Mapping Social Capital in Vocational Education and Training: A Multi-Perspective Egocentric Social Network Analysis in a European Innovation Project

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Abstract

Context: The importance of the involved stakeholders and their networks in vocational education and training (VET) focussing on international transfer and cooperation is highlighted in various empirical studies. A systematic empirical survey of these by means of social network analysis, however, has hardly been applied to date. This article is concerned with the development of social capital in the course of network formation and its sustainability. The object of investigation is the funded European VET innovation project *AI Pioneers* within the Erasmus+ program of the European Union. The main objective of the project is to establish and expand an international network in the context of VET in order to support the exchange of expertise on the use of artificial intelligence (AI) in education.

Approach: To answer the research questions, the first step was to combine theoretical approaches from a social network perspective from psychology in relation to the analysis of interpersonal trust, sociology regarding the social capital approach and business administration by addressing the roles of actors in innovation processes. Among others, the social network perspective in this study is based on the work of Granovetter as well as Marsden and Campbell. For the data collection, a fully structured interview questionnaire and a semi-structured interview guideline were developed based on the theoretical framework of the

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study. In the second step, a multi-perspective egocentric network analysis was carried out: Data on a total of N = 10 egocentric networks were collected from the funded partners in the *AI Pioneers* project to gain an overall picture of the combined social capital and network structures. For the visualisation of the network data, the type of structured and standardised network maps was used.

Findings: Regarding the establishment of social capital in the analysed innovation project *AI Pioneers*, it can be emphasised that a total of 74 relationships have been recorded in the 10 egocentric networks combined. In line with the project objectives, the education sector is addressed by the majority of the analysed relationships (n = 54), with (technical) vocational schools making up a substantial part of these. Focussing on the sustainability of the surveyed network structures: Most of the analysed relationships already existed before the project start and were consolidated during it (n = 57), while new ones were also established (n = 17). In addition, the continuous development of mutual trust and the need for equal cooperation is emphasised: A relatively high level of mutual trust can be recorded overall in the analysed egocentric networks (n = 55), while a low mutual trust is present in 19 relationships which is described due to e.g. asymmetrical power relations or a lack of commitment. The results show that the relationships analysed primarily contribute their resources in the form of expertise and their networking knowledge to the egocentric networks. Furthermore, a high level of interest and willingness to support the *AI Pioneers* project can be captured, particularly due to the novelty of the topic and the application of AI in VET.

Conclusions: The study makes a significant contribution to VET research and its methodological set by using social network analysis with a combination of qualitative approaches for analysing egocentric networks from multiple perspectives. The importance of allocating resources to the creation of social capital regarding cooperation, network building and the sustainable maintenance of established structures can be emphasised. In this respect the benefits of a network-based approach can be highlighted in the context of the Erasmus+ program and the partnerships for innovation on forward-looking topics. In addition, the development of the two structured survey instruments in this study can be emphasised, which can be further developed on the basis of future research. Further quantitative network analyses would be valuable for VET research, especially against the background of innovation drivers and network formation, such as market and trend-related drivers due to demands and developments in the field of AI in education.

Keywords: Social Network Analysis, Egocentric Multi-Perspective, Social Capital, Erasmus+ Innovation Project, Artificial Intelligence, Vocational Education and Training, VET

1   Introduction

Educational cooperation has been funded and promoted by the European Union for many years under the Erasmus+ program with *innovation*[1] as the central element: Therefore, the aim of funding is on supporting innovative projects with regard to various priorities, so that, among other areas, cooperation between educational organisations in Europe is promoted under the *Partnerships for Innovation* in order to support modernisation and novelty on future-oriented topics such as digitalisation and the use of artificial intelligence (AI) in education and training (European Commission, 2022, 2024). Funding is primarily provided in this regard for projects that are made up of a transnational consortium and focus on "mutual learning on forward-looking issues amongst key stakeholders and empowering them to develop innovative solutions and promote the transfer of those solutions in new settings" (European Commission, 2022, p. 277). In addition, other eligible activities are outlined, including 'mapping work' and 'transnational events or networking activities' under the priorities of the so-called *forward-looking projects* (European Commission, 2022). Therefore, the Erasmus+ program focuses directly on building sustainable international networks as a constant implicit feature (European Commission, 2022, 2024), with some innovation projects even explicitly setting international networking as one of their core objectives. Networking activities like this extend beyond national borders. At the same time, the aspect of networking is increasingly becoming a focus for the use of resources in order to meet the growing challenges and change processes in the education sector (Gruber et al., 2018). As a resource within the networks, the resulting social capital (e.g., trust) in particular can be an indicator of sustainability (Gessler & Siemer, 2020). Therefore, the promotion of network formation and thus social capital, as directly addressed by the European funding program, should be placed in the focus of research interest as well as the output of such funding efforts addressing networking and its sustainability in international contexts.

Furthermore, in vocational education and training (VET), the connection between work, technology and education continues to be understood as a dynamic interdependence that must be addressed in a changing world of work (McGrath et al., 2019). The changes resulting from developments in the field of AI should be particularly emphasised in this interdependence, as they result in both fundamental change processes in society and various potentials for teachers, trainers and learners in VET (e.g., to identify individual learning needs; De Witt, 2024; Roppertz, 2021). As the debate surrounding the topic of AI has gained momentum in recent years, the funding and implementation of AI innovation projects was placed

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[1] Regarding the term *innovation* under the priority of *Partnerships for Innovation* focusing on *Forward-looking Projects*, the Erasmus+ Program refers to "foster[ing] innovation, creativity and participation, as well as social entrepreneurship in different fields of education and training. It will support forward-looking ideas based around key European priorities, (…) and giving input for improving education and training systems, as well as to bring a substantial innovative effect in terms of methods and practices to all types of learning and active participation settings for Europe's social cohesion" (European Commission, 2024, p. 16).

in the foreground of the Erasmus+ program (European Commission, 2024). Accordingly, the importance of AI is reflected in the educational context through policy funding not only at national level (e.g., Digitalisation Master Plan for Lower Saxony in Germany) but also explicitly at international level (e.g., Digital Education Action Plan and Erasmus+ Program for 2021-2027 of the European Commission). Furthermore, under the keyword 'Artificial Intelligence' on the European Commission's project and results platform, there are a total of 689 references to EU-funded projects, whereby 389 projects on AI can already be found for the EU funding period from 2021 to 2027[2]. Appropriately, CEDEFOP and ReferNet (2023, p. 1) emphasise the need "to integrate AI competences in education and training at schools, at the workplace (e.g. apprenticeship training), in teaching and at universities".

In order to address the topic of networking and cooperation with regard to the AI application in VET, an Erasmus+ project is analysed as an example for the category of partnerships for innovation and forward-looking projects in this study. The VET innovation project *AI Pioneers* (funded within the European Union Erasmus+ program, period 2023-2025) promotes the use and teaching of AI in adult and vocational education and training, with a total of 10 project partners from seven different EU countries involved in the project network (Germany, Greece, Portugal, Italy, Spain, Cyprus, Estonia). The focus of the project, besides the development of policy recommendations, AI toolkits, implementation guidelines of AI use cases and ethical and trustworthy use of AI in education, is predominantly on the implementation and establishment of an international network of *AI Pioneers*. In this regard educators, stakeholders, policy makers and education planners are addressed as reference points in the network for the design and implementation of (future) education projects related to AI (see e.g., Attwell et al., 2023; Deitmer et al., 2024; Grollmann et al., 2024; Meyne & Siemer, 2024). The emerging network will promote the exchange of best practices and national communities of practice (CoP) to increase transparency regarding the application of AI in educational settings.

In the current scientific discourse, the importance of the actors involved and the resulting social networks in international VET cooperation is emphasised in a large number of empirical studies (see e.g., Albertz & Pilz, 2025; Gessler, 2019; Peters & Gessler, 2019; Pilz, 2016; Pilz & Zenner-Höffkes, 2023; Röhrer et al., 2021). However, the state of research in the field of VET (see e.g., Coppe et al., 2023; Schlicht & Moschner, 2018; Messmann et al., 2018) and especially the recording of social capital in international VET research is considerably limited (see Gessler & Siemer, 2020; Siemer & Gessler, 2021).

Against this background, the article is based on the assumption that the development of social capital in the course of network formation of funded projects has an influence on the

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2 The majority of the projects are located in the Horizon Europe program. If the search terms are used independently of each other, there are 1205 entries with in total 665 projects between 2021 and 2027 (search status: 18th February 2025): https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/projects-results?order=DESC&pageNumber=1&pageSize=50&sortBy=title&keywords=Artificial%20Intelligence&isExactMatch=false

sustainability of those. One approach to identify such outward-facing networking activities comes from innovation research and is based on the promoter model (Gemünden & Hölzle, 2005; Hauschildt & Chakrabarti, 1988; Witte, 1973). This model comprises the following four promoter roles: Power promoter, professional promoter, process promoter and relationship promoter, whereby the latter role is inter-organisationally oriented and mainly characterised by external networking activities (Gemünden et al., 2007; Gemünden & Hölzle, 2005). On the basis of the relationship promoter of the *AI Pioneers* project partners, this article applies egocentric network analysis and examines the development of social capital (e.g., intensity of the established relationships):

> *Egocentric network data describe the local social environments surrounding individual actors in a network – usually comprising one or more of each focal actor's direct contacts ("alters") and certain qualities of the dyadic relationships between that actor ("ego") and the alters. (Marsden & Campbell, 2012, p. 18)*

Therefore, the aim of this study is to use egocentric network analysis to examine the development and establishment of (international) networks on forward-looking topics in vocational education and training using the example of the Erasmus+ funded *AI Pioneers* innovation project. The focus is on the identification of central actors and their development of social capital as well as the intensity of relationships between funded partners in the course of network formation in the form of a multi-perspective egocentric network analysis to gain an overall picture of the combined network structures (see Chapter 2). The analysis is based on network data of 10 relationship promoters (egos) of the project partners funded as part of *AI Pioneers* and the relationships to the actors (alters) that arise in the project context in their egocentric networks: "Actors [in social networks] are often individuals. But organisations or states can also act as nodes in social networks" (Fuhse, 2018, p. 14; translated by the authors).

