Development of sustainable resource ties in the agrifood industry: the case for the Polish fruit and vegetable industry

RESEARCH ARTICLE

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Abstract

This paper contributes to the overall discussion on the relational resources then, in particular, attempts to recognize inter-firm investments in the agrifood industry. It is essentially grounded in an integrative approach which combines relational and resource-based views. Our goal in this paper is to find out if and how relational investment contributes to a sustainable relational advantage of business relationships in the agrifood industry. Producers, processors and traders who undertake investments in conjunction with their contractors were queried. The main areas of these investment activities and the potential of a sustainable relational advantage are explored. On this basis, a model of resource-based sustainable relational advantage in agrifood business relationships was executed. It was found that relational investments aimed at optimization of supply and provision as well as food safety and social responsibility create and sustain a relational advantage. Those aimed at technology and ecology implicate an unexploited relational advantage. Subsequent human, financial and real capital investments implicate a temporary relational advantage. The added value of this study lies in the implementation of an integrative approach to investigating the development potential of sustainable resource ties in the agrifood industry.

Keywords: relational investments, relation-specific resources, sustainable relational advantage, agrifood industry

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1. Introduction

Resources are the main subject of research for different economic and management theories. The reasons for the huge interest of economists and managers in resources are their overall characteristics, i.e. scarcity and the ability of turning profits. These features make them extremely valuable for firms and the overall economy. Different resource-based views are looking for ways to optimize resource inputs and profits of separate firms, industries or economies (Bain, 1959; Barney, 1991; Porter, 1990). However, particularly in recent years economists have noticed that resources have a relational nature (Dyer and Singh, 1998; Gulati, 1999; Håkansson and Snehota, 1995). They found out that by itself, a single economic resource is passive and without any value. This means that resources provide the building blocks for the structure and process of economic relationships. They have the potential to generate economic value only through interaction with other resources and the way that a resource interacts with other ones defines its nature.

Since then some economists have tried to relate traditional resource-based paradigms to relation-based theories (Das and Teng, 2000; Duschek, 2004; Ritala and Ellonen, 2010). They are refocused within a new analytical unit – the relationship. The relationships or ties are recognized to turn advantages to the economic units. Continuous interaction constitutes the context within which the interactions endow the resources with meaning and role. There is an important shift in focus away from the way an economic unit allocates and structures its internal resources towards the way it relates its own resources to those of its contractors. The relationship relates the internal and external resources and increases their combined effectiveness. It permits economic units both to access and to develop resources in the long term (Håkansson and Snehota, 2006; Håkansson *et al.*, 2009).

Accordingly, a body of research on relational resources has arisen (Abrahamsen and Håkansson, 2015; Baraldi and Strömsten, 2006; Baraldi *et al.*, 2012; Harrison and Håkansson, 2006). It highlights the importance of external complementary resources and capabilities that can be used to achieve more effective and innovative configurations that a single firm cannot achieve alone. However, firms should be willing to invest in relational resources and capabilities which are complementary to their internal resources. These investments may band resources, relationships and partners from alternative uses by alternative users. In this way they may become specific or unique to a relationship. Idiosyncratic or relation-specific investments create cost savings and/or increased revenues that are due to specialization benefits and relational rents. They are a source of competitive advantage and/or opportunism threats and/or enduring relationships and thus increasing trust, commitment and cooperative behavior (Dyer, 1996; Williamson, 1991).

A body of research seeks explanations of the drivers of specific investment allocations (Ebers and Semrau, 2015; Lu *et al.*, 2012; Yeung *et al.*, 2013) in the agrifood industry (Li *et al.*, 2017). Among other things they identify asymmetries, learning and acquisition of market knowledge, business relationship satisfaction or environmental uncertainty as the allocation factors but in general they do not discuss relational advantages at all. Furthermore, studies embracing the agrifood industry which is, in its nature, one of the most relative and integrative industrial structures, are quite rare. Responding to this gap, this paper seeks to explain if and how the relational investments contribute to the sustainable relational advantage of business relationships in this industry. To develop its core theoretical argument, it draws on relational theory (Dyer and Singh, 1998) and resource-based view (Barney, 1991) trying to amalgamate the relational paradigm with the theory of sustained competitive advantage. These theories can help illuminate the study question, because they provide insights into specific-resource endowments and the advantages thereof.

