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Vocational education and training (VET) system governance: a systematic literature review

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ABSTRACT

In this study, we conduct a systematic literature review of records across disciplines dealing with VET system governance. The literature draws on a broad array of disciplines including political science, sociology, economics, development economics, and education policy. Despite this, we find a generally interconnected literature, which is neither ideologically isolated nor always based in a single disciplinary approach. In addition, we identify 16 variables across 6 dimensions that are commonly used to describe governance in VET systems. Those dimensions are: codified, unified, and principled national approach; coordination at all levels; cooperation and involvement; skills supply and demand; finances and funding; and providing high-quality and attractive VET. In general, the literature is not fully cohesive but avoids being isolated into ideological silos.

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Vocational education and training; VET; TVET; education governance; governance

Introduction

The governance of vocational education and training (VET) systems should ensure an efficient, effective, and equitable system for students while providing an equilibrium in the supply of and demand for skills across education and employment. However, the field of VET system governance is multi-disciplinary, and a systematic review that reaches across disciplines is missing. The goal of this review is to fill that gap, understand the way knowledge is produced in the field of VET system governance, and identify common variables related to efficient and effective governance in the field of VET.

An overview of the literature on VET governance is complex and timely for at least three reasons. First, VET is not universal. Some countries, especially in Europe, have well-established VET systems, while others have no VET or have very weak VET systems. The bulk of the VET research obviously comes from countries with more VET, but it is not always clear how applicable this is universally.

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Second, VET is a complex system to govern because of its interconnection and interdependency with other systems. VET is embedded in the education system, meaning that the permeability of the system, the availability of lifelong learning, and attitudes towards general education compared to VET are all both factors for and outcomes of VET governance. Unlike general education, VET is also linked to the labour market and other economic systems, making VET governance distinct from the governance of education in general.

Finally, research and researchers play a role in developing VET – especially specific forms of VET. For example, prospective members of the European Union are asked to develop VET and development organisations like UNESCO promote VET in developing countries. Some countries even attempt to ‘export’ their VET models, when it is not at all clear that the governance of those systems can be applied in other contexts.

In this review, we find an ideologically diverse but generally unified literature. The literature is not fragmented into uncommunicative silos, instead scholars build on work across fields of study. The literature is still in development and is not unified around accepted ideas, but we are able to identify a set of common variables across six dimensions of VET system governance.

Conceptual framework

One challenge of this review is defining the scope of ‘VET system governance’ in a way that crosses different fields of study. Methodological and terminological differences can create comparison problems due to socially constructed concepts (Renold 2020). This presents three challenges: identifying an appropriate concept of ‘governance,’ differentiating VET governance from general education governance, and defining the ‘VET system.’

Governance

Governance is a much used, but also a much-contested concept across various fields of study. Political scientists began to distinguish governance from government in the 1980s, turning the focus to networks of actors pursuing common goals (Kjaer 2023). King and Schneider (1991) lay out an influential definition, stating: ‘We use the term governance to denote the command mechanism of a social system and its actions that endeavor to provide security, prosperity, coherence, order and continuity to the system’ (pp. 181–182). Different subfields of political science and sociology approach governance in different ways based on the key interests and theories in each field, as insightfully summarised by Kjaer (2023). All are concerned with different aspects of governance – how it comes into being, who has power, how it changes, its efficiency, its outputs, and its processes – but all focus on regulation, steering, and control.

In addition to having multiple theory-based definitions, the use of the word 'governance' in the literature is fragmented. Fukuyama (2016) articulates three separate definitions of governance as used in the literature: 'international cooperation through nonsovereign bodies outside the state system ... a synonym for public administration ... [and] the regulation of social behavior through networks and other nonhierarchical mechanisms' (p. 89). The common denominator across use of the word 'governance' in the literature is, according to Fukuyama, 'the act of steering or regulating social behavior' (p. 90). At the most general level, governance in the literature is about directing the behaviour of actors for some purpose.

Various authors have sought to identify the observable features of governance. Rosenau (2021) highlights command in the form of goals, directives, and policies. Börzel and Risse's (2010) concept of governance focuses on two features: structures and processes. Structures are rules and collective goods, while processes are actions of coordination among actors. Ruhanen et al. (2010) identify six key dimensions of governance in a cross-disciplinary literature review: accountability, transparency, involvement, structure, effectiveness and power. The first two describe mechanisms by which actors' behaviour may be directed, while the latter combines mechanisms with characteristics typically associated with efficient or effective governance.

In sum, governance is a broad concept unified by the consideration of steering actors' behaviour towards some goal. It can be meaningfully considered in terms of the governance itself – what structures and processes or mechanisms are used to shape behaviour – and in terms of other considerations like its origins, effectiveness, efficiency, participants, and more. Research that considers any of these and more can be considered part of the governance literature.

Governance in education and VET

The literature on education governance begins from the same point of departure articulated by political scientists: the shift from government-as-governance to governance-as-function. Education-specific interest was driven by a wave of education restructuring reforms in the 1990s and 2000s that implemented 'new governance' or 'new managerialism' reforms in education globally (Lindblad, Johannesson, and Simola 2002). These reforms moved power from the public sector to networks of public and private actors and implemented new management practices and outcomes-based accountability.

However, the literature on education governance tends to be more focused on comparing and evaluating the impact of various accountability approaches rather than conceptualising education governance as a whole (Edwards and Klees 2015; Pons 2017). One exception is the subfield of higher education governance, where comparative research explores issues like decentralisation, goal-setting, autonomy, and rule-setting with a focus on deriving indicators of efficient and effective

governance (Dobbins, Knill, and Vögtle 2011; Kennedy 2003). In general, the literature on education governance is an applied field focused most notably on accountability.

The literature on VET governance is frequently even more applied than the general education governance literature. UNESCO¹ offers a resource on governance in VET with a very generic definition of governance, specifying only that governance in VET is a network of actors generating collective action in VET via funding, policy, regulation, and curriculum. Preddey (2006) identifies three specific goals of governance in VET: responsiveness, efficiency, and cost-effectiveness. However, although Preddey mentions employers' role in governing VET, he does not directly distinguish between VET governance and education governance in general. Bolli et al. (2018) directly distinguishes between VET and general education, highlighting the role of employers in VET governance and their importance for balancing out resource and information asymmetries.

Therefore, the key distinction between VET and general education is VET's connection to the labour market and the inclusion of employers in its governance network. While the private sector plays a role in networked education governance in general, labour-market actors like employers, unions, and employer associations are key actors in VET. Therefore, VET governance will have different considerations and characteristics than general education governance.

Identifying the VET system

Scholars often use the term 'VET system' without explicitly stating what they mean by *system* except that it is a macro level above the programme level (Rauner, Wittig, and Deitmer 2010). We build on Renold et al. (2019) notion that the VET system is more than the sum of VET programmes. Instead, the VET system includes all the programmes, processes, and actions required to deliver 'high-quality and effective VET' (p. 24) and facilitate the movement of students into, through, and out of VET. This includes everything required to deliver all programmes in the VET and professional education and training (PET) pathway, as well as transitions between VET or PET and academic education. This allows enough breadth to encompass a wide variety of governance actions and keeps the focus on the macro – that is non-programmatic – level of analysis.

Research questions

The field of science studies critically examines various aspects of how knowledge is produced, shared, and structured within the scientific community. Knowledge is socially constructed. The VET governance literature is small and highly interdisciplinary, which could lead to three possible outcomes. First, and least desirable, would be the presence of ideological silos (Collins 1992; Latour, Salk, and Woolgar 2013). Ideological silos refer to the

tendency to focus narrowly on familiar ideas, frameworks, or methods – potentially to the exclusion of relevant alternatives. This can lead to intellectual isolation, confirmation bias, and limited relevance for complex issues. This might happen in the VET governance literature if small groups of researchers from the same discipline or institution only work within the literature and methods of that group and fail to see or apply external concepts.