The present study thus pursues the following main research question (RQ): *To what extent has social capital evolved within the network in the international AI Pioneers project?* To answer this main question, the following sub research questions arise:

– *RQ1: Which actors (alters) play a central role in network formation in the AI Pioneers project?*

– *RQ2: How are the relationships within the analysed egocentric networks formed in terms of their intensity?*

– *RQ3: What functions and relevance do these alters bring to the egocentric networks?*

To answer these questions, the article is structured as follows: Chapter 2 introduces the theoretical framework and sets out relevant definitions for this study. Chapter 3 presents the research design including the research approach, the data sample, the data collection and analysis. Chapter 4 is dedicated to the results of this study. In chapter 5, the results and the methodological approach are discussed. The article concludes in chapter 6 with the limitations of the study and an outlook for future research.

2   Theoretical Framework

In collecting network data, Hansen et al. (2011) refer to the analysis of overall networks (full networks), sections of these (partial networks) and individual networks of actors (personal/ egocentric networks). According to Hansen et al. full networks are:

> (…) *Often created and available when a single system, such as a social media platform, acts as a hub among a group of connected people or groups (…). A full or complete network contains all the people or entities of interest and the connections among them. All egos are treated equally. (Hansen et al., 2011, p. 36)*

In partial networks, on the other hand, researchers select certain entities of a superordinate network as the unit of analysis (Hansen et al., 2011). Furthermore, "it is often useful to consider social networks from an individual member's point of view", so that, starting from a single actor (ego), the connections to other persons (alters), and sometimes also the connections between different alters, are analysed (Hansen et al., 2011, p. 36; see Figure 1). The visualisation of different types of network data often occurs in the form of network maps. Hollstein and Pfeffer (2010) also emphasise that studies in which network maps are used often involve comparisons within these maps (e.g., between alters) or between different maps (e.g., different egocentric networks). The analysis of individual egocentric network data without a common context could accordingly be referred to as first-order egocentric analysis, while in the context of the present study, the combination of multiple perspectives of different egocentric networks and their connections to each other within an overall perspective could be thought of as second-order egocentric network analysis (see Figure 2). Based on the Erasmus+ innovation project *AI Pioneers*, the article adopts the second-order perspective of egocentric network analyses presented here, so that a multi-egocentric network analysis is carried out in the course of the study and thus several egos (N = 10) are surveyed in order to draw conclusions about the developed social capital in the common project context. These two understandings of egocentric network analyses are illustrated below.
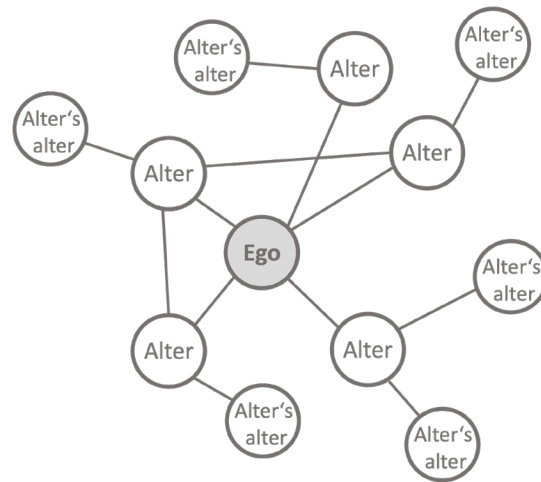
Figure 1: Visualisation of a "First-Order" Perspective on an Egocentric Network (own compilation in accordance with Hansen et al., 2011, p. 168)
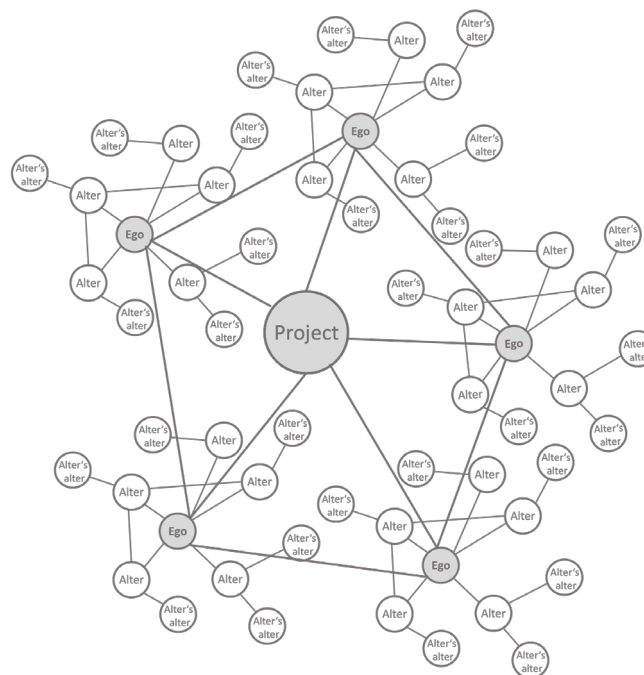

Figure 2: Visualisation of a "Second-Order" Perspective on Egocentric Networks (own compilation)

In the following, the theoretical framework of the study is described (see Figure 3), which includes approaches from a social network perspective (see Granovetter, 1973; Marsden & Campbell, 2012) from psychology in relation to the analysis of interpersonal trust (see Schweer, 2008), sociology regarding the social capital approach (see Bourdieu, 1983) and business administration by addressing the roles of actors in innovation processes (see Gessler, 2019; Witte, 1973). Those approaches are subsequently empirically applied to the field of vocational education and training (see Chapter 3 and 4).
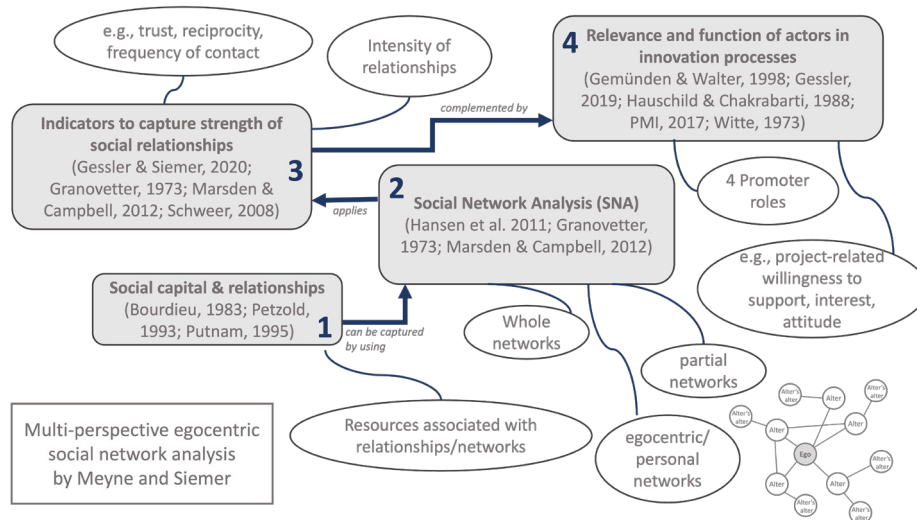

Figure 3: Concept Map of the Theoretical Framework of the Study (own compilation)

To capture the relationships within networks, this paper will draw on the concept of social capital, which is significant for understanding the function of relationships. Among the most prominent authors who shaped the definition of this concept are Pierre Bourdieu (see e.g., 1983) and Robert Putnam (see e.g., 1995). However, both represent different perspectives on the topic: Bourdieu defines social capital as "the totality of actual and potential resources associated with the possession of a durable network of more or less institutionalised relations of mutual knowledge or recognition" (Bourdieu, 1983, p. 191; translated by the authors) and foregrounds social capital as a private good. Although Putnam (2001) increasingly focuses his research on the societal effects of social capital, he states: "There are both public and private faces of social capital" (Putnam, 2001, p. 1). Putnam further characterises social capital as "features of social organisation such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995, p. 67) and describes the concept of trust as being relevant to social capital. Despite Putnam's view of social capital from the perspective of society as a whole, his considerations on trust are relevant to social

capital for the context of this study. Moreover, Putnam (1995) argues that "social trust is not part of the definition of social capital but it is certainly a close consequence, and therefore could be easily thought of as a proxy" (Putnam, 2001, p. 7). In the context of this article, the definitional approaches of Bourdieu (1973) and considerations on trust from Putnam (1995) are taken into account with regard to institutionalised permanent relationships between individual actors, which are characterised by exchange and cooperation, reciprocity and a certain degree of trust, in order to draw conclusions about social capital.

Therefore, a definition of the term *relationship* is necessary. A *relationship* can be described by the forms of interaction between individuals. Following Petzold (1993), forms of interaction are understood as contact, encounter and relationship, whereby a contact is not automatically a relationship, but is nevertheless relevant for building one. The relationship modalities according to Petzold (1993) build on each other in terms of the intensiveness of their exchange and are framed by *confluence* and *bonding*[3]. Contact as a relationship modality happens before *encounter* can take place. *Contact* thus represents the necessary preliminary stage of *encounter*, whereas *encounter* itself is to be understood as a mutual exchange based on empathy (Petzold, 1993). Petzold further states: "Relationship is an encounter that is sustained over time, a chain of encounters that includes a future perspective in addition to a shared history and a shared present" (Petzold, 1993, p. 796; translated by the authors). Since this study is concerned with *relationships* in the context of the *AI Pioneers* project, interactions that can only be classified as contacts or *encounters* on the part of the interviewees are not of interest.

Furthermore, the distinction between strong and weak relationships (ties) between actors can be traced back to Granovetter (1973). While weak ties enable new information to be shared with other groups and innovative ideas to be passed on, and thus have the potential to reach a wider circle of actors, strong ties occur as dense relationships between actors that are similar to a certain extent and are characterised by a considerable reciprocity, as within friendships (Granovetter, 1973):

> *One's strong ties form a dense network, one's weak ties a less dense one. (…) Those to whom we are weakly tied are more likely to move in circles different from our own and will thus have access to information different from that which we receive. (Granovetter, 1973, p. 1370-1371)*

According to Granovetter (1973), the strength of relationships is primarily influenced by the duration within the relationship, the emotional intensity and intimacy in terms of shared content and reciprocity. Furthermore, Granovetter (1973) points out that relationships

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3 According to Petzold (1993), the relationship modalities are arranged as follows: Confluence →Contact → Encounter → Relationship → Bonding. Here, confluence is to be understood as an interaction form of coexistence, such as it is found in the embryonic period between mother and child in complete mergence. Whereas bonding as the highest form goes beyond that of a relationship and is characterised by the voluntariness of the bond entered into, loyalty, devotion and willingness to suffer (Petzold, 1993).

intensify the more time the interaction partners share together and that strong relationships are primarily entered into by persons who are similar to each other, which is known in network research under the term of social homophily. We therefore propose assumption one in the context of the present study: *Project partners primarily intensify contacts over the project duration with organisations that are similar to their own* (A1). With regard to the intensification of contacts, the interplay of network size or network mobilisation and the experience of the egos in similar (Erasmus+) projects is also of interest. In this regard, reference can be made to the so-called *Matthew Effect*, which is aimed at the connection between previous achievements and the resulting future successes based of those (Merton, 1968).