On this base, the model of resource-based sustainable relational advantage in agrifood business networks was executed. Consistent with these arguments, empirical findings from a survey of 866 buyer-supplier relationships in fruit and vegetable processing, which is a typical agrifood industry, reveal that inter-firm investments aimed at optimization of supply and provision, food safety and social responsibility led to the generation of relation-specific resources which create the potential of a sustainable relational advantage.

While technological and ecological developments imply an unexploited relational advantage, subsequent human, financial and real capital investments imply only a temporary relational advantage.

With these findings, the present study contributes to filling an important research gap by offering a theory-based explanation for the potential of the sustainable relational advantage of relational investments. As a further contribution, this study highlights how a resource-based view can enrich relational and network theory in helping to explain the development potential of resource ties among and across firm boundaries.

2. Theoretical background

Since the 90s, the resource-based view is one of the most important ideas in strategic management. Wernerfelt (1984) stated that resource means anything which could be thought of as a strength or weakness of a firm. The author underlines that the growth strategy of a firm involves striking a balance between exploitation of existing resources and the development of new ones. As Wernerfelt (1995) stated, strategies which are not resource-based are unlikely to succeed. Barney's (1991) classification of a firm's resources includes three categories: physical, human and organizational capital. He assumed that a firm's resources are heterogeneous and immobile. This means that most industries are characterized by at least some degree of resource heterogeneity and immobility. If one assumes that resources are homogenous and mobile then it cannot be expected that they are the source of competitive advantage. If resources are heterogeneous and immobile then some of them hold the potential of sustained competitive advantage. For this, Barney's model assumes that they need to have four attributes (VRIN criteria): (1) value, in the sense that they exploit opportunities; (2) rareness among a firm's current and potential competition; should be (3) imperfectly imitable and cannot be strategically equivalent substitutes for this resource; (4) nonsubstitutable, that are valuable but neither rare or imperfectly imitable (Barney, 1991: 105-106). Under the resource-based view there is a substantial relationship between resource heterogeneity and immobility, value, rareness, imperfect imitability, nonsubstitutability, and sustained competitive advantage (Figure 1).

According to Barney's (2001) further clarifications, the value of a firm's resource is exogenous and is determined by the competitive environment – market conditions. The rareness is the number of firms that possess the particular valuable resources – it is less than the number of firms needed to generate perfect competition dynamics in an industry. The imperfect imitability comes from unique historical circumstances characterized by casual ambiguity and social complexity in which the resource has been obtained and its imitation is costly. The nonsubstitutability means that there cannot be strategically equivalent substitutes for the resources that are themselves either not rare or imitable.

While Prahalad and Hamel (1990) introduced the notion of core competence as a corporate critical resource which may be reallocated by corporate management. Core competences are the collective learning in the organization, especially how to coordinate various production skills and integrate multiple streams of technologies. It is also organization of work and the delivery of value. It is communication, involvement, and a deep commitment to working across organizational boundaries. Core competence does not diminish with use. Unlike physical assets, which deteriorate over time, competencies are enhanced as they are applied and shared (Prahalad and Hamel, 1990: 81). Core competence more explicitly refers to the significance of the cooperative utilization of external resources. Therefore, economists utilized the concept of core competencies

Figure 1. Assumptions and attributes of the potential of sustained competitive advantages (Barney, 1991: 112).

for establishing sustained competitive advantage in the firms' collaborations and partnerships (Hamel, 1991; Hamel *et al.*, 1989).

At the time, Williamson (1985, 1991) discussed an asset specificity as the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value. The author differentiated among site, physical-asset, human asset, brand name capital, dedicated assets and temporal specificity. In consequence, firms invest in specific assets. These transaction-specific investments could lead to hold up situations, but on the other hand, may lower transactional and operational costs. Later on, in his early research Dyer (1996) discussed transaction-specific investments and the influence of Williamson's asset site, physical and human specificity on the firm's performance measures, proving three factors influence efficacy of transaction-specific investments as a source of competitive advantage, i.e. institutional/contracting environment, industry uncertainty or volatility and product/task interdependence.

