 Sino-German VET projects have been collected by sending a survey to specific organizations. From the replies to the survey, 259 related organizations were found to be involved in Sino-German VET projects. These organizations are classified according to their location (German, Chinese and international) and sector (governmental, civil society and private).

From this classification analysis, it is found that governmental actors are numerically the main part, especially for Chinese governmental organizations. However, German private organizations numerically more participated in VET cooperation rather than Chinese private organizations. There is no significant difference in social organizations between China and Germany. The reason for this might be the systematic social differences between the two countries, most of the organizations involved in VET are regarded as governmental or governmental-related in China.

Looking into the details of every single project of these 99 projects, cooperation type, content type and project duration have also been taken into account, derived from the key factor model of sustainability. Therefore, the project clusters have been created to present the overview. Different cooperation types show different emphasis: Type G projects focus on building or promoting organizations, Type G + P projects tend toward individual and system objectives, Type G + C projects occur more often at the individual level and Type G + P + C projects tend to pursue goals on organizational or system level.

This typology system provides a framework for categorizing, based on these three dimensions derivate from 'the key factor model', the VET projects can be now put into a 'real type' system. It can be used as a toolbox for furthermore study on international VET

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cooperation projects. When looking at a specific VET project, it can be regarded with a comprehensive and mutiperspective approach.

Follow-up research can base on the typology developed in this paper and may focus on more interviews and qualitative analysis to verify the potential success factors in Sino-German VET cooperation. More specialized research can be extended for those types of cooperation in this further research.

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SUPPORTING INFORMATION

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