Furthermore, Granovetter (1973) uses the frequency of contact between the interaction partners as an indicator to capture strong ties. Following on from Granovetter (1973), Marsden and Campbell (1984, 2012) also empirically addressed the question of which indicators can be used to capture the strength of social relationships and refer to the frequency of contact as well as the duration described as the years of acquaintance. Following on from the theoretical and empirical work of Granovetter (1973) and Marsden and Campbell (1984, 2012), Gessler and Siemer (2020; see also Siemer & Gessler, 2021) introduce a specification in the form of a level model for measuring the closeness of social relationships. According to Gessler and Siemer (2020) the intensity increases over the five levels and the attributes of the subordinate levels are to be assigned to the superordinate levels as well:

1. Pure exchange of information: The relationship is classified as relevant between the interaction partners, but represents a pure exchange of information, so that a weak relationship exists.

2. Mutual exchange: The second level represents a mutual exchange of information, so that there is now reciprocity between the actors, which is still characterised by distance.

3. Goal-oriented coordination: The third level of the model represents the purposeful agreement in relation to a particular result with the willingness to coordinate actions with each other.

4. Cooperation: Interdependence is a characteristic of the fourth level, which is characterised by cooperation between actors through involvement in a shared context.

5. Trust: The last and highest level of the model refers to the level of trust, which is characterised by the continuity of the relationship and represents a strong relationship.

In the context of the present study, trust is thus used as an indicator for capturing the closeness of relationships and thus to identify the intensity within a network in addition to other categories. In accordance with Granovetter, who states that stronger ties need "larger time

commitments" (1973, p. 1362) we propose assumption two for the present study: *Relationships aimed at cooperation and trust need more commitment over the duration of the project* (A2).

But which elements can be used to assess trust in social relationships? Accordingly, it should first be emphasised that this study is dedicated to interpersonal trust between individual actors (Jecker & Spachmann, 2023)[4]. From a sociological as well as a psychological perspective, trust is primarily geared towards reducing complexity (Schweer, 2022). Although there is a wide range of definitions of the concept (see e.g., Hosmer, 1995; Zaltman & Moorman, 1988), there is widespread agreement that, gaining trust is desirable and active efforts are necessary to achieve it (Schweer, 2008). Schweer (2008) refers to the definition of trust according to Platzköster (1990, p. 48; translated by the authors), which describes trust as a "conscious renunciation of information in order to increase the certainty of expectation with positive appreciation of the expectation and an assigned probability of occurrence". As operationalisable characteristics of trust, Schweer (2008) first states that in addition to basic features of trust (like reciprocity and time invested), a distinction must be made between personal features (like individual trust tendency and implicit trust theory) and situational features (like the degree of symmetry of the relationship structure and the duration of the relationship; Schweer, 2008). In the present study, trust is thus to be captured on the basis of these characteristics. The subcategory reciprocity describes the mutual exchange of trust in relationships (Schweer, 2008). Since trust also requires a temporal component with regard to its increase, the characteristic of time invested in the relationship is also addressed (Schweer, 2008). Among the situational conditions of trust, the symmetry of the relationship structure aims at the power imbalance between persons, while the individual trust tendency (personal feature of trust) aims at the potentially basic attitude towards trusting interaction partners (Schweer, 2006, 2008). Additionally, among the personal features of trust, the implicit trust theory according to Schweer describes "the totality of an individual's normative expectations of the behaviour of other persons with regard to a positive development of trust" (Schweer, 2008, p. 21; translated by the authors).

The frequency of contact, the years of acquaintance and the used communication channel are also cited as relevant characteristics of the intensity of relationships (Granovetter, 1973; Marsden & Campbell, 1984; Schweer, 2008). Granovetter (1973) introduces the frequency of contact and thus describes the frequency of exchange within the relationship. Furthermore, regarding the communication channel, Schenk (2010) points out that communication in social networks requires a reciprocal exchange and often takes place in a "trusted face-to-face context" or via digital communication channel, which in comparison might reduce the social presence (Schenk, 2010, p. 774). We therefore propose the third assumption: *The trust*

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4 In addition to personal trust between individual actors, trust can also be addressed regarding systems and the fulfilment of expectations placed on them (e.g., institutions, subsystems of organisations, social subsystems; Jecker & Spachmann, 2023).

between the ego and alter relationships is strengthened through the face-to-face contact within the context of the project (A3).

Since the context of the funded project is an innovation project with regard to the establishment of an international network for topic-specific exchange, the promoter model will be used to determine the "content dimension of support" (Gessler & Siemer, 2020, p. 46; translated by the authors) within the egocentric networks focusing on the resources the relationships contribute.

The promoter model follows the concept that promoters are able to overcome barriers in the innovation process due to suitable resources (Gessler, 2019). The *power promoter* is characterised by his hierarchical potential, which enables him to make decisions and impose sanctions on opponents (Witte, 1973). The *expertise promoter* brings in professional knowledge with a strong argumentative power to solve subject-specific barriers (Witte, 1973). The *relationship promoter* connects relevant stakeholders and enables a dialogue between them through his contacts outside the own organisation and ability to network (Gemünden & Walter, 1998). Furthermore, the *process promoter* manages the coordination between the involved actors and focuses on administrative processes to plan and control innovation projects (Hauschild & Chakrabarti, 1988; see also Siemer, 2023).

Moreover, information about the relevance of the relationships for the project will also be surveyed in order to gather information to support successful network formation. It can be stated that "the process of identifying project stakeholders regularly and analysing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success" (Project Management Institute [PMI], 2017, p. 503) is of central meaning in this regard. In addition to the general attitude towards the project, the influence on the project, the importance for the project according to the project objectives, as well as the interest in information about the project and its results and the willingness to support the project are surveyed in this study (PMI, 2017).

3   Research Design

The aim of this study is to apply the potential of a multi-perspective egocentric network analysis to map and investigate (international) networks in vocational education and training. Such data collection designs do not support extensive structural and statistical analysis parallel to that possible for whole networks, though some measures of local structure exist (e.g., Burt 1992). To this end, the study was divided into three phases. Different qualitative methods were used to achieve the corresponding objectives: In phase 1, the focus was on identifying the relationship promoters in the respective partner organisations. Phase 2 involved the data collection and phase 3 was dedicated to validating the network maps.

3.1   Phase 1: Data Sample (Egos) and Network Boundaries

In the first step, the assessment of the promoter roles serves to identify the person who acts as a relationship promoter (ego) within the organisations of the project partners. Based on the ego of the organisations, relevant actors can thus be identified who play a central role in building a network of VET pioneers with regard to the use of artificial intelligence. To determine the relationship promoters, an inquiry was sent by email to the organisations of the project partners in order to identify the relationship promoter within the organisational structures on the basis of the promoter model (see Chapter 2). In total, all 10 project partners of the *AI Pioneers* project were reached for this study. This results in a sample of egos (understood as relationship promoters) of N = 10. The data sample was selected based on the following criteria:

1. Direct project partner of the collaborative Erasmus+ funded *AI Pioneers* project;

2. Person(s) taking on the role of relationship promoter from their organisation involved in the *AI Pioneers* project.

A total of eight individual interviews and two interviews with two people each, who together represented the role of relationship promoter in the organisation[5], were conducted (see Table 1).

Table 1: Characteristics of the Sample (Egos)

Institution of project partner/ego	Gender of ego	Position within own institution	Experience in Erasmus+ project implementation
Institution/ organisation	female	Project manager	Established in the Erasmus+ project landscape
Institution/ organisation	male	Researcher	Many years of experience with Erasmus+
Institution/ organisation	male	Scientific officer	Established in the Erasmus+ project landscape
Institution/ organisation	female	Researcher	Many years of experience with Erasmus+
Institution/ organisation	female	Project manager	Established in the Erasmus+ project landscape
Institution/ organisation	female	Researcher	Established in the Erasmus+ project landscape
Institution/ organisation	male	Managing director	Many years of experience with Erasmus+
University	male	Researcher	Many years of experience with Erasmus+

5 To simplify the procedure, only the main relationship promoter is listed as ego in table 1 for the two interviews with two people each. The data collection was carried out in pairs in this regard due to the newness of the interviewees' professional experience in the implementation of Erasmus+ projects at the request of the interviewees.

University	male	Researcher	New in the Erasmus+ project landscape
University	male	Research consultant	Many years of experience with Erasmus+

The interviews lasted between thirty minutes and three and a half hours depending on the size of the egocentric networks as the smallest egocentric network in the project context comprised two alters, while the largest had 17. The sample of the egos consists of six male and four female interviewees, whose professional profiles fall into the main categories of researcher, consultant, managing director and project manager and cover the seven project countries involved (three of those countries are each represented by two partners).

A common feature of the sample is the attitude of the ego as a person regarding trust. The study examined ego's general attitude towards trust in (new) contacts (individual trust tendency), as well as the assumption of how trust in relationships will develop in the future (implicit trust theory). All egos (N = 10) have a generally positive attitude towards trust in relationships and its development in the future. The positive attitude towards developing trust was emphasised by all egos as a personal character attribute, but also as a necessity within the working context and the project activities:

> *The personality here has a lot of influence because, there are people probably with more contacts, more organised or more structured than me in the project that are very, very good. But maybe they don't have this talent of spreading, calling, having this trust at first sight and loving people at first sight and not the second or third. (E08, 52)*[6]

While some egos focus primarily on informal and direct communication as a "problem-solving strategy" (E08, 98; E01; E06; E07), others prefer more formal communication channels and adhere more closely to predetermined structures and hierarchies in the work context (E05; E10). Furthermore, the interviewees largely agree that in the process of building relationships, adjustments are made if necessary according to the further development of trust based on the behaviour of the individuals involved (E01; E03; E04; E05; E07; E08; E09; E10), which is also emphasised in connection with professional experience, among other things: "In my professional relations, I'm more selective now and this has to do with the fact that I have more experience (…)" (E01, 10). Accordingly, the development over time plays an important role in dissolving or strengthening the relationship if necessary and developing a higher level of trust: "I think we have to start from a position of trust and see if we can build that trust to a useful conclusion" (E07, 12).