Then, Dyer and Singh (1998) confirmed that the formation of inter-organizational relationships, as a separate source of competitive advantage, can facilitate firms. Different methods of interacting with suppliers, customers or even rivals are identified as sources of relational advantages. The relational view shows that the firm's critical resources may extend beyond its boundaries and may be embedded in inter-firm resources and routines. The authors identified four potential sources of interorganizational advantage: relation-specific assets, knowledge-sharing routines, complementary resource/capabilities, effective governance. Relational rents are possible when alliance partners combine, exchange, or invest in idiosyncratic assets, knowledge, and resources/capabilities, and/or they employ effective governance mechanisms that lower transaction costs or permit the realization of relational rents through the synergistic combination of assets, knowledge, or capabilities.

After the relational view came into existence, one recent criticism of resource-based view is that it falls back only on a traditional firm-focused explanation of the development of sustained competitive advantage based exclusively on firm's internal resources. Nonetheless, the newest studies show that internal development is limited, especially for competences, intangible and non-tradable assets considering in particular the cost and time for some resources' internal development. As well, Barney and Clark (2007: 168-171) conclude that there are numerous reasons why it might be very costly for a firm to create a particular capability of its own. Since, it may depend on historical conditions that no longer exist, be path-dependent, socially complex or the ways of creating it may not be fully known. Collaborative arrangements are used to overcome the limitations on resources and capabilities as well as to use new technological opportunities. Furthermore, recently possible openness which means using firm-external ideas results from low cost information and knowledge exchange in the digital economy (Schoder *et al.*, 2019).

Therefore, the primary level of analysis for the search on relational advantage is no longer a firm but should be the network of a firm's relations. The relational view draws attention to interfirm cooperation as a source of relational advantage by taking interfirm relationships as the unit of analysis. It focuses solely on the relationship level, which is its main distinction with respect to earlier studies. It can provide an independent explanatory set that identifies competitive advantage caused by differences in the attributes of the relationships themselves and not, for example, the resources of a single firm (Ritala and Ellonen, 2010). Due to the focus on resources as the primary object of analysis, the relational view could be seen, in principle, as a 'complementary extension' of the resource- and competence-based approach aiming at a conceptual anchoring of sustained competitive advantage in network resources (Duschek, 2004: 61).

Further, a body of literature focuses on explaining cooperation as the way to access and acquire valuable resources that are needed (Mowery *et al.*, 1996). Some authors use the transaction cost and resource-based rationales to emphasize cost minimization and value maximization of a firm through pooling and utilizing valuable resources. This approach assumes that certain resources are not perfectly tradable on the market, as they are either mingled with other resources or embedded in organizations. Hence, mergers, acquisitions, and strategic alliances are variously employed. There are two motives for firms to use strategic alliances: to obtain

others' resources and to retain and develop one's own resources by combining them with others' resources (Das and Teng, 2000: 36-37). While all resource-based theories focus mainly on the focal firm's internal resources and capabilities, they also seem to include an assumption that cooperative interfirm relationships are a source of complementary resources and capabilities that can be used to achieve an optimal resource configuration. The main rationale behind interfirm cooperation from the resource-based perspective is the value-creation potential of different firms' resources and capabilities that are pooled together to create a greater competitive advantage than a single firm could achieve (Ritala and Ellonen, 2010).

Since the 1990s, another important approach for the relational view was developed – the network approach (Håkansson and Snehota, 1989). It was applied to strategic management and, later on, the central issues of resource dimension were also characterized for network management by Håkansson and Snehota (1995). They concluded that firms develop and share resources, such as goods and services, manufacturing facilities, finance, technology, knowledge and personnel. The substance of a relationship in terms of resources can vary greatly and the resource ties that arise in a relationship have different consequences; they affect the availability of resources and the innovativeness of a company. Later, the authors wrote that over recent years they have seen the resource-based view of strategy, and the concern for capabilities and knowledge, take a central place in strategy research (Håkansson and Snehota, 2006: 272).