A second possibility is for schools of thought to form. Rather than the complete isolation of silos, schools of thought refer to distinct approaches, methodologies, or theoretical frameworks within a scientific discipline. These schools are socially constructed, often forming around key thinkers, institutions, or paradigms (Bourdieu 1975; Lakatos 2014). Different schools of thought may compete, potentially helping or hurting progress in the field depending on how that competition plays out in terms of ideological exchange, funding, and either growth or entrenchment (Pickering 2010).

The third possibility is that the field may be unified by its shared topic despite different approaches and research questions. Thanks to the relatively small field, scholars dealing with VET governance could conceivably read most of the literature on the topic and stay up to date with new publications. At best, that could yield an interdisciplinary field where ideas from other approaches could potentially build on each other and spark new ideas.

Therefore, our first research question looks for patterns of interconnection among publications in VET governance:

What is the structure of the VET governance field, and how are scholars interconnected? Does the field tend towards ideological silos, schools of thought, or interdisciplinarity?

Another way to look at the literature is to consider whether scholars are arriving at similar results. One of the key outcomes of governance research is frameworks of factors that matter in some way for governance efficiency and effectiveness. Therefore, our second research question examines the variables scholars use to describe governance.

What are the key variables used to describe VET system governance, and how are they linked to the structure of the field?

This study is valuable for mapping out how knowledge is structured in the multi-disciplinary field of VET governance and for providing a critical reflection on how scholars interact. It can highlight opportunities for innovation and collaboration, while also pointing out potential pitfalls, such as ideological silos or rigid schools of thought. This understanding can lead to more effective research and better governance strategies for VET systems.

Method

We conduct a systematic literature review of records across disciplines dealing with VET system governance. We follow the general recommendations from Wolfswinkel, Furtmueller, and Wilderom (2013) and use some of the concrete steps taken by K. Caves, Baumann, and Renold (2021) in their systematic literature review on VET implementation, combining general guidelines with VET-specific considerations.

Wolfswinkel, Furtmueller, and Wilderom (2013) outline four steps for a systematic literature review: (1) define, (2) search, (3) select and (4) analyse. We begin by defining our criteria for inclusion, then search relevant databases followed by selecting the relevant records from that large and unrefined sample. We conduct a forward and backward citation search from the selected records, then analyse the final sample. Our analytical approach uses a citation network for the first research question and a coding approach for the second research question. We kept a logbook (available upon request) throughout the process to ensure replicability.

Define

Definition includes two sets of criteria, one for search and one for selection. We are discipline-agnostic, so we searched for academic texts in multi-disciplinary databases. However, we are only open to academic publications, including journal articles, books, book sections, conference proceedings from academic conferences, and working papers published by university departments. We disregarded non-academic or 'grey' literature, for example records published by international policy organisations. The search was not restricted to any specific period. We follow K. Caves, Baumann, and Renold (2021), using both broad academic databases and smaller databases dedicated to VET research. Table A2 in the Appendix shows the full list.

The main component of the search criteria is our search terms. Our goal is terms that return all records related to VET system governance. For this, we brainstormed about synonymous names for VET and also for governance in three languages we are familiar with. We included additional keywords after internal discussion. Some keywords were used with an asterisk to capture any variation. Additionally, we required that records contain one keyword for VET and one for governance. Table 1 shows our search terms, which we used in three languages – English, German, and French. The scientific communities in many countries often publish education-related work in their native languages. We chose these three languages because literature on VET is primarily in those languages, although we ended up only finding useful sources in English and German. The French-language sources were few and those few did not meet our criteria.

Table 1. Search terms.

Language	VET keywords	Governance keywords
English	VET; TVET; vocational education; career and technical education; CTE; apprenticeship; dual education; Work-based learning; vocational training; education and training	Governance; control*; steering; leadership
German	Berufsbildung; Berufsausbildung; berufliche Bildung; Lehrlingsausbildung; Azubi; Auszubild*	Steuerung; Governance; Verwaltung; Führung; Leitung
French	formation professionnelle; enseignement professionnel; apprentissage professionnel; apprentissage; formation d'apprentis; formation des apprentis; formation en apprentissage	gouvernance; gouverner; régissant

Our second set of criteria is for record selection from the original search and for.

Our second set of criteria is for record selection from the original search and for backward and forward citations. We focus on clearly stated theoretical framework or conceptual approach. These criteria are:

- The record deals with VET at the upper-secondary education level.
- The unit of analysis is at the systemic level, though we allow records addressing system components. Hence, we focus on the macro- and meso-level and discard micro-level analyses. Concretely, this means we exclude papers that focus on a single programme and only include those focusing on the VET system.
- The record must contain a theory or theory-like section. Records solely giving empirical results were discarded.

After initial selection, we added a fourth criteria. We found that many records were purely descriptive accounts of how VET system governance arrangements had come into being. Theory-based analyses of path dependency and historical institutionalism are included, but descriptive records did not apply. Therefore:

- The theory section in the record addresses the functioning, characteristics or types of VET system governance. We eliminated descriptive papers about the development of governance in a particular VET system.

Search and select

Figure 1 visualises the path from the full sample to the final sample. The initial search yielded around 2,000 records. Through a process of narrowing down the sample, we first removed duplicate records and read through the titles of the remaining records to discard those that came from a completely different field (often veterinary science) or that were clearly dealing with the micro-level (often VET students or teachers). Next, we screened around 300 records in more detail. This meant that we read all the abstracts and, when necessary, the full text. One

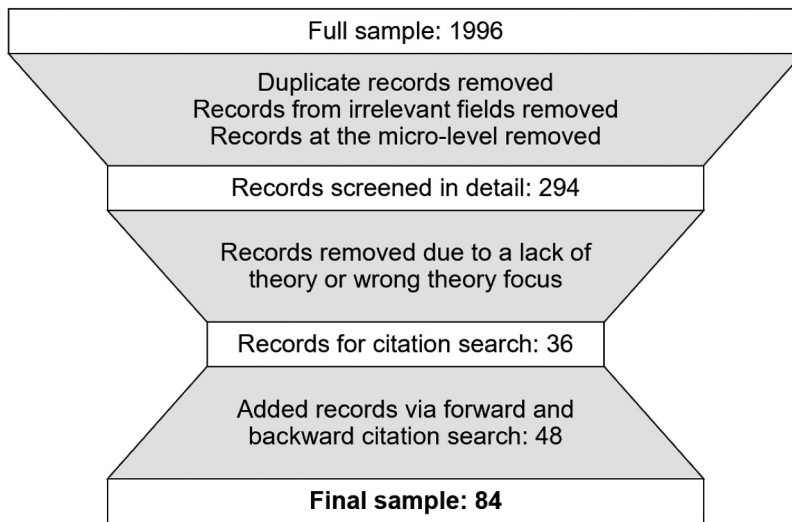


Figure 1. Search and select process.

author was in charge of selection, but any unclear records were discussed between two authors.

The result of this selection phase was a total of 36 relevant records. We then used these records as the foundation for a snowballing process, where we screened the forward and backward citations in detail (reading the title, abstract or the text depending on when the author could make a clear decision). We used the bibliographies in the records to conduct this process. It more than doubled our final sample, mostly because our initial keywords did not include search terms from the skills formation literature.