The topic of defining the boundaries of networks is central to network research, although there is no clear consensus on how to clearly define them and what meaning emerges from

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6   To anonymize the referenced data in the following, the interviewees were abbreviated with the letter E (for ego) and numbered in the order in which the data collection took place. The number after the abbreviation represents the section numbering of the transcripts from MaxQDA.

them (Häußling, 2009a). Häußling points out that there is a very different understanding of networks in research. It can be assumed that networks themselves are to be understood as boundaries (see e.g., Karafillidis, 2009), that networks have no boundaries at all (see e.g., Mewes, 2009) and/or that networks have blurred boundaries (Häußling, 2009b). Furthermore, Abbott (1995) states:

> *It is wrong to look for boundaries between preexisting social entities. Rather we should start with boundaries and investigate how people create entities by linking those boundaries into units. We should not look for boundaries of things but for things of boundaries. (Abbott, 1995, p. 857)*

Accordingly, we define the network to be analysed in this study along the thematic focus of the *AI Pioneers* project. Using multi-perspective egocentric network analysis (see e.g., Perry et al., 2018; McCallister & Fischer 1978; see also Chapter 3.2), the sample is asked about their relevant relationships in the project context, thereby defining the alters of the project partners in terms of their connection and exchange with the *AI Pioneers* project and thus focusing on a specific number of actors and relationships.

3.2   Phase 2: Qualitative Survey Instruments

In the second phase, a fully structured interview questionnaire and a semi-structured interview guideline were developed based on the model by Gessler and Siemer (2020) and on the theoretical framework presented in Chapter 2. The advantage of using fully structured interviews is that they make the interview situation easier for the interviewees by allowing the interviewer to fill in the standardised answers together with the interviewee. This makes it possible to ask questions directly in the event of comprehension problems (Döring, 2023). In this phase, an initial interview was conducted with the interviewees to discuss matters of understanding in advance. The interview situation included an explanation of the categories. The structured interview guideline was then filled out collaboratively.

Table 2 in the appendix shows the fully structured interview questionnaire, in accordance with Gessler and Siemer (2020) and enriched by further categories (see Chapter 2) with the corresponding questions/statements and selectable answer options. The selection of the applicable answer option was made by the interviewees themselves (see Table 2 in the appendix).

A semi-structured interview guideline was developed on the basis of the fully structured approach (Döring, 2023) to gather further information and contextual knowledge about the relationships. The interview guideline was tested in advance and subsequently adapted (Friebertshäuser & Langer, 2013). The following table shows exemplary in-depth questions along the main categories for the present study (Table 3).

Table 3: Category System With Example Questions

Categories	Example Questions
Information about the person	Do you assume generally that a relationship of trust will evolve with new people when you first meet them?
Information about the partner organisations	Could you please tell us in advance what exactly these organisations are that you have entered in the questionnaire, in other words what they do in their day-to-day business and why you have listed them in general?
Intensity of the relationship	How do the listed contacts that were described as having a high degree of willingness to mutually exchange information differ from the others? What project-related information is involved here exactly?
Function of the organisations	Can you give us a few examples regarding the categorised actors in terms of power, expertise, social capital and processes?
Relevance of the relationships in the course of the project	Can you explain in more detail how the relationships and organisations are classified in terms of their importance for the AI Pioneers project?

In this study, the categories listed represent the thematic areas of the fully structured interview questionnaire and the semi-structured interview guideline (see also Table 2 in the appendix). The data was collected by the authors. The data material was analysed on the basis of a previously developed coding system. In a first step, the data material was analysed independently by the authors. In a second step, the results were discussed, which led to a consensus. The data collection was carried out using the video conferencing software Zoom. The interviews were transcribed using the F4x transcription tool. The analysis and coding were initially carried out deductively and subsequently inductively based on qualitative content analysis according to Kuckartz (2018) by using the MaxQDA software to analyse the transcriptions.

The methodological reflection of our study is based on the critical appraisal tool for qualitative research by Lockwood et al. (2024). Lockwood et al. (2024, p. 2) pointed out initially: "The purpose of this appraisal is to assess the methodological quality of a study and to determine the extent to which a study has addressed the possibility of bias in its design, conduct and analysis".

3.3   Phase 3: Validation of the Network Maps

For the visualisation of the network data, we used the type of structured and standardised network maps (Hollstein & Pfeffer, 2010). The concentric circles in our study express the emotional closeness and distance to the ego. The structuring elements comprise the gradations trust (highest degree of closeness), cooperation, goal-oriented coordination, mutual exchange of information and pure exchange (highest degree of distance) and thus enable comparability of the network maps determined. This means that both the relationships of the alters to the ego within a map (e.g. based on circle and sector assignments) and, in some cases, different maps can be analysed in relation to each other (Hollstein & Pfeffer, 2010). While the use of standardised network maps leads to increased comparability between those, a high degree of standardisation limits the contextual knowledge of the visualised network data.

In order to overcome these limitations, we complement the study with qualitative research methods (Hollstein & Pfeffer, 2010).

The visualisation of the network maps was created in own compilation by the authors of the study in accordance with the tool VennMaker (Kronenwett & Schönhuth, 2014) based on the data of the egocentric networks collected via the fully structured interview questionnaire. The created network maps were validated in a second appointment via Zoom with the egos (relationship promoters). This procedure was chosen to confirm the validity of the generated network maps on the part of the egos as well as to make changes if these are necessary on-site of ego to represent the relationship to the alters in its visualisation accurately. Finally, two network maps are visualised as examples for this article.

4   Findings

In the following, the results of the survey of network structures in the VET Innovation project *AI Pioneers* are presented, starting by addressing the first research question focused on the analysed relationships (alters) of the multiple egocentric networks (RQ1). Subsequently the topics of the intensity of the surveyed relationships (RQ2) as well as the function of the alters in the network (RQ3) are presented in detail. The presentation of the results does not follow the list in Table 1 in order to ensure the anonymity of the respondents. Two exemplary network maps (see figure 4 and 5[7]) are included in the presentation of the findings to visualise the results of the survey. The identification of the relationships within the egocentric networks (N = 10) of the present study was carried out from the subjective perspective of the egos interviewed.

4.1   Which Actors (Alters) Play a Central Role in Network Formation in the AI Pioneers Project?

At the time of data collection, a total of 74 relationships were recorded in the 10 egocentric networks combined. The relationships were categorised by the egos as follows with regard to the social functional system of the actors: Politics (n = 4), economy, (n = 3), education (n = 54), science (n = 7), media (n = 0) and others (n = 6; see Table 3). In the area of politics, the interviewees named four ministries and political administrative bodies (E02; E05; E08), while with regard to the economy, one construction company and two AI companies are listed (E01; E07; E10). A more differentiated picture emerges concerning the sectors *education*, *science* and *others*. In line with the project aims, the education sector is addressed by

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7   The two exemplary network maps were selected to illustrate the diversity of the structures of the egocentric networks, as they show e.g. the role of an ego with years of experience in the field with a corresponding number of relationships that already existed before the start of the project and were maintained (Figure 4), compared to the network of an ego that could not draw on such an extensive existing network but had established new relationships in the project context (Figure 5).

the majority (n = 54). In this regard, relationships with a total of 24 vocational schools and adult education centres, as well as three secondary schools, were recorded (see Table 4). These primarily include technical vocational schools (TVET), which are for example involved in robotics projects in industry in connection with process and production automation, projects on the use of AI to increase the energy efficiency of buildings, AI for programming in computer science and mechatronics lessons and, in particular, the use of generative AI in teaching (E06). Furthermore, the use of AI in schools is also being considered in the area of hospitality (E10), and in professional education in aesthetics for training courses (E03): The range of potential application scenarios for AI in the field of vocational and adult education is accordingly very diverse (E01; E03; E05; E06; E09; E10).

Furthermore, a large number of European and international associations from the field of vocational and adult education are mentioned by the egos (n = 11), which are dedicated to lifelong learning, e-learning and distance education in addition to vocational education in general (E03; E05; E07; E09). The listed relationships of the egos also include a total of six non-profit organisations from the education sector, which deal with topics such as AI in ethics and pedagogy, learning analytics, digital infrastructure, as well as social disadvantage and educational justice (E02; E07). In addition, relationships with three consultancies in the field of AI in education are listed (E07). The remaining relationships are with internal and external research institutions (n = 20) that deal directly or indirectly with the topic of AI in education, whereby one think tank is also listed (E02; E04; E05; E06; E07; E08).

Table 4: Characteristics of the Alters

Categories	n	Categories	n
Characteristics of the Alters			
Social functional system		*Location of partner organisation*	
(1) Politics	4	(1) Country of project partner	56
(2) Economy	3	(2) Other EU country	14
(3) Education	54	(3) Country outside EU	4
(4) Science	7		
(5) Media	0		
(6) Others	6		
Intensity of the Relationships			
Closeness		*Communication channel*	
(1) No relationship	2	(1) Mainly face to face in presence	3
(2) Pure exchange of information (weak relationship)	14	(2) Mainly face to face online (video call)	17
(3) Mutual exchange (rather weak relationship)	15	(3) Mainly email	31

(4) Goal-oriented coordination (promising relationship)	23	(4) Mainly phone	19
(5) Cooperation (rather strong relationship)	13	(5) Mainly chat (e.g., WhatsApp, Telegram, Skype)	4
(6) Trust in each other (strong relationship)	7		

Reciprocity/ mutuality of trust		*Symmetry of the relationship structure*	
(1) No mutual trust	0	(1) Asymmetrical	4
(2) Low mutual trust	19	(2) Rather asymmetrical	17
(3) Rather high mutual trust	43	(3) Rather symmetrical	28
(4) Very high mutual trust	12	(4) Symmetrical	22
		(5) Prefer not to answer	3

Years of acquaintance		*Frequency of contact*	
(1) Half a year or less	6	(1) Less than once a month	50
(2) Between half a year and 1 year	6	(2) Once a month	22
(3) Between 1 and 2 years	16	(3) Once a week	2
(4) More than 2 years	46	(4) More than once a week	0

Relationship initiation before the project	
(1) Yes	57
(2) No	17

Function of the Alters

Power promoter		*Expertise promoter*	
(1) No power	40	(1) No expertise	6
(2) Some power	25	(2) Some expertise	31
(3) Rather high power	7	(3) Rather high expertise	25
(4) Very high power	2	(4) Very high expertise	12

Relationship promoter		*Process promoter*	
(1) No relationship capital	5	(1) No process knowledge	11
(2) Some relationship capital	36	(2) Some process knowledge	30
(3) Rather high relationship capital	23	(3) Rather high process knowledge	20
(4) Very high relationship capital	10	(4) Very high process knowledge	13

Relevance of the Alters

Attitude towards the project		*Influence on the project*	
(1) negative (hindering)	0	(1) No influence	34
(2) Rather negative	0	(2) Some influence	29
(3) Neutral (indifferent)	14	(3) Rather high influence	7
(4) Rather positive	53	(4) Very high influence	4
(5) Positive (promoting)	7		

Importance for the project		*Willingness to support the project*	
(1) Not important	6	(1) No willingness	2
(2) Less important	28	(2) Some willingness	35
(3) Rather important	34	(3) Rather high willingness	31
(4) Very important	6	(4) Very high willingness	6

Interest in the project	
(1) No interest	1
(2) Less interest	15
(3) Rather high interest	51
(4) Very high interest	7

Note. Each category represents the 74 relationships of the 10 egocentric networks combined.