The network approach is being developed in explanations of different strategic capabilities of network investments and resources (Baraldi and Strömster, 2006; Gadde *et al.*, 2002; Harrison and Håkansson, 2006; Hart, 1995; Johanson and Mattson, 1985; Mugera, 2012; Waluszewski, 2004) also in food supply (Claro, 2004; Gadde and Amani, 2016). In its framework economic resources provide the building blocks for the structure and process of business. By itself, a single economic resource is passive and without value. The ways that a resource interacts with other resources define the nature of that resource and have the potential to generate economic value (Håkansson *et al.*, 2009: 65). A business relationship relates the resources of the two participants and allows their combined effectiveness to be increased. Business relationships permit companies both to access and to develop resources (Håkansson and Snehota, 1995). As well, Jarillo (1988) highlighted that inter-firm interactions imply investments to build relationships, which gives consistency to the network. The investments made by the firms in their relationships lead them to try, at least over the short run, to use the 'voice' (face-to-face) mode of negotiation, instead of the pure 'exit' (no negotiation).

Baraldi *et al.*'s (2012) research admitted that the idea of resource heterogeneity is present in independent firms and in a firm as a part of an interacting network. In the second case, resources are interdependent across firms. The value of a resource is dependent on its connections to other resources in resource networks. Resource use is dynamic and can be changed over time – this is the result of heterogeneity assumption in the network approach. Moreover, combining resources implies heterogeneity, resources with special interfaces are difficult to combine effectively with other resources. If a network member can utilize the heterogeneity potential of its counterparts, his own resources will become more valuable. Creating and developing resources rather than economizing on resources may be the primary purpose of a business enterprise. The resources of the firm are heterogeneous in the meaning that their value depends on which other resources they are combined with. So, they must be evaluated in different combinations and arrangements (Håkansson and Snehota, 1995: 134). From a network perspective, firm-internal resources are combined with external resources accessed through others – suppliers, customers (Figure 2).

The assumption of resource heterogeneity in business relationships led to the transfer of the resource-based assumptions to relational and network studies (Gold *et al.*, 2010; Rašković and Makovec, 2013; Rudawska, 2010; Vargas and Mantilla, 2014). They revealed that competitive advantage lies in resources and intangible assets which are born and developed within the inter-firm relationships built in a network environment. Rudawska (2010) presents some empirical evidence showing the crucial role of inter-firm trust and commitment as a competitive advantage factor. The researched organizations credit effective inter-firm communication and the satisfaction resulting from the mutual respect and recognition as the components of value offerings.

Figure 2. Balance of resource ties to different users/providers (Håkansson and Snehota, 1995: 187).

Rašković and Makovec (2013) indicate that relationships are key intangible organizational resources and confirm with empirical findings the trust-commitment theory for buyer-supplier relationships.

Finally, the network approach embeds resources in business relationships underlying the dependency of internal and external resources of a firm. A business relationship is the locus for the generation, maintenance and further development of strategic resources. Firms operate on a set of internal resources, resource bundles in business relationships and resource configurations in business networks. Heterogeneity, social complexity and path dependency are the main characteristics of relational resources. Business partners anticipate transferability as well as particularity of some of the resources. The above discussed resource-based, relational view as well as network approach were used in defining the following research analytical framework.

3. Analytical framework

The literature review shows that despite broad contributions to the literature in recent years, theoretical discussion linking inter-firm networking in the area of investments and resources with relational advantage is still limited. Our goal in this paper is to find out if and how relational investments contribute to the sustainable relational advantage of business relationships in the agrifood industry. The logic model of resource-based sustainable relational advantage is presented in Figure 3.