Analysis

For the first research question, we used social network analysis on the citations between records. The papers are the nodes and the citations between the papers are the edges. The network is directed, since a citation points from one paper to another. We use a network analysis approach because we would expect to observe silos, schools of thought, or interdisciplinarity through the network. A maximally siloed network would have groups of papers that cite each other and no out-group members. A network with schools of thought would also have groups that cite each other, but with some out-group citations linking the field together. An interdisciplinary network would have limited or no isolated groups, with a dense network of citations.

Our analysis focuses on different types of centrality, and follows Newman (2018). We use in-degree-centrality to identify how often a study is cited by

other studies, which is an indication for the influence of the study and therefore its impact on scientific research. We also regard the out-degree centrality, which is an indicator for which studies are cited by the study. We need both degree centralities because our network is directed. Furthermore, we include page rank as to see which studies are cited and not just how many – this accounts not only for studies that are cited frequently but adds weight for those cited by high-centrality studies. Finally, we look for studies that themselves cite important studies (relative importance). For that we have a look at the hubs and authorities in the network. Hubs are studies that indicate which other studies are important, and authorities are the studies containing the useful information.

Closeness centrality and betweenness centrality look at the shortest connections between studies. Closeness centrality focuses on the mean distance between the studies which can indicate the direct influence of a study. Betweenness centrality indicates the extent to which a study lies on the paths between other studies and therefore can influence information flow.

To describe the structure of the network and whether there is clustering, we examine transitivity. Newman (2018) also describes a variety of community detection algorithms. We apply the information theory algorithm Infomap, which is the best for this data because the network is directed.

For the second research question, we coded the variables records reported as influencing or defining VET governance. We grouped these into categories, which we formed based on the codes. We kept a codebook where we tracked our progress. In our analysis of the VET system governance variables, we began by coding the variables in the records using the language of the original authors. We began finding commonalities and building categories of variables during later coding steps. The second research question was less compatible with this coding procedure since measurement is directly linked to the processes and structures identified, so these results are more descriptive.

Sample and data

This section presents descriptive statistics and a narrative summary of the sample.

Descriptive statistics

The 84 records in the final sample represent a broad range of academic disciplines including subfields of political science, economics, and sociology. They include typologies, normative theories, and theoretical conceptualisations as ways of studying VET system governance. Figures 2 and 3 visualise the sample by year and type, respectively. The literature has grown over time, with most publications within the last 10 years and the most records published in 2021.

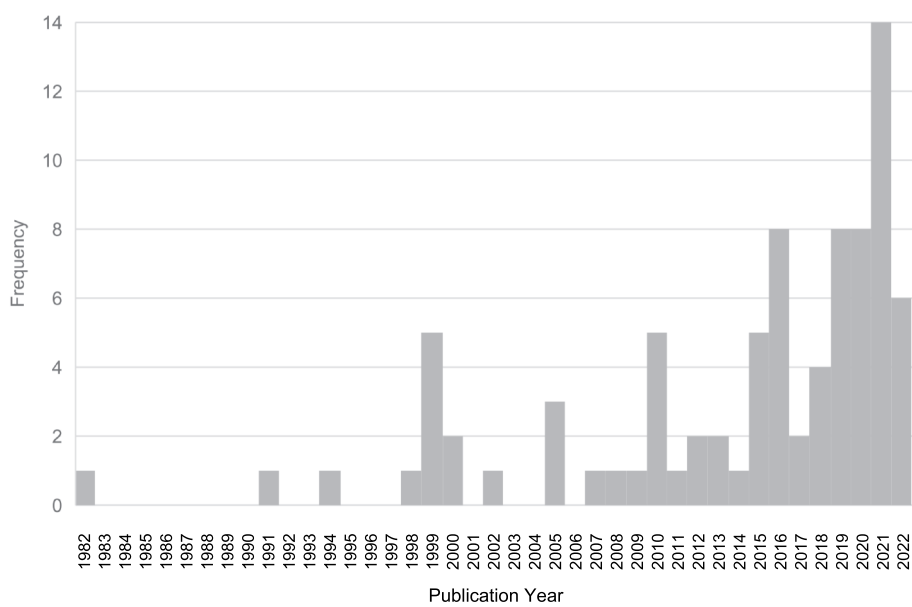


Figure 2. Histogram of records by publication year.

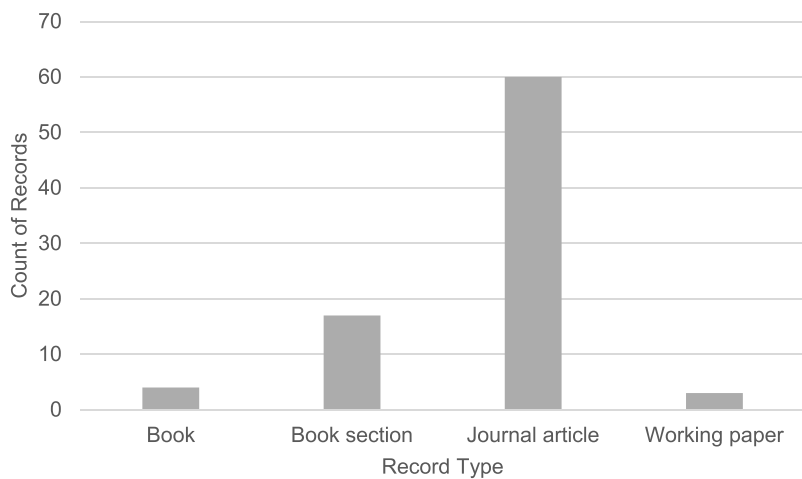


Figure 3. Type of record.

However, the sample dates back to the 1980s and the first spike is around 2000. Scholars are actively working on this topic and the field is developing.

We have included four kinds of records in our final sample: Books, book sections, journal articles and working papers. By far the largest group is the journal articles, which make up almost three-fourths of the whole sample.

Narrative summary

Even within the limited area of VET systems specifically, the topic of governance is very broad. Descriptively, our sample of studies represents a few major and minor fields, which we briefly summarise here.

The largest group of studies comes from the political science literature and develops a framework related to collective skills formation and dual systems (18 records in our sample, see Appendix Table A1). Beginning with Busemeyer and Trampusch's (2012) seminal text, this approach has become one of the main ways to study the type of VET system found in Germany, Switzerland, Austria, and Denmark. This approach starts with a typology across two dimensions: public commitment to VET and the involvement of firms in VET.

This general classification led to work on a multitude of specific topics, including how governance arrangements assist and limit the integration of refugees (Aerne and Bonoli 2021), the degree of inclusiveness or selectivity vs. integration (G. Bonoli and Emmenegger 2021; G. Bonoli and Wilson 2019), and the role of business associations, trade unions, and other intermediary organisations (Bürgi and Gonon 2021; Emmenegger, Graf, and Strebel 2020, 2021; Michelsen et al. 2021; Strebel, Emmenegger, and Graf 2021). Other work maintains the focus on dual systems (Gonon 2014; Kuhlee 2015). Newer work in this group extends the collective skill formation approach to new contexts by applying other ideal types, yielding analyses of other countries in Europe (Benassi, Durazzi, and Fortwengel 2022; Persson and Hermelin 2020) and beyond (Langthaler, Wolf, and Schnitzler 2022; Tasli-Karabulut 2022). Emmenegger, Graf, and Trampusch (2019) add to this field by considering decentralised cooperation within collective skill formation regimes.