With regard to the geographical location of the relationships, it should be noted that 56 contacts originate from the partner countries of the project consortium, while 18 contacts are with actors in other EU countries (n = 14) and countries outside the EU (n = 4; see Table 4). The specific focus on the countries within the project consortium is justified by an ego regarding the role of the partners in the project context: "This is also related to how the project is structured and what is required from us as a partner (…), you're mostly required to add the contacts from this country. (…). I haven't tried contacting VET schools outside [partners country]" (E10, 69).

4.2   How are the Relationships Within the Analysed Egocentric Networks Formed in Terms of Their Intensity?

Of the relationships mentioned in all egocentric networks, 57 already existed before the start of the project, while 17 were established during the course of the project at the time of data collection.

Looking at the results of the closeness of the relationships, a relatively balanced distribution of the relationships can be seen in the middle characteristics of the category, while the two outlying characteristics (no relationship, n = 2; strong relationship, n = 7) were rarely assigned. Therefore, a total of 14 relationships were categorised as *pure exchange of information* (weak relationship), 15 relationships as *mutual exchange but distanced* (rather weak relationship), 23 as *goal-oriented coordination* (promising relationship) and 13 relationships as cooperation (rather strong relationship; see for example Figure 4).
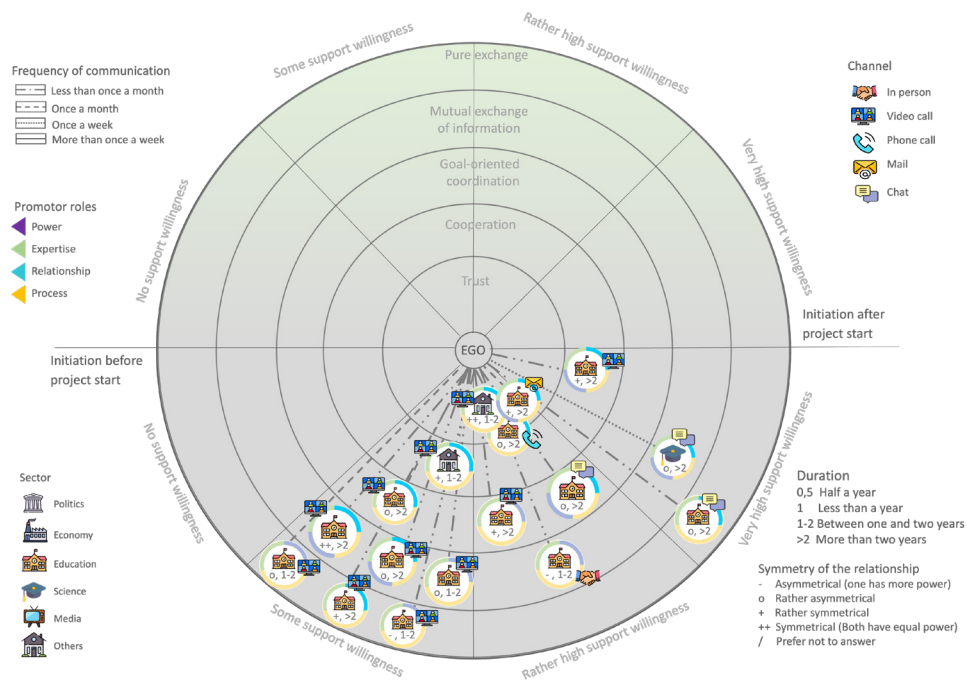
Figure 4: Network Structure and Map of Ego 06 (own compilation)

The category of pure information exchange (weak relationship) shows that the relationships rated by ego are mainly about "(…) informing them that we have a project. We are working on these results and if you are interested, I can keep you updated" (E05, 36). In contrast to this, the subsequent category is characterised by a *mutual exchange* (rather weak relationship), but the relationship has the potential to improve in the future: "We have mutual exchange of different information about our relations. At the moment I cannot say that its strong, but could be developed in the future" (E01, 18). Most relationships in the project are located in the category of the *goal-oriented coordination* (promising relationship; n = 23), so that a purposeful agreement with clear actions to be coordinated is given. Additionally, the egos interviewed increasingly emphasised that a shared interest regarding the topic of communication is important for maintaining contact (E04; E05; E10).

The category *cooperation* (rather strong relationship) goes beyond the exchange within the *goal-oriented coordination* and is characterised by a certain intertwining of the actors. This category was primarily selected by the egos with regard to relationships that have already been able to gain many years of experience in joint cooperation, for example through the implementation of shared (Erasmus+) projects in the past. Of the 23 relationships in this category, 17 go beyond the project duration and thus already existed before the start of the project (years of

acquaintance). Furthermore, it can be seen that especially those contacts that were categorised as *pure exchange of information* were mostly newly established during the project period (10 out of 14). With regard to the duration of the relationships in the other subcategories of closeness, there is a clear concentration of longer established relationships (longer than 2 years) focusing on *cooperation* (rather strong relationship) and trust (very strong relationship).

> *The level of trust is being evaluated during the years. (…) Trust didn't exist in the very beginning. (…) It was much easier for me to contact people and organisations that I already know and there is this mutual trust. (…) The principal of the school, is a very good friend, and I trust him a lot. (…) He assured me that everything will be okay with the school. (E01, 36 - 38)*

At the same time, it is also evident that personal and friendly contacts are used in the work context, which is associated with certain key positions of these actors in the professional field (E01; E05). Furthermore, some actors who can already look back on a variety of Erasmus+ project experience have larger network structures and can mobilise existing contacts within the *AI Pioneers* project effectively (E01, E03, E05, E06, E07), although there are also exceptions here in the interplay of network size and professional experience of the egos. Accordingly, egocentric networks are also present, in which extensive expertise is not accompanied by a correspondingly large network in the project context (E02, E08, E09). At the same time, however, it can also be seen that some egos with smaller project-related networks have established more new relationships within the project duration (E02, E08, E10). Ego 6 contradicts these findings, meaning that a certain network size already existed and was mobilised for the analysed project. At the same time, however, 1/3 of the final egocentric network of Ego 6 consists of new contacts that were established within the project duration.

With regard to the reciprocity of the relationships, the majority of these are categorised by the egos with a relatively high level of mutual trust (n = 55). However, a low mutual trust is present in 19 relationships, which is mainly due to imbalances with regard to asymmetrical power relations (E02; E05), a lack of commitment or other negative experiences in the working context within the relationship (E05; E07; E10). No relationship was described in terms of an absence of mutual trust. Furthermore, the ongoing development of mutual trust is emphasised, as according to one interviewee, small and medium-sized enterprises in particular must constantly prove their trustworthiness in the work context:

> *For me it has to do with the credibility and these are pictures of the trust, it's an ongoing process. Maybe you are credible today and if you start delivering fake things, you lose your credibility and this is a very dynamic process. (…) It has to do with the size of the organisation and the type, for example, a university. You can trust mostly a university. Even the persons are changing but it's under the university. But for smaller companies like [partner organisation], this is a process that every day we need to prove our credibility in order to build trust. And this is a two-direction process to have trustful partners and to give trust to other partners. (E01, 98 - 101)*

With regard to the symmetry of the relationship structure, 21 relationships were found to be (rather) asymmetrical, meaning that one partner has more power than the other (asymmetrical, n = 4; rather asymmetrical, n = 17) according to the categorisation of the egos. While one ego did not want to classify the hierarchical potential of three relationships, the majority of the relationships are classified as *rather symmetrical* (n = 28) and *symmetrical* (n = 22), which means both parties have the same amount of power. Equal cooperation is increasingly emphasised during the interviews (E01; E03; E06; E08), here personal networking preferences as well as target group-specific aspects become apparent. For example, the desire to balance out the power imbalance is particularly pronounced in the case of an ego in order to establish beneficial work on an equal level: "I always find it completely unpleasant to talk to people where I have the feeling that they are in an exaggeratedly supplicant or somehow inferior position. I don't think anything good comes out of that" (E02, 40). Furthermore, the results show that attracting suitable people from the project's target groups can be a hurdle, which reproduces asymmetrical relationships, as the project is dependent on practitioners, especially VET schools, being interested and wanting to cooperate (E02; E04; E05). In addition, the size of the participating organisations (alters) in terms of available resources and personnel involved in relation to the project partners (egos) in the *AI Pioneers* consortium is also emphasised, which can also lead to an asymmetrical power imbalance if one side is institutionally significantly larger than the other (E01; E07).

In terms of the main communication channels used, there is a clear dominance regarding emails as a central communication medium (n = 31), while the telephone (n = 19) and online video calls (n = 17) are also used. In contrast, face-to-face meetings in person (n = 3) are hardly used as the predominant communication channel, which seems to be partly due to the conditions of the Covid pandemic and the international nature of these projects: "The reality is that since the pandemic, we've (…) cut down grossly the amount of face-to-face contact and I wonder if that affects trust. I think that does affect trust" (E07, 73-87). Finally, chat functions are only used in four relationships as the most frequently used medium for communicating with each other. Although it should be noted that all egos emphasised that they use a variety of communication channels simultaneously, depending on their personal preference and that of their counterpart. While a large number of different channels are used for communication, the frequency of contact via these channels is strongly linked to the respective project phase and the activities that are planned in these in exchange with the project target group. Accordingly, the egos reported an average frequency of contact of less than once a month for 50 relationships. In the case of 22 relationships, communication takes place once a month and in only two relationships once a week.

4.3   What Functions and Relevance Do These Alters Bring to the Egocentric Networks?

With regard to the design of the promoter roles and thus the function of the actors in the egocentric networks, the egos interviewed largely agree that the alters in the country-specific networks show low hierarchical potential in the project-related network. The majority of the relationships (n = 40) were categorised regarding the role of the power promoter as having no power, while 25 relationships are marked as having some (see Table 4). Furthermore, one ego highlights: "It's about the research they [alter] do and of course that also has some influence on how we assess the AI applications, the use cases (...), but there is definitely an influence. It is not without influence" (E06, 53). Accordingly, the egos surveyed emphasise that the alters contribute their expertise to the project, but that they nevertheless do not have a certain amount of authority to influence project-related processes (E01; E02; E03; E04; E05; E10). However, there are certain alters that were classified significantly higher in this category either because they occupy a special position as pioneers in the implementation of AI in VET in terms of their technical expertise or because they have a direct link to politics and are therefore involved in discussion processes about AI in VET at policy level (E06; E07; E08). These still represent a minority of the relationships analysed in this survey.

Addressing the role of the expertise promoter, the majority of the relationships and actors were categorised as having some expertise (n = 31), rather high expertise (n = 25) and very high expertise (n = 12) in the field of AI in education: "They have a lot of capital all in different areas, they have a lot of experience first, and second a broad network of collaboration. So, they can be multipliers of what we are doing with our project" (E01, 72-73). According to the egos interviewed, such alters with (rather) high expertise possess such expertise due to their many years of professional experience in the implementation of Erasmus+ projects, their practical knowledge in VET, including AI use cases and initiatives with work-based learning approaches, as well as their contribution of strategic perspectives in VET. Furthermore, the academic expertise in the field of AI in education is particularly emphasised among the alters, as well as the technical expertise of AI developers (E01, E02, E04, E05, E06, E07, E08, E10). Only six relationships were marked with *no expertise* in this regard. Such alters, who have not been identified as having any specialist expertise, are certainly interested in the project results and most importantly have knowledge with regard to the other promoter roles, e.g. high networking skills (E02, E03, E09). Language barriers when it comes to contributing expertise as well as the identification and establishment of new relationships with relevant experts is emphasised as a central hurdle for network formation (E02; E03; E04; E08; E09; E10).

Additionally, the distribution of the role of the relationship promoter in the egocentric networks shows that a total of 36 alters have some relationship capital, a further 23 have rather high relationship capital, while 10 alters possess a very high relationship capital related

to the categorisation of the egos. Only five alters across the analysed egocentric networks do not contribute any relationship capital to the network. Furthermore, the involvement of European and international associations and networks (n = 11), which have a wide reach for disseminating project results (E03; E05; E07; E09), expand the social capital among the analysed egocentric networks: "The associations do have high relationship capital because they have very different people involved as members, (…), I can abroad contact people even at different levels, if I'm more interested on administrative roles or more on research roles or teaching (…). I felt that associations are very good, they have a very good scope of different stakeholders" (E05, 97-98).

Finally, the role of the process promoter shows that a total of 30 alters have some process knowledge and a further 20 have rather high process knowledge. While the focus is in the middle, the two marginal categories (no process knowledge, n = 11; very high process knowledge, n = 13) are used slightly more than in the two roles of expertise and relationship promoter. Additionally, the exchange across similar projects is emphasised by the egos, whereby project-related knowledge regarding processes among others is shared: "They have related similar projects. (…) We exchange also practices, (…), maybe there is an approach or something that we didn't think about, a good idea that we can also use, (…) more strategic things to more practical things" (E01, 76-77).

Focusing on the relevance of the alters for the egocentric networks, the results are particularly positive with regard to the attitude towards the project. A total of 53 relationships were rated as 'rather positive'. A further seven relationships were identified as very positive and promoting and only 14 relationships were rated as neutral (indifferent): "The feedback is positive, especially, (…) that this project started like nearly one and a half years ago" (E05, 107-108). The two lowest characteristics of this category (negative/hindering; rather negative) were not used by any of the egos to categorise the attitude towards the project on the part of the alters. According to the egos surveyed, two factors in particular play a decisive role with regard to the attitude towards the project: Firstly, the positive attitude is primarily shown "because it's a trending topic" (E08, 121-122). Secondly, the relationship between ego and alter is reflected in the general attitude towards the project: "If you're talking about people's attitude towards the project, it depends very much on what your relationship with them is. If you've got a bad relationship, they probably look at the project bad. It's as simple as that" (E07, 135-136).

In addition to the timing (e.g., the time of the contact request), interest in the project topic and trust in the high-quality of work of the involved individuals are particularly important: "We are working on that field for the last seven years. (…) This gives us a good credibility that what we are producing there is something that will be useful for them. So, increase that interest" (E01, 97). Accordingly, a total of 51 relationships were classified with a rather high interest. In line with these findings, a total of 66 relationships are described as willing to support the

project to a certain extent (some willingness, n = 35; rather high willingness, n = 31). On the one hand, the newness of the topic also shows that a certain number of people are more interested in obtaining information on the use of AI in educational settings, but are less willing or able to get actively involved (E02; E03; E04; E05; E07; E08; E10; see for example Figure 5). On the other hand, there seems to be a slow upswing in the debate surrounding AI in VET in terms of motivation and active participation in (networking) activities: "People have been (…) really wanting information from us rather than wanting to participate. (…) I think we're at a stage when that's beginning to change" (E07, 65).
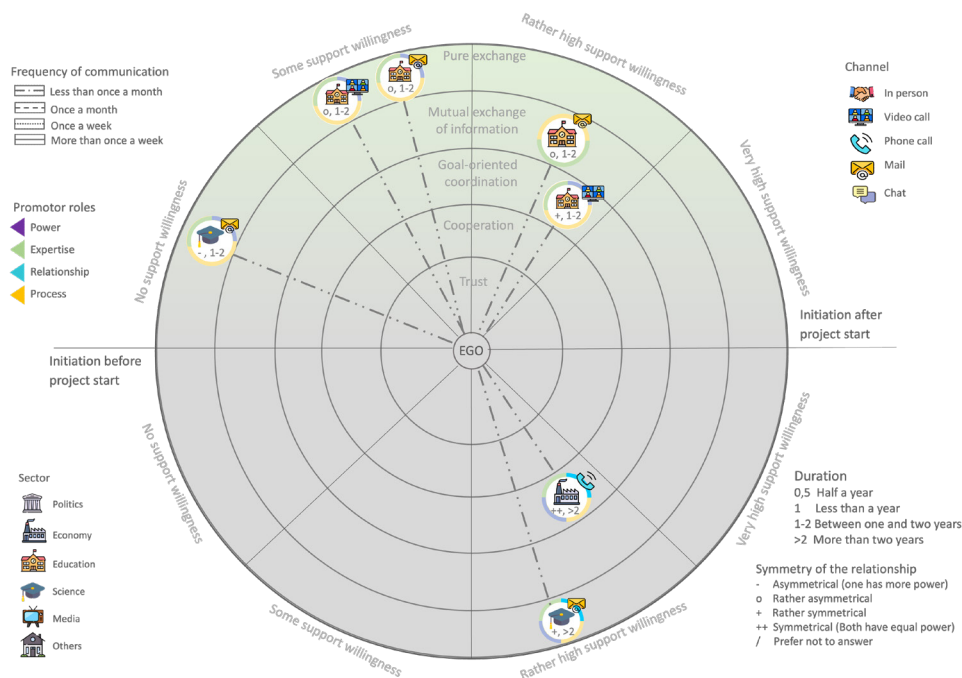

Figure 5: Network Structure and Map of Ego 10 (own compilation)

Regarding the importance of the actors for and their influence on the project it can be seen that the actors have a certain importance in terms of network formation (very important, n = 6; rather important, n = 34; less important, n = 28; not important, n = 6). At the same time, the influence of the involved individual alters on the overall progress of the project is lower compared to the importance of those according to the classification of the egos (n = 63 out of 74 relationships are in the lowest category of the importance). The general importance of the project topic in the context of vocational education and training is also emphasised among others due to the interaction between technology and occupation in general: "A vocational school teacher has to deal with the changes in the economy and society, especially in the pro-

fessions (...), something changes in technology (…) it progresses and changes something and a school also has to deal with that" (E06, 321 - 322).

Furthermore, there are a number of opportunities and needs in the area of vocational school teacher training mentioned when it comes to integrating AI into teaching and learning processes, especially with regard to further and advanced training potential for teachers and networking in general, but also the ethical use of AI in lessons, including corresponding reflection of processes (E01; E06).

5 Discussion

The aim of this study was to apply multi-perspective egocentric network analysis to analyse the development and establishment of (international) networks in vocational education and training using the example of the Erasmus+ funded *AI Pioneers* innovation project regarding the forward-looking topic of AI in educational settings. Using a fully standardised questionnaire and a semi-structured interview guideline, we examined the project partners' egocentric networks in terms of central relationships and their development of social capital as well as intensity, function and relevance. The results are discussed below, taking into account the content of the survey in relation to research questions and assumptions, before focussing on the methodological approach of the study.

5.1 Content

Social homophily was confirmed for the subject of this study. Accordingly, the assumption (A1) that project partners primarily intensify contacts with organisations that are similar to their own (see e.g., Granovetter, 1973) can be confirmed. From an institutional point of view, the education sector stands out in particular among the identified alters of the 10 egocentric networks of the funded project partners (egos). The largest group of alters comprises vocational schools, which accounted for almost a third of the relationships at the time of data collection. At the same time, the participating vocational schools show in detail a broad spectrum of the application of AI in vocational education. According to Granovetter (1973) this strong social homophily in the networks suggests that the egocentric networks consist of intensive and strong relationships.

In terms of sustainability, it is therefore evident that those relationships that have already been consolidated over several years are mobilised first (see e.g., Schweer, 2008), which is justified for the development of a successful network recruitment strategy. On the one hand, the results of half of the ego networks analysed in the study underpin that experience and successes from other project contexts might lead to further successes in new contexts (see e.g., Merton, 1968). On the other hand, the smaller egocentric networks in particular

rely more on the establishment of new relationships to expand their project-related network. However, these are largely focused on the exchange of information (Granovetter, 1973). Exceptions prove the rule: One ego already has a considerable project-related network at project start and at the same time has made a noticeable number of new contacts during it, which may indicate intrinsic motivation, available personnel resources for networking and a great topic-related interest.

The fact that homogeneous networks can have knowledge and innovation deficits is critical in our study, especially against the background of social homophily. This means that access to critical reflection processes through an interdisciplinary perspective on the use of artificial intelligence in the context of VET may be lacking. As a result, social or institutional changes in network orientations cannot be sufficiently taken into account. At the same time, a low level of technological exchange within the networks can minimise innovation potential for the use of AI in vocational education and training and best practice examples remain undiscovered for the community of practice. Even though the vocational schools examined in this study are predominantly technical vocational schools, presumably with a high level of technical expertise in the use of AI, the lack of involvement of technological institutions (alters) with a focus on AI development is apparent.