A second large part of the literature (17 records) comes from the comparative aspect of political science. This group seeks to establish VET-specific governance models and apply them to various countries, often comparatively (Greinert 1998, 2000). Scholars highlight the importance of the state (Greinert 1998), the differences between market- and occupation-driven models (Clematide et al. 2005; Deitmer 2015), regulation patterns (Wegge and Weber 1999), and feedback mechanisms (Markowitsch and Heffler 2018). This approach also includes typologies (Souto-Otero and Ure 2012) like the influential work of Rauner and co-authors (Rauner and Wittig 2010; Rauner et al. 2009; Rauner, Wittig, and Deitmer 2010), which has led to a much-used typology that describes VET governance in two dimensions: degree of integration and input- or output-orientation. Scholars in this group also consider the aims of VET system governance (L. Bonoli and Gonon 2022), the qualification-certification spectrum (Brockmann, Clarke, and Winch 2008), and governance through VET agencies (Frommberger and Baumann 2016). Newer work in this group combines various governance models and perspectives, summarising

determinants and types of VET-specific governance (K. Caves and Renold 2018; Gonon 2016; Pilz 2016).

The final large group of work in the field of VET governance (16 records) focuses on institutions. This group encompasses classical sociological perspectives (Harney and Rahn 2000) and conventions (Imdorf, Berner, and Gonon 2016; Leemann and Imdorf 2015), as well as political science (Carstensen and Ibsen 2021), neo-institutionalism (Schlögl et al. 2020), and historical institutionalism (Carstensen and Ibsen 2021). Scholars describe the complex processes by which actors find compromise (L. Bonoli and Eigenmann 2021; L. Bonoli and Vorpe 2022), the conflicts and relations between the logics of education and employment (Graf, Strebel, and Emmenegger 2021; Iannelli and Raffe 2007; Zoellner 2020), and the trade-off between efficiency and equality (Carstensen and Ibsen 2021). While much of this work is theoretical, it also includes some more movement towards empirical work (Renold et al. 2019).

A moderate group of work (10 records in our sample) takes an economic approach to VET systems by building on human capital theory. Work taking this approach is particularly interested in underinvestment in VET, finding equilibria in the supply and demand for skills, and addressing market failures and externalities related to the transferability of collective goods or financing arrangements. Interestingly, economics-based work includes both our oldest (Bowman 2005; Crouch, Finegold, and Sako 1999; Drake 1991; Frommberger 2005; Johansen 2002; Sadowski 1981; Stevens 1999) and newest records (Valiente, Zancajo, and Jacovkis 2020; Zhang 2021).

The second moderately sized group in the literature (6 records) is interdisciplinary but focused on the governance of sub-systems in VET. There are two sub-categories within this approach: records dealing with specific governance arrangements (Remington 2018; Schmieri 2011) and those highlighting governance challenges at the sub-system level (Amegah 2021; Bolli et al. 2018; Rustico, Ramona, and Ranieri 2020). The shared characteristic of records taking this approach is a focus on cooperation. Scholars highlight numerous reasons for cooperation problems, specifically insufficient coordination between private and state regulations (Rustico, Ramona, and Ranieri 2020), skewed decision-making power across employment and education actors (Bolli et al. 2018) or a lack of employer engagement in VET (Amegah 2021). Studies taking this approach argue that cooperation is challenging and necessary for effective VET system governance.

The last moderately sized approach (5 records) is also one of the oldest, taking a development perspective on VET governance. The main interest here is how state intervention in skill formation can support economic growth. Initially developed as a theoretical foundation for understanding the economic growth process in East and Southeast Asia (Ashton and Sung 1994; Ashton et al. 1999; Green et al. 1999), this part of the literature focuses primarily on skill formation and its relation to other policy areas (Green 2013; Powell, Reddy, and Juan 2016). It argues that a state can fit its skill formation policy to its larger economic strategy (Green 2013)

and positively intervene in skill formation (Powell, Reddy, and Juan 2016). More recent scholarship has taken up this approach and used it to analyse skills planning processes in new contexts (Powell, Reddy, and Juan 2016).

Other smaller approaches to studying VET system governance are diverse. Scholars using discursive theories (3 records) to understand VET governance study general discourses (Bartlett and Pagliarello 2016) or discourses on specific elements of governance (Zoellner 2015), highlighting how discourse shapes VET policymaking and sheds light on power relations among actors. Studies that focus on multi-level governance (3 records) originated to study European integration (Marks, Hooghe, and Blank 1996), but is applied to VET governance holistically (Arribas 2016) or using individual elements (Hooze 2015). A further group of studies (3 records) centres the concept of governance rather than its execution, considering a possible generic governance model (Oliver 2010) and providing critical historical accounts of VET system governance (Kuhlee 2017). This conceptual work connects VET system governance with the broader governance field, including education governance and new public management (Buchmann 2017). Finally, some studies (3 records) draw on methods like social network analysis (K. M. Caves and Oswald-Egg 2021) or apply concepts like triple helix governance to the field (Coletti 2019), further broadening the diversity of the literature on VET system governance.

Results

This section presents our analytical results. We begin with research question one, where we use network analysis to explore the structure of the literature for ideological silos, schools of thought, or interdisciplinarity. We then present the results of the second research question, where we examine the variables used to describe VET governance in the literature.

Structure of the literature

We describe our sample of records using network analysis to explore the structure of the literature and highlight influential sources and ideas. Table 2 shows the top records for some basic measures of network centrality. In-degree captures how many other records cite each record. Busemeyer and Trampusch (2012) is the most cited record in the sample, cited by 36 other records. The second- and third-most-cited records are Emmenegger, Graf, and Trampusch (2019) and Rauner et al. (2009) typology of VET system governance, with 18 and 13 citations from the network respectively.

Out-degree captures the records that cite other records in the sample, indicating high reference to and embeddedness in the literature we explore here. The three records with the highest out-degree are all part of the collective skill formation literature, indicating that the records in this literature build upon each other. They are also all relatively recent, which is both mathematically

Table 2. Network measures.

Measure	Top records	Values
In-degree	Busemeyer and Trampusch (2012)	36
	Emmenegger, Graf, and Trampusch (2019)	18
	Rauner et al. (2009)	13
Out-degree	Emmenegger and Seitzl (2020)	9
	G. Bonoli and Emmenegger (2021)	7
	Bürgi and Gonon (2021)	7
Page rank	Busemeyer and Trampusch (2012)	9.95%
	Greinert (1998)	9.37%
	Crouch, Finegold, and Sako (1999)	8.90%
Hubs	Emmenegger and Seitzl (2020)	1.00
	G. Bonoli and Emmenegger (2021)	0.82
	Strebel, Emmenegger, and Graf (2021)	0.81
Authorities	Busemeyer and Trampusch (2012)	1.00
	Emmenegger, Graf, and Trampusch (2019)	0.61
	Rauner et al. (2009)	0.39
Closeness	Ashton et al. (1999)	1.00
	Greinert (2000)	1.00
	Souto-Otero and Ure (2012)	1.00
	Bowman (2005)	1.00
	Zoellner (2020)	1.00
	Hooge (2015)	1.00
Betweenness	Emmenegger, Graf, and Trampusch (2019)	94.1
	Busemeyer and Trampusch (2012)	50.5
	G. Bonoli and Emmenegger (2021)	46.8
Local transitivity	Stuart (2019)	1.00
	Strebel, Engelage, and Baumeler (2019)	1.00
	Schlögl et al. (2020)	1.00
	L. Bonoli and Gonon (2022)	1.00
	Tasli-Karabulut (2022)	1.00
Global transitivity	K. M. Caves and Oswald-Egg (2021)	1.00
Average transitivity		0.23
		0.37

Values computed in R with the *igraph*-package. The table reports the top 3 values for each metric. See methods section for description of measures.

necessary and indicates that the discussion in the literature builds on itself rather than constantly reinventing itself. The highest-scoring records are Emmenegger and Seitzl (2020), G. Bonoli and Emmenegger (2021), and Bürgi and Gonon (2021)—again from the collective skill formation literature.