Accordingly, there is a clear gap in the analysed relationships between the networks of the egos with regard to the involvement of business, politics and the media. For the second half of the project term, there is a need for action to initiate and effectively establish new relationships in this regard in the remaining funding period in order to build up further social capital through relevant actors. This emphasises e.g., the relevance of the interaction between technology and occupation in the context of vocational training.

Furthermore, it should also be noted that the promoter model can be transferred to the subject of the study (Witte, 1973). This shows that, based on the promoter roles, the project-related focus of the relationships analysed is primarily on the roles of the expert promoter and the relationship promoter. According to Gemünden and Walter (1998), relationship promoters overcome their own organisational boundaries. Relationship promoters thus make a significant contribution to network activities in developing new contacts and supporting the establishment and expansion of an innovative European VET-related network. In concrete terms, for the *AI Pioneers* network this means that the egos build relationships with relevant stakeholders and organisations. Power and process functions, on the other hand, relate more to higher-level decision-makers, such as influencing the political decision-making processes of AI in VET (power) or steering similarly funded project plans and processes.

Furthermore, it can be seen that technological developments, implementations and realisations of AI are closely linked to the knowledge of the expert promoters. At the same time, this raises the question of how and in what form the specialist knowledge is oriented towards

theory and practice in the course of the project and which expertise has or will have a particularly beneficial effect on the social capital of the identified alters.

Overall, it can be stated that the size of the identified egocentric networks varies greatly among the partners surveyed. The reasons for this can be discussed on an individual, resource-oriented and/or structural level. First of all, individual differences in the development of social capital and the sustainability of networks can be seen in the sample studied. Some egos utilise existing long-term contacts and proactively establish further relationships since the start of the project and maintain them intensively. Other egos on the other hand initially remain at the moment of the data collection limited to smaller, more stable networks. These differences may result from individual dispositions of the egos in dealing with social relationships, such as the general level of trust. The willingness and ability to actively shape networks also plays a central role. The long-term establishment of certain partners can also influence the early expansion of one's own network based on existing trust structures.

In the case of the egos, another key factor influencing the establishment and expansion of a sustainable network is the selection of communication channels and access to resources. The ability to expand and sustainably stabilise the network depends largely on the availability of time, financial and technological resources. Limited access to physical contact, for example through few face-to-face meetings, can inhibit the building of trust and thus reduce the number and stability of relationships. In contrast, digital communication channels enable a wide reach and the establishment of numerous, but often less intensive, connections. This type of networking favours a wide distribution of information, but can make it more difficult for close, trust-based relationships to develop.

Finally, structural and organisational conditions also significantly determine the network size of the egos studied here. The results show that there is hierarchical potential between the egos and alters in only a few networks, which suggests that these networks tend to be more formalised e.g., due to institutional requirements. Nevertheless, it can be stated that these factors influence not only the size, but also the functioning and quality of the social capital as well as the sustainability of the networks.

With regard to the intensity of the relationships of the funded partners in the course of the project's network formation (RQ3), it has been shown that the characteristic of goal-oriented coordination (promising relationship; cf. Gessler & Siemer, 2020; Siemer & Gessler, 2021) slightly predominates among the relationships analysed, while at the same time, as already outlined, the majority of the relationships were already in exchange with each other before the start of the project. Accordingly, the results indicate that the assumption (A2) that relationships aimed at cooperation and trust require more commitment over the duration of the project can also be confirmed to create strong relationships (ties; cf. e.g. Granovetter, 1973). In accordance, newly established relationships are characterised in the study mainly regarding the exchange of information about project-related topics which underpins

Granovetter's (1973) elaborations on the dissemination of novelties through weak ties. At the same time, the interviewees repeatedly emphasised their networking personality, which is generally open-minded and trusting towards new relationships.

With regard to the intensity of the relationships, it could also be emphasised for the present research context that, despite the lack of frequent direct face-to-face contact in the international project studied, a certain degree of closeness and trust exists and can be consolidated. At the same time, however, the importance of direct face-to-face contact continues to be emphasised (cf. e.g., Schenk, 2010). Reasons for this may be the existing long-term established relationships, as already consolidated trust structures could also be stabilised across digital channels. It can also be assumed that there is an advance of trust for further cooperation. Retrospectively, positive interactions with an alter are a further indication that the relationship has been maintained over the last years based on trust. Therefore, long-standing relationships in the networks indicate a regular, consistent and transparent exchange between ego and alter and thus reliable communication. This makes it possible to maintain a high level of trust via digital exchange.

According to the data, the assumption (A3) that trust between ego and alter relationships is strengthened by the personal contact within the project can be supported, while the long-standing practice in the international networks of the participating egos implies successful actions despite the dominance of digital communication channels. Furthermore, the results show that the attitude towards the project strongly depends on the attitude and closeness to the specific people supporting the project. Furthermore, the interest of the alters to join the network might be related to the topic of the project, but the trust and willingness to support the project might depend more on the personal contacts as well as on the available resources to support and participate in specific activities. The fact that the individual egocentric networks are predominantly local should be viewed critically. This suggests that language barriers make broad cross-border networking difficult.

In the case of the *AI Pioneers* project, numerous relationships were consolidated and established, which would not have been possible to this extent without the project funding, as the interviewees emphasised that maintaining networks is a very time-consuming undertaking. At this point, the study underlines the need for support structures for network formation.

5.2   Methodological Approach

Based on the research questions and the research interest, a multi-perspective egocentric network analysis was applied in this study, which included both a standardised interview questionnaire and a semi-structured interview guideline. The methodological approach is reflected below, taking into account key quality criteria and following the critical evaluation and appraisal tool of qualitative research according to Lockwood (2024). The challenges of

subject-related analyses – as is the case in the use of egocentric network analysis – are to make the methodological procedure transparent and reproducible and to enable verification and falsification of the results. In the following, the use of egocentric social network analysis with regard to the chosen methodological approach (RQ3) is addressed in order to identify findings and obstacles for future VET research.

According to Lockwood et al. (2024), the critical evaluation of qualitative research is based on an exact match between the chosen research questions, the theoretical and conceptual foundations used and the resulting data collection instrument. The methodological approach of our study thus allows the following conclusions to be drawn with regard to the quality assurance of the results:

– The qualitative approach in this study was systematised in terms of its transparency, comprehensibility and reproducibility by deriving a theory-based research approach. Based on the theoretical framework, the qualitative standardised questionnaire and semi-structured guideline were then developed. This methodological approach makes it possible to increase the comprehensibility of the results and to classify them within a given framework. Based on the theoretical framework, which combines approaches from psychology, sociology and innovation research, the survey instruments could be conceptually and strategically framed, which in turn increases both the transparency of the results and their comprehensibility and enables the results to be compared.

– The validity of the methodological approach chosen here receives further empirical evidence through an upstream pre-test and through its application in the *AI Pioneers* study context. The congruence between research methodology, research question and data collection methods can therefore be regarded as given (Lockwood et al., 2024). The validity of the identified network maps also receives further evidence through the review and approval of the egos. Nevertheless, it should be noted that the survey instruments are not validated up to now.

– Against the background of the objectivity of the results, it should be taken into account that the assessments of the egocentric networks are based on the subjective perception of the egos. Nevertheless, the combination of the fully and semi-structured survey instruments proved to be useful in the course of the data collection during the interview settings in order to create comparability of the data and to capture complex and in-depth information about the subject of investigation.

– According to the accuracy of the research questions, the theory, the survey instruments and the case selection, the field access and the unit of analysis must also be

chosen appropriately so that the research design is coherent (Lockwood et al., 2024). In this respect, the present study referred to the funded project partners within the *AI Pioneers* project, so that direct field access was already given by the joint funding context. In accordance with the survey method of multi-perspective egocentric network analysis, the sample was selected on the basis of the funded project partners in the network and thus on their relationship promoters to get an in-depth view of the project-related network on the basis of the personal network structures combined.

– The application of the promoter model proved to be useful in the context of this survey, so that the egocentric networks could be analysed from the perspective of the person who summarises the contacts per partner organisation. On the basis of this, the network can be narrowed down to the individual assessment of the interviewees. The definition of network boundaries is essential for the data collection of egocentric networks (see Chapter 3). The natural boundaries defined by the funding framework of the *AI Pioneers* project made it possible to narrow down the relevant relationships for this empirical study.

– The perspective of the alters was not recorded, so that a partial view of the project network could be provided from multiple perspectives. Accordingly, the empirical results do not contain an objectifiable measure, as would be the case in whole network structures. Consequently, the network maps are an individual reflection of the social capital of the egos interviewed. The connections to alters shown in the network maps provide insights into the individual social structures of the *AI Pioneers* project partners. At the time of the survey, they provided important insights into personal resources and enable a description of the intensity and function of these from a subjective perspective.

– By using social network analysis, it was possible to identify predominantly strong ties between ego and alters. However, with the methodological approach used here, it remains unclear to what extent the alters mentioned assess the bond with the egos and how the alters are interconnected with each other with regard to the exchange of content on artificial intelligence in vocational education and training. It should also be pointed out that further relevant institutions (alters) might be included in the further course of the project and that the network maps shown in the article do not provide a complete picture of the network structure of the *AI Pioneers* project as would be the case in the recording of whole network structures.

Despite the efforts listed here to design the methodological approach used for this study in a comprehensible and transparent manner, our study has limitations. This paper concludes with the limitations of the study and an outlook for future research.

6   Conclusion, Limitations and Future Research

In this study, the methodological approach of a multi-perspective egocentric social network analysis was used to analyse the network structures from the perspective of individual actors (personal networks). This has been addressed on the basis of an innovation project with the central goal of network formation about AI in VET in an international context by collecting data on ego-alter relationships. Furthermore, the combination of egocentric data as a multiple-perspective egocentric network analysis is beneficial for an overarching view of a common context (e.g., project or programme) in order to gain an initial insight into network structures that go beyond the perspective of a single ego, but at the same time do not correspond to the undertaking of recording overall network structures.

In a first step, the two (standardised) survey instruments were created for the purpose of the study, so that in a second step, they were applied in the course of a qualitative data collection of 10 egocentric networks (partners of the Erasmus+ *AI Pioneers* project as egos). Subsequently the data were used to generate network maps to visualise exemplary egocentric networks of the study.