Page rank captures a record's importance in terms of its relative influence in the network. It is expressed in percentages, which reflect how much of the total network influence comes from a given record. The highest three scorers collectively make up nearly 30% of the total influence in the network. Two are older, more foundational records (Greinert 1998 with 9.37% and Crouch et al. (2001) with 8.9%), while the top-ranked paper is more recent (Busemeyer and Trampusch 2012, with 9.95%). Busemeyer and Trampusch (2012) is a foundational paper in the collective skills formation group, Greinert (1998) comes from the comparative political science field of the literature, and Crouch et al. (1998) comes from the economics of VET. These papers underscore the multidisciplinary of the VET governance literature, despite the higher citation counts being concentrated within the collective skills formation group.

Authorities and hubs identify two additional types of importance in a network (Kleinberg 1999). Authorities are nodes that are considered reliable or valuable, and are often linked to many hubs. Hubs, in turn, are nodes that link to various authorities and act as information brokers or intermediaries in the network. In this network, the top authority is an original seminal paper often considered to have kicked off the collective skills formation literature (Busemeyer and Trampusch 2012), while the top hub is a key literature review of the same skills formation field (Emmenegger and Seitzl 2020).

Closeness and betweenness both capture centrality in terms of nodes' importance or influence in the network. Closeness measures how quickly a node can reach other nodes in the network. Six records in the network all have closeness scores of 1.00, indicating that they are all extremely well positioned for efficient information spread. This is a diverse group in terms of field: Ashton et al. (1999) comes from the development literature, Greinert (2000) and Souto-Otero and Ure (2012) come from comparative political science, Bowman (2005) represents the economics of VET, Zoellner (2020) comes from the institutional approach, and Hooge (2015) comes from the field focused on multi-level governance.

The betweenness measure captures nodes on the shortest paths across the citation network. Emmenegger, Graf, and Trampusch (2019) has by far the highest betweenness centrality (94.1), reinforcing its importance in the network. Busemeyer and Trampusch (2012) appears once again (50.5), as does G. Bonoli and Emmenegger (2021) (46.8). The key records here are all from the collective skills formation literature, and all appear elsewhere in Table 2 as top-scoring records for other metrics of network centrality.

Finally, our last metric describing the connection of individual nodes is local transitivity, also called the local clustering coefficient. This measures the extent to which a node's neighbours are also connected to each other, forming closed triangles. It indicates that a node is tightly knit within the network. Like closeness, we have a six-way tie for the highest-scoring records in terms of local transitivity, all among recent records. Stuart (2019) comes from the economics of VET field, Strebel, Engelage, and Baumeler (2019) and Tasli-Karabulut (2022) represent collective skill formation, Schlögl et al. (2020) represents institutions, L. Bonoli and Gonon (2022) come from governance models, and K. M. Caves and Oswald-Egg (2021) come from other approaches.

Turning from individual papers to metrics that apply to the network as a whole, Table 2 reports two metrics that describe the level of clustering in the network – important for our consideration of the network's ideological silos, schools of thought, or interdisciplinarity. Global transitivity, also called the global clustering coefficient, expresses the ratio of closed triangles in the network. High transitivity would indicate high interconnectedness and tightly-knit clusters. Scores range from 0 to 1, expressing the ratio of closed triangles. Our network scores 0.23, indicating a low to moderate level of transitivity.

Average transitivity, also known as the average local clustering coefficient, measures the tendency for nodes to cluster locally by averaging the clustering coefficients of individual nodes. It also reflects the likelihood that a node's neighbours are connected to each other, but it is calculated locally for each node and then averaged. High average transitivity indicates dense local networks or neighbourhoods, made up of highly interconnected individual nodes. This score is slightly higher at 0.37, indicating that the network tends more towards clusters than triangles, but not at high density.

Finally, we use the Infomap community detection algorithm to see what the communities are in the network. Figure 4 displays a citation network built using our sample of records. Colours show the clusters identified by group. We find four groups in this network: one extremely large group that brings most of the records together into a single discussion (red) and three much smaller groups of two or three records (blue, green, purple). The largest group contains all but eight records, and comprises records from all fields of study related to VET system governance.

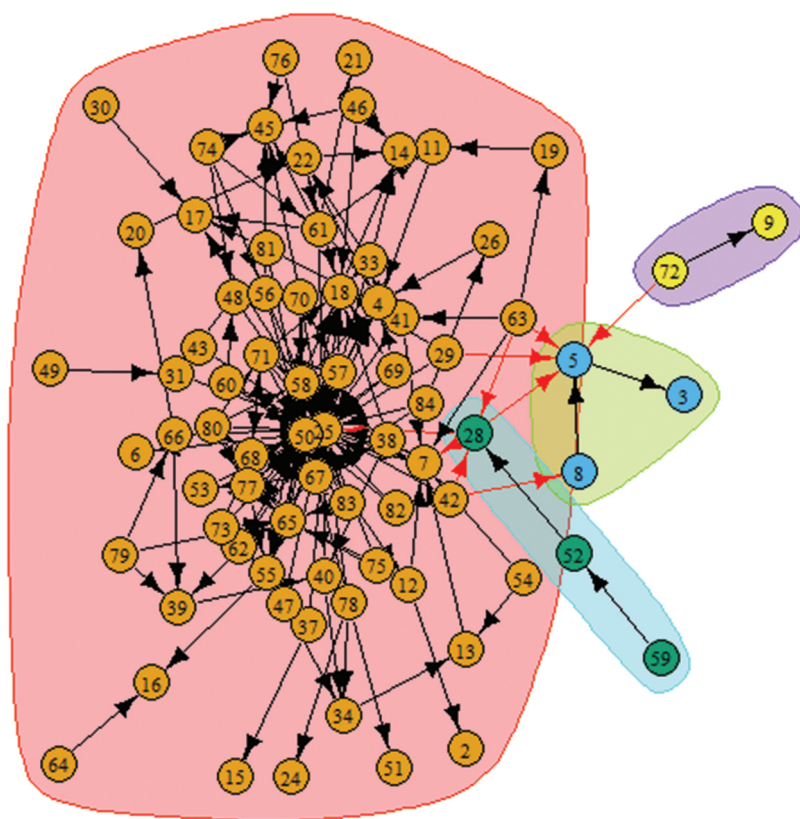


Figure 4. Citation network. Citation network based on the full record sample (papers which do not cite other papers and are not cited by other papers are not displayed). The list of keys is on the following page. Directed links between nodes signify that node X cites node Y ($X \rightarrow Y$). The network is unweighted and we used the Kamada-Kawai layout algorithm in R to space the nodes. The colours indicate the group the nodes belong to according to the Infomap algorithm.

- (1) *Sadowski (1981)*
- (2) Drake (1991)
- (3) Ashton and Sung (1994)
- (4) Greinert (1998)
- (5) Ashton et al. (1999)
- (6) Wegge and Weber (1999)
- (7) Crouch, Finegold, and Sako (1999)
- (8) Green et al. (1999)
- (9) Stevens (1999)
- (10) Harney and Rahn (2000)
- (11) Greinert (2000)
- (12) Johansen (2002)
- (13) Bowman (2005)
- (14) Clematide et al. (2005)
- (15) Frommberger (2005)
- (16) Iannelli and Raffe (2007)
- (17) Brockmann, Clarke, and Winch (2008)
- (18) Rauner et al. (2009)
- (19) Greinert (2010)
- (20) Oliver (2010)
- (21) Rauner and Wittig (2010)
- (22) Rauner, Wittig, and Deitmer (2010)
- (23) Watt-Malcolm and Barabasch (2010)
- (24) Schmierl (2011)
- (25) Busemeyer and Trampusch (2012)
- (26) Souto-Otero and Ure (2012)
- (27) Noguera (2013)
- (28) Green (2013)
- (29) Gonon (2014)
- (30) Hooge (2015)
- (31) Kuhlee (2015)
- (32) Zoellner (2015)
- (33) Deitmer (2015)
- (34) Leemann and Imdorf (2015)
- (35) Arribas (2016)
- (36) Bartlett and Pagliarello (2016)
- (37) Frommberger and Baumann (2016)
- (38) Gonon (2016)
- (39) Gonon and Zehnder (2016)
- (40) Imdorf, Berner, and Gonon (2016)
- (41) Pilz (2016)
- (42) Powell, Reddy, and Juan (2016)
- (43) Kuhlee (2017)

- (44) Buchmann (2017)
- (45) Bolli et al. (2018)
- (46) K. Caves and Renold (2018)
- (47) Markowitsch and Heffler (2018)
- (48) Remington (2018)
- (49) Coletti (2019)
- (50) Emmenegger, Graf, and Trampusch (2019)
- (51) Leemann (2019)
- (52) Pouliakas & Ranieri (2018)
- (53) Strebel, Engelage, and Baumeler (2019)
- (54) Stuart (2019)
- (55) G. Bonoli and Wilson (2019)
- (56) Renold et al. (2019)
- (57) Emmenegger, Graf, and Strebel (2020)
- (58) Emmenegger and Seitzl (2020)
- (59) Rustico, Ramona, and Ranieri (2020)
- (60) Persson and Hermelin (2020)
- (61) Rageth and Renold (2020)
- (62) Schlögl et al. (2020)
- (63) Valiente, Zancajo, and Jacovkis (2020)
- (64) Zoellner (2020)
- (65) G. Bonoli and Emmenegger (2021)
- (66) L. Bonoli and Eigenmann (2021)
- (67) Bürgi and Gonon (2021)
- (68) Carstensen and Ibsen (2021)
- (69) Emmenegger, Graf, and Strebel (2021)
- (70) Strebel (2021)
- (71) Strebel, Emmenegger, and Graf (2021)
- (72) Zhang (2021)
- (73) Aerne and Bonoli (2021)
- (74) Amegah (2021)
- (75) L. Bonoli and Gonon (2022)
- (76) K. M. Caves and Oswald-Egg (2021)
- (77) Graf, Strebel, and Emmenegger (2021)
- (78) Michelsen et al. (2021)
- (79) L. Bonoli and Vorpe (2022)
- (80) Busemeyer, Carstensen, and Emmenegger (2022)
- (81) Kopsen (2022)
- (82) Tasli-Karabulut (2022)
- (83) Benassi, Durazzi, and Fortwengel (2022)
- (84) Langthaler, Wolf, and Schnitzler (2022)

Ital: Authors in italics are not included in the network because they are not cited and do not cite any of the included papers

The first smaller group (blue) contains three records linked to the larger group (red) by Green (2013), which is cited by three records in the large group and cites one record in that group. The records in this sample come from the development field (Green 2013) and from the interdisciplinary field that focuses on VET sub-systems (Pouliakas & Raineiri, 2019; Rustico, Ramona, and Ranieri 2020). The records are all generally newer.

The second smaller group (green) comprises three records linked to the larger group by two citations of Ashton et al. (1999) and one of Green et al. (1999), as well as a citation from Green (2013) linking it to the blue group. All three records in this group belong to the development field of literature on VET system governance.

Finally, the last smaller group (purple) comprises only two records, both from the economics of VET field of VET system governance literature. This group is not connected to the largest group (red), instead linked to the literature only by Zhang (2021)'s citation of Ashton et al. (1999) in the green group. No records from other groups cite records in this group.

Overall, this presents a picture of a highly interdisciplinary and interconnected literature on VET system governance, linked to the literatures on VET sub-systems, development, and the economics of VET by a small set of papers that address governance from the perspective of those fields. We do not find evidence of ideological silos or distinct schools of thought

Variables describing VET governance

Our second research question asks which specific structures and processes – variables in the literature – are used to describe VET governance, and how they are operationalised. A significant part of the literature does not spell out its methodology. Most of the records in our final sample do not use quantitative methods – qualitative approaches dominate. We do find empirical work, including comparative work that indicates the literature has moved beyond single case studies.

The most common qualitative methodological approach remains case study research – both single and comparative. The data scholars use to conduct case studies most often include interviews (Aerne and Bonoli 2021; Amegah 2021; Persson and Hermelin 2020) and documents. Typologies are also common (e.g. Busemeyer and Trampusch 2012; Remington 2018). These studies group (sub-) systems according to theory-driven typologies. However, the level of methodological rigour varies, and typologies run the risk of overemphasising some aspects over others, disregarding sub-national differences, or missing gradual changes over time (Gonon 2016).

We observe numerous quantitative approaches. For example, Bolli et al. (2018) use a survey-based weighted index of features of education-employment linkage. Felix Rauner and co-authors (including Wolfgang Wittig, Ludger Deitmer and Antje Barabasch) also use expert surveys and workshop data to assign national VET system governance to types. Emerging literature continues to add new quantitative methods. For example, Caves & Oswald-Egg take a network analysis approach (2021) to explore the role of intermediaries in VET governance and assess fairness and balance across public and private sectors.

Table 3 shows descriptions and sources for each variable we identified in the literature that sources use to describe VET system governance. Our broad approach to the literature resulted in variable categories that are not completely independent, which we chose over larger categories that might mask interesting variation. Who use slightly more specific variables and bundle them under broader dimensions.

Codified, unified and principled national approach

This governance dimension captures the overarching structures in VET system governance. This includes the *vision, strategy and leadership, legal framework, and general governance principles*.

The *vision, strategy and leadership* variable addresses the role of the state in exercising leadership to set the direction of the VET system. This includes the long-term vision, continuous reform efforts, and a strategy for aligning VET policies with other policy areas. One challenge is that the state dominates other actors if it is too authoritative in fulfilling its tasks. According to the sources in this group, the state should balance its leadership role with a participatory stance towards other actors.

According to these sources, having a good *legal framework* provides actors with a common understanding of their roles and tasks. This builds coordination and thus supports other governance dimensions. Moreover, a legal framework enables actors to codify standards and regulations so that they are easier to implement and uphold.

The *general governance principles* are general principles not specific to VET system governance. These principles are centred around democratic participation, accountability, and transparency. They focus on increasing the public's trust and involvement in VET and the quality of decision-making.

Coordination at all levels

VET system governance cuts across political levels and sectors. According to the sources that apply this variable, this means that coordination, *vertical* and *horizontal*, is necessary to ensure a high-quality VET system.

Vertical coordination is necessary because VET implementation is at the local level, while strategic and structural decisions are made at higher levels.

Table 3. Variables describing VET governance by dimension.