One advantage of the chosen methodological approach is that in the context of the project-related network development of *AI Pioneers*, a detailed analysis of a person's social relationships (ego) and their direct connections (alters) was possible. Furthermore, the study not only makes a significant contribution to VET research and its methodological set, but also to the Erasmus+ funding landscape by highlighting personal resources, social support and individual perceptions of project-related networks. On the basis of the knowledge gained in this study, it would be possible in a next step to take measures to expand the project network structures regarding important groups of stakeholders that are not yet sufficiently reached (e.g., from politics and media) to use the results of the study as a foundation for future project steering decisions. Accordingly, the methodological approach pursued here offers the possibility of making transfer and network activities of project consortia visible in order to draw attention to the necessary resources to build and maintain those. These findings can be taken into account when announcing further funding programmes with a similar focus.

With a view to future programmes, the extent to which emergent phenomena influence the network formation of the egos during the funding period could also be investigated, e.g. to potentially identify network patterns in terms of the response to the project environment of the actors involved. To this end, a process-orientated analysis designed as a

longitudinal study with different time horizons up to the end of the project, could provide information on the background against which further relationships (e.g., new social capital due to expertise) are entered into, if existing relationships are terminated prematurely (e.g., due to misuse of trust) or in how far topic related trends affect the motivation to join new groups and networks. This allows both the dynamics of network formation to be recognised and the sustainability of the networks after the funding period to be determined. Future research could also investigate the extent to which network size and previous professional practice affect each other in detail. Moreover, the role of forward-looking actors and innovations that arise within networks could also be investigated my means of future research projects. The following research questions could guide future research as a continuation of the present study:

– *To what extent do the egocentric networks change over the course of the implementation of the project?*

– *What factors influence the intensity of the relationships between ego and alter?*

– *To what extent is there a relation between network size and professional experience from previous similar project contexts?*

– *What forms of project consortia are particularly beneficial for the creation of innovations within networks?*

Corresponding data could be collected in the form of partial networks and/or an extension of alter-alter relationships in (multi-perspective) egocentric networks. For the present study of the *AI Pioneers* project, the relationships between the 10 egos would also be beneficial to analyse, as well as the resulting conclusions for internal relationship management within a consortium. In accordance, for example the connections between Ego 1, Ego 2 and their shared relationships (alters) could be analysed. Such a methodical approach would make it possible to identify changes in the subjectively perceived relevance of the relationships that might have a long-term positive effect on the design of the egocentric networks and consequently on the success of the project.

Furthermore, the findings of this study are based on a small sample size which nevertheless produced an extensive amount of qualitative data. Statements about a complete survey of all relationships within a social system would mean recording the entire network. Following on from this article, the entire network of *AI Pioneers* could be analysed in a further empirical study. The following question could guide this: *How extensive are the whole network structures of the AI Pioneers project and the interconnections between alters?*

This qualitative approach could be expanded in a follow-up study with a quantitative approach. Accordingly, the next step could be to develop a quantitative questionnaire based on the theoretical framework used here, which draws on comprehensive scales in order to be able to make valid statements regarding the overall network of *AI Pioneers*. Such a study could provide information on the extent of cooperation between stakeholders or institutions in the establishment and expansion of an innovative international network in the field of vocational education and training. In this context, with regard to the social capital, it would also be interesting to analyse strong and weak relationships in the network in more detail, for example by measuring centrality. It would also be interesting to see whether and how certain characteristics (nodes or edges) are related to each other. Such an approach would make it possible to identify relationship behaviour more comprehensively.

In line with the study's approach, it should be emphasised that the approaches of recording egocentric networks and whole networks are not mutually exclusive. Both methodological approaches to survey social network structures can complement each other. For example, researchers can start with egocentric network studies in order to understand central actors and their relationships with each other, and then follow up with an analysis of the entire network or partial sections that go beyond the analysis of individual egocentric networks. In any case, the delimitation of the network is of central importance, which is particularly useful with regard to the investigation of funded collaborative projects and relationships that have arisen or are maintained in the project context due to the clear possibility of defining network boundaries.

Due to the specific framework conditions of the funded *AI Pioneers* project, it is assumed that the relationships identified initially only apply to the multiple unique egocentric networks. It is unclear to what extent the relevance and intensity of the relationships can be transferred to other projects. The study also does not allow any conclusions to be drawn about the connection between the identified egocentric networks and the probability of success of the *AI Pioneers* project as a whole.

In conclusion, it can be pointed out that despite the limitations described, the methodological approach is fruitful due to the combination of qualitative approaches for analysing the institutionally related egocentric networks from multiple perspectives and the description of social capital for the European project landscape.

Further qualitative and quantitative network analyses would be an enrichment for VET research, especially against the background of innovation drivers and network formation. Innovation drivers such as market-related and trend-related drivers for example regarding the technical development of AI or related training programmes offered by vocational training providers could have an impact on the content dimension of network formation. Increased demand for the integration and ethical use of AI in educational settings may lead to an upswing in the willingness of individuals and organisations to reach out to others

and participate in topic-specific networking activities. In accordance, further analysis of forward-looking and topic-specific network formation processes with a view to the internationalisation of vocational education and training in order to learn from each other across national borders would be an enrichment for international comparative vocational education and training research.

Ethics Statement

The research presented here was carried out according to the principles for research involving the participation of human subjects based on the guidelines described in IJRVET's ethical statement. The interviewees consented to the collection, recording and analysis of the interviews and the anonymous presentation of the findings.

Acknowledgement

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Appendix

Table 2: Fully Structured Interview Questionnaire

1 Blog – Information about the person	
Questions	Response requirements
Please enter your name.	Open field.
What is the name of your organisation?	Open field.
Please select your age.	1 = <20, 2 = 21-30, 3 = 31-40, 4 = 41-50, 5 = 51-60, 6 = >60
Please select your gender.	1 = m, 2 = f, 3 = d
Which position do you have within your own organisation?	Open field
Where is your organisation located?	1 = Germany, 2 = UK, 3 = Greece, 4 = Spain, 5 = Italy, 6 = Portugal, 7 = Cyprus, 8 = Estonia, 9 = Other EU country, 10 = Outside EU
2 Blog – Information about the partner organisations	
With which partner organisation do you have a relationship in the context of the project?	Open field.
In which sector is the partner organisation located with which a relationship exists in the course of the project?	1 = politics, 2 = economy, 3 = education, 4 = science, 5 = media, 6 = others
Where is the partner organisation located?	1 = Germany, 2 = UK, 3 = Greece, 4 = Spain, 5 = Italy, 6 = Portugal, 7 = Cyprus, 8 = Estonia, 9 = Other EU country, 10 = Outside EU
3 Blog – Intensity of the relationship	
To what extent are you generally trusting of other people (general attitude)?	1 = No potential trust, 2 = Low potential trust, 3 = Rather high potential trust, 4 = Very high potential trust
To what extent do you assume a positive develop-ment of trust when you first come into contact with other people?	1 = No trust development, 2 = Low trust development, 3 = Rather high trust development, 4 = Very high trust development
How would you describe the closeness of the relationship between your organisation and the partner organisation?	1 = No relationship, 2 = Pure exchange of information (Weak relationship), 3 = Mutual exchange (distanced) (Rather weak relationship), 4 = Goal-oriented coordination (Promising relationship), 5 = Cooperation (Rather strong relationship), 6 = Trust in each other (Strong relationship)
To what extent are you willing to take a leap of faith (advan-ce of trust) in your partner organisation, even if this might involve a risk of disappointment?	1 = No willingness, 2 = Some willingness, 3 = Rather high willingness, 4 = Very high willingness
To what extent is there a willingness to mutually exchange of sensible information?	1 = No mutual trust, 2 = Low mutual trust, 3 = Rather high mutual trust, 4 = Very high mutual trust
Did the relationship already exist before the project started?	1 = Yes, 2 = No
How long has the relationship with the partner organisation existed at the moment?	1 = Less than half a year, 2 = Half a year, 3 = 1 year, 4 = 2 years, 5 = More than 2 years
In your opinion, to what extent is there currently a trusting relationship with your partner organisation in the work context of the project?	1 = Not trustworthy, 2 = Rather not trustworthy, 3 = Trust-worthy, 4 = Very trustworthy
How would you describe the hierarchical potential within the relationship between yourself and your partner organi-sation?	1 = Asymmetrical (One person has more power than the other), 2 = Rather asymmetrical, 3 = Rather symmetrical, 4 = Symmetrical (Both have equal power)

How do you perceive the voluntariness of the relationship with your partner organisation within the project?	1 = Not voluntary, 2 = Rather not voluntary, 3 = Rather voluntary, 4 = Very voluntary
Which communication channel do you mainly use with the partner organisation?	1 = Face to face in presence, 2 = Face to face online (video call), 3 = Email, 4 = Phone, 5 = Chat (e.g., WhatsApp, Telegram, Skype)
How often do you communicate with the partner organisation via the mentioned communication channel?	1 = Less than once a month, 2 = Once a month, 3 = Once a week, 4 = Daily

4 Blog – Function of the organisation

To what extent does the partner organisation have the power to make decisions that affect the progress of the project?	1 = No power, 2 = Some power, 3 = Rather high power, 4 = Very high power
To what extent does the partner organisation have relevant expertise for the project?	1 = No expertise, 2 = Some expertise, 3 = Rather high expertise, 4 = Very high expertise
To what extent does the partner organisation have or acquire the required relationships for the project and bring together relevant stakeholders?	1 = No relationship capital, 2 = Some relationship capital, 3 = Rather high relationship capital, 4 = Very high relationship capital
To what extent does the partner organisation have the necessary knowledge about project-related administrative processes, rules and procedures?	1 = No process knowledge, 2 = Some process knowledge, 3 = Rather high process knowledge, 4 = Very high process knowledge

5 Blog – Relevance of the relationships in the course of the project

How would you rate the attitude of the partner organisation towards the project?	1 = negative (hindering), 2 = rather negative, 3 = neutral (indifferent), 4 = rather positive, 5 = positive (promoting)
How would you rate the influence of the partner organisation on the project?	1 = No influence, 2 = Some influence, 3 = Rather high influence, 4 = Very high influence
How important is the partner organisation currently for the project?	1 = Not important, 2 = Less important, 3 = Rather important, 4 = Very important
How would you rate the willingness of the partner organisation to support the project?	1 = No willingness, 2 = Some willingness, 3 = Rather high willingness, 4 = Very high willingness
How would you rate the partner organisation's interest in the project?	1 = No interest, 2 = Less interest, 3 = Rather high interest, 4 = Very high interest

Note. Multiple choice not possible.