Variable	Description	Records
Dimension: Codified, unified, and principled national approach		
Vision, strategy and leadership (national level)	Argues that the state should exercise leadership without dominating other actors to ensure that the VET system has clear direction and that other actors can count on the state to support the system. Also includes continuous reform efforts and balancing VET with other policy areas.	(Ashton et al. 1999) (Busemeyer and Trampusch 2012) (Emmenegger, Graf, and Trampusch 2019) (Emmenegger and Seitzl 2020) (Oliver 2010) (Pilz 2016)
Legal framework	Argues that a legal framework can help specify roles and tasks of various actors, thus helping actors coordinate behaviour. A legal framework makes it easier to establish common standards and regulations for implementation.	(K. Caves and Renold 2018) (Deitmer 2015) (Frommberger and Baumann 2016) (Gonon 2014) (Pilz 2016) (Rauner and Wittig 2010) (Rauner et al. 2009) (Rauner, Wittig, and Deitmer 2010) (Rustico, Ramona, and Ranieri 2020) (Schlögl et al. 2020)
Democratic participation, accountability, and transparency	According to the literature, there are general principles that should run through all governance. These include democratic participation, accountability, and transparency. These principles improve the public's trust and involvement in VET, but also the general quality of decisions.	(Arribas 2016) (Oliver 2010) (Tasli-Karabulut 2022)
Dimension: Coordination at all levels		
Vertical coordination	Even in non-federal states, policy implementation and VET provision take place locally. These sources argue that levels must communicate and make decisions at the appropriate level (subsidiarity). Each level should have the necessary organisational capacity to fulfill its tasks.	(Arribas 2016) (Emmenegger and Seitzl 2020) (Noguera 2013) (Rauner and Wittig 2010) (Rauner et al. 2009) (Rauner, Wittig, and Deitmer 2010)
Horizontal coordination	At the horizontal level, these sources identify two main coordination problems to be solved: Coordination and power-sharing. The sharing of decision-making power amongst actors from different sectors is an integral part to successful horizontal coordination.	(Aerne and Bonoli 2021) (Arribas 2016) (Bolli et al. 2018) (Carstensen and Ibsen 2021) (K. M. Caves and Oswald-Egg 2021) (K. Caves and Renold 2018) (Deitmer 2015) (Emmenegger and Seitzl 2020) (Hooge 2015) (Noguera 2013) (Rageth and Renold 2020) (Rauner and Wittig 2010) (Rauner et al. 2009) (Rauner, Wittig, and Deitmer 2010)

(Continued)

Table 3. (Continued).

Variable	Description	Records
Dimension: Cooperation and involvement		
Cooperative environment	These sources argue that VET actors must constantly find compromises and overcome their sometimes-competing interests. VET system governance should ensure cooperation, communication, and collective problem solving become easier.	(Aerne and Bonoli 2021) (L. Bonoli and Gonon 2022) (Emmenegger, Graf, and Trampusch 2019) (Rageth and Renold 2020) (Renold et al. 2019)
Actor involvement	These sources argue for the involvement of firms, employer associations, unions, school leaders, and teachers.	(Busemeyer and Trampusch 2012) (Emmenegger, Graf, and Strebel 2021) (Emmenegger, Graf, and Strebel 2020) (Pilz 2016) (Rageth and Renold 2020) (Sadowski 1981)
Solving collective action dilemmas	These sources address collective action. There is no golden solution, but long-term cooperation agreements, state involvement, corporatist structures and fair institutional arrangements are some strategies presented.	(G. Bonoli and Emmenegger 2021) (Carstensen and Ibsen 2021) (Leemann and Imdorf 2015) (Zhang 2021)
Organizational support to collective action	These sources propose specific ways of assisting actors in overcoming collective action problems through organisational structures. Actors bundle resources, and intermediaries enable communication and partnerships.	(Busemeyer, Carstensen, and Emmenegger 2022) (K. M. Caves and Oswald-Egg 2021) (Frommberger and Baumann 2016) (Graf, Strebel, and Emmenegger 2021) (Michelsen et al. 2021) (Remington 2018) (Schmierl 2011)
Dimension: Skills supply and demand		
Matching skills supply and demand	An equilibrium of skills supply and demand basically means that the VET system provides young people with the quantity and quality of skill that the labour market demands. These sources argue that this equilibrium is a necessary goal of VET governance.	(Ashton et al. 1999) (Bolli et al. 2018) (Emmenegger, Graf, and Trampusch 2019) (Frommberger 2005) (Pilz 2016) (Wegge and Weber 1999) (Zhang 2021)
Information and data gathering	These sources propose one way of dealing with skill mismatch through data. According to these sources, data alone is insufficient but, if combined with the right policies, can help actors achieve equilibrium.	(Emmenegger, Graf, and Trampusch 2019) (Green et al. 1999) (Pouliakas and Ranieri 2018)

(Continued)

Table 3. (Continued).

Variable	Description	Records
Dimension: Finances and funding		
Finances and funding	These sources deal with the distributing resources for VET. These financial structures also shape behaviour. Key considerations include: firm investment in VET, input- or output-based funding, and state subsidies.	(Buchmann 2017) (Busemeyer and Trampusch 2012) (Carstensen and Ibsen 2021) (K. Caves and Renold 2018) (Deitmer 2015) (Emmenegger, Graf, and Trampusch 2019) (Leemann and Imdorf 2015) (Michelsen et al. 2021) (Oliver 2010) (Rauner and Wittig 2010) (Rauner et al. 2009) (Rauner, Wittig, and Deitmer 2010) (Sadowski 1981) (Schmierl 2011) (Wegge and Weber 1999) (Zhang 2021)
Dimension: Providing high-quality and attractive VET		
Quality, content, and monitoring of VET	These sources focus on defining curricula, ensuring quality, and monitoring training provision. Actors from education and employment are engaged in these processes.	(Bolli et al. 2018) (Carstensen and Ibsen 2021) (K. Caves and Renold 2018) (Deitmer 2015) (Emmenegger, Graf, and Trampusch 2019) (Markowitsch and Hefler 2018) (Rauner and Wittig 2010) (Rauner et al. 2009) (Rauner, Wittig, and Deitmer 2010) (Schlögl et al. 2020)
Permeability	Permeability deals with VET's connections to the rest of the education system. These sources argue that clear pathways into, within, and out of the education system are crucial.	(K. Caves and Renold 2018) (Gonon 2014) (Pilz 2016)
The learning model	These sources refer to learning places and the underlying understanding of learning (e.g. competence-based or occupation-based).	(Carstensen and Ibsen 2021) (Gonon 2014) (Greinert 2010) (Harney and Rahn 2000) (Pilz 2016)
Access, equality and inclusiveness	These sources argue for including disadvantaged youth in VET through either preparation programs or the right incentives for firms.	(G. Bonoli and Wilson 2019) (Carstensen and Ibsen 2021)

Communication ensures that these processes are not fragmented. Decision-making power should be attributed to the appropriate level (subsidiarity) and all levels should have the necessary capacity to fulfil their tasks.

Horizontal coordination addresses mainly two problems: involving all relevant actors at a given level and providing the right institutional setup for these actors to coordinate their activities. This also includes sharing decision-making power so no sector or actor can impose its own interests.

Cooperation and involvement

One of the main characteristics of VET is that it brings the education and economic spheres together. Apart from the horizontal coordination challenges this causes, the literature points towards a specific need for looking at cooperation more broadly. This goes beyond coordination to questions about *cooperative environments, actor involvement, solving collective action dilemmas*, and providing *organizational support to foster collective action*.

According to these sources, a *cooperative environment* ensures that actors from different sectors they can continuously find compromises and overcome diverging interests. VET system governance should provide the conditions for this cooperation, and actors themselves are responsible for overcoming the obstacles to cooperation.

VET systems require the participation of various actors. Firms especially are necessary to achieve a highly functioning VET system, which requires balancing their incentives and responsibilities. Unions and education actors also give input and have a role to play, so *actor involvement* goes beyond firms.

Solving collective action dilemmas addresses a specific type of coordination problem. Individual actors may benefit from a collective solution to a problem but have incentives to withdraw from cooperation. There is no one-size-fits-all solution, but the literature identifies long-term cooperation agreements, state involvement, corporatist structures, and fair institutional arrangements as some ways these dilemmas can be solved.

Another specific way of addressing collective action problems is through *organizational support*. This received so much attention in the literature that we include it as a separate variable. It highlights the positive impact organisational structures, both formal and informal, have on solving collective action problems. Such structures may revolve around bundling resources, establishing intermediaries, or codified partnerships, and they can be initiated by both state and non-state actors.

Skills supply and demand

These sources argue that a core indicator of the quality of a VET system is whether there is an equilibrium in the supply and demand skills produced by the system. There are two aspects of this: *matching skills supply and demand* themselves and *gathering information and data*.

The former revolves around the challenge of *addressing skills mismatches*, where firms' skills demands are not adequately met by the supply through the VET system or where VET graduates cannot find employment. Multiple actors, including firms, the state, and VET providers, must adapt when necessary.

Information and data gathering helps detect mismatches. Ideally, there is a system for this – either a market or data and information. This requires establishing a market or gathering and analysing data systematically.

Finances and funding

The *finances and funding* variable covers the way resources and costs are distributed across actors and/or VET processes. These sources argue that VET system governance must balance costs and benefits while considering how funding arrangements shape actors' behaviour.

Providing high-quality and attractive VET

The last governance dimension revolves around programme delivery. According to the sources using this variable, high-quality and attractive VET rests on *quality, content and monitoring, permeability, the learning model, and the access to and equality and inclusiveness of the system*.

Curriculum development, upholding the standards of certificates, and monitoring the provision of VET are at the heart of implementation. VET providers and economic actors carry out these processes and require an institutional setup that fosters collective decision-making and the adoption of a formal and functional feedback process. The latter is required to address the dynamism and flexibility needed to secure *quality* and the *right content and monitoring*.

Permeability deals with the position of VET within the education. In a highly permeable system, individuals can progress from any starting point to any endpoint. This increases the attractiveness of VET to prospective students. Permeability also includes smooth transitions between VET and other education subsystems.

While the *learning model* seems like a didactic topic and not a governance topic, learning places and curriculum approach (e.g. competence-based or occupation-based) are founded on governance decisions. They are related to various other aspects such as finance and funding and skills supply. Defining the roles of actors, finding the balance actors' interests, and defining the foundations for high-quality VET are governance tasks.

The last variable addresses the scope of VET provision. While the state has an incentive to maximise access to VET, firms have an interest in a competitive system where they can select the best candidates. Weighing these two and finding common solutions is a governance challenge. Tools include financial incentives or penalties targeted at firms, preparatory programmes for disadvantaged youths, and career guidance and counselling. Together, these ensure *access, equality and inclusiveness*.

Discussion

We identified broad diversity in the VET system governance literature. Records represent various fields of study linked into an interdisciplinary literature without ideological isolation and we find numerous variables describing VET governance. This section explores the areas of fragmentation and consolidation in the literature by relating the various groups we have identified in the literature.

Unlike some other fields of governance research – for example corporate governance – the VET systems governance literature does not always agree on a single key problem. The corporate governance literature is largely focused on the principal-agent problem, seeing the purpose of good governance as reducing that problem (Khan 2011). One feature of the interdisciplinarity of the VET governance literature is that the different fields of study identify different central issues. While economists might focus on variations of the principal-agent problem or information asymmetries (e.g. Bolli et al. 2018), the collective skills formation literature takes a more political science approach and focuses on balancing the needs and contributions of various stakeholders and social partners (e.g. Busemeyer and Trampusch 2012), and a more sociological approach is concerned with equity, social inclusion, and social mobility as the central challenge of VET governance (e.g. Johansen 2002). This lack of a central focus enhances discussion in the VET system governance literature, but may make it more difficult to arrive at a coherent solution to so many problems.

Indeed, numerous recent reviews find that the interdisciplinarity of VET research leads to fragmentation and even stagnation rather than fostering progress. Gessler's, Naegele, and Stadler (2021) sweeping review of the VET literature overall finds a fragmented field parcelled out by country, with consequences for the representation and access available to scholars from non-favoured countries. K. Caves, Baumann, and Renold (2021) review VET reform implementation literature and find that the use of variables depends on the record's publication source – in that literature, the schools of thought and variables are all tightly correlated, forming somewhat isolated silos and ideological stagnation. Scheuch et al. (2021) find that VET policy in Europe is highly fragmented by country and focused on individual factors rather than generally applicable principles.

Some fields of governance research face similar challenges to those found in the VET system governance literature. Education governance in general also lacks overarching theory and faces multiple competing challenges (Pons 2017). The governance of higher education is similarly ideologically diverse and also deals with competing priorities, plus a dynamic environment. Kezar and Eckel (2004) point out a pattern of a burst of new ideas in the mid-1900s to respond to new challenges at that time, followed by relative stagnation, and call for another burst of new ideas to address current challenges to which the older research is no longer suited. The current increase in VET-governance-related publications

may represent such a burst, helping to move the field towards greater cohesion around key ideas.

Unlike the national fragmentation and ideological silos found in other sub-literatures related to VET, we find that the VET governance literature generally shares ideas and concepts. The field has yet to establish strong consensus opinions about which variables matter most for VET system governance, but the different fields of study are in the same conversation to at least some degree.

Conclusion

The field of VET system governance can appear overwhelming and fragmented at first blush, with fields of study and an unclear definition of what variables or specific structures and processes describe VET governance. In reviewing the literature, we find an overall more cohesive field than expected. We can identify a set of variables describing VET governance, but we find the field still very much in development.

Scholars in this field build an understanding of VET system governance from multiple theoretical perspectives while maintaining a generally unified discussion. This should prevent pigeonholing and enable the field to understand its topic more broadly. However, it also presents challenges for communication across sources and development of ideas spread across so many different theories and concepts.

Despite a general lack of quantitative research, the field has moved beyond single-case studies and applies comparative methods frequently. The literature is robust enough for us to identify 16 variables in six dimensions that describe governance for VET systems. These dimensions and variables provide a picture of how scholars in the field commonly describe VET system governance and shows which variables are more and less commonly used. We see a strong focus on issues around cooperation and coordination, and a focus on various specific points.

VET is prominent in current policy conversations as a strategy for reducing youth unemployment, increasing the permeability of education systems, and even contributing to economic development. Even if all these things are possible, research-based governance strategies new and developing VET systems are difficult to articulate. Although we find some common variables and dimensions of governance in the literature, we do not find a great deal of causal research. Especially in a topic where there are so many context-specific factors and where some countries and institutions are actively encouraging others to expand VET, future research should be very rigorous in how it approaches findings that could be construed as advice.

Despite including French-language search terms, we were not able to identify any French-language records for the sample. It is not always

reasonable to expect authors to cite across languages, so snowball sampling cannot necessarily make up for this. This underscores the importance of literature that – although it may be based in a particular perspective or place – speaks as broadly as possible to the global community of researchers and policymakers interested in VET governance. As much as possible, future research should consider what variables and perspectives are inherently part of successful VET governance and which factors are more context-specific.

Although we have included as much literature as possible in this review and incorporated sources in three languages, we may have missed relevant literature. This is especially true for sources in other languages, which means we may have missed literature from outside the VET literature that places a systematic and biased focus on Western European countries (Gessler, Naegele, and Stadler 2021). We also eliminated literature that takes a purely empirical approach without applying or attempting to build theory. With the variables identified from the more theoretical literature, a review of the empirical literature may be able to identify variables' importance and operational appearance. Finally, despite trying to bridge various fields of study, we do not provide a comprehensive or multi-disciplinary theoretical framework. The field probably needs such a framework to reach its potential, and the integration and cross-theoretical work we observe in this review is an indication it is moving in that direction.

Note

1. <https://files.eric.ed.gov/fulltext/ED619361.pdf>.

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