The literature findings led to amalgamate resource-based and relational views. In the present study we use the rationales of resource-based and relational views to study the directions and results of relational investments. The choice of this theoretical background to study inter-firm investments was driven mainly by the fact that they focus on particularity and uniqueness of intra- and inter- firm resources and capabilities. This would not be possible without drawing on the joint resource pool. The relation-specific resources give the network partners the sustainable relational advantage within the scope of the cooperation and as well as outside of it. Thus, on the theoretical background the following is assumed: (1) firms are embedded in network relationships; (2) relational investing creates relational investment results; (3) relational investment results engender a relational resource bundle and a sustainable relational advantage.

Figure 3. The logic model of resource-based sustainable relational advantage.

Firms can gain a better advantage by utilizing complementarities than by operating individually. The notion of complementary resources is also an implicit assumption in the resource-based theories with respect to interfirm cooperation (Ritala and Ellonen, 2010). With relational investments, firms are given long-term access to complementary and difficult to transfer resources and the possibility of a network-specific resource pool. Complementary but scarce resources and capabilities can be used jointly in the creation of unique new products, services, or technologies. Furthermore, creating knowledge-sharing routines among firms also increases the potential for relational advantages. The advantages generated by specific relational assets are exploited by means of long-standing safeguards and a high volume of transactions between cooperating parties.

Relational investment results in specific relational resources which, according to the traditional resource-based view, cannot be redeployed to alternative uses or by alternative users, are valuable and rare, imperfectly imitable and nonsubstitutable. Dyer and Singh (1998) identified four relation-specific barriers to imitation and substitution. Two of them characterize relational resources, i.e. interorganizational asset interconnectedness and resource invisibility. They relatively refill the Barney's model attributes of imperfect imitability and nonsubstitutability in the relational option. Further attributes of firm resources, i.e. value and rareness are also easily transferable into the relational view. Relational investments obviously are undertaken to exploit new opportunities and in this sense are valuable. They are also rare among the investing partners' current and potential competitors for the reason of partners' scarcity or institutional environments. Within this concept, relational advantage needs relational investments. In other words, relational resources must be characterized as assets with high specificity and uniqueness. Therefore, we hypothesized that:

H1: Relational investment results in a specific relational resource bundle.

The sustainable relational advantage is a relational extension of the resource-based notion of sustained competitive advantage. Relational advantage is also sustainable because inter-firm relationships offer a vast number of barriers to imitation, such as: inter-organizational asset interconnectedness, partner scarcity, resource indivisibility or the institutional environment. In previous resource-based studies competitive advantage was defined as the ability of a firm to outperform its industry, that is to earn a higher rate of profit than the industry norm (Ritala and Ellonen, 2010). In the relational context this poses an important question of competition dynamics in inter-firm relationships. Alberts (2017) suggests three network competition forms which can generate benefits for their member firms. They are network formation, network composition and network governance. Network resources creation changes the competition dynamics in network composition. On the network level the main concern is if the network possesses the critical type, quality and quantity of resources. On the member level the main concern is if the member resources are needed and valued in the network (Alberts, 2017: 105).

Taking into account relational views, relational rents generally arise when network partners exchange (material and immaterial) resources and/or invest in inter-firm resource relations, and/or use governance mechanisms which lower transaction costs and/or enable the realization of 'added value' by a synergetic combination of (material and immaterial) resources (Duschek, 2004). So, the relational advantage is defined as above normal profits or interorganizational quasi rents which are fundamentally generated in inter-firm relationships. Accordingly, they cannot be generated by one of the participating firms alone, but only within the scope of the joint, idiosyncratic contributions of the specific partners of cooperation.

Generally, in previous resource-based studies the sustainability of the competitive advantage is based on factors preventing competitors from imitating a firm's resources (Mazur and Kulczyk, 2013; Oliver, 1997). As Reed and DeFillippi (1990) proved that specificity in a firm's skills and resources can generate casual ambiguity in competency-based advantage and thus raise barriers to imitation. Also, in inter-firm relationships different types of ambiguities may occur, as for example: linkage ambiguity, inherent ambiguity concerned with the resource itself, bundles of co-existing resources, path dependency. Social complexity and behavioral aspects like identification, willingness and ability to imitate resources are key limitations for competitors (Jonson and Regnér, 2008) as well as timing of resource development (Pacheco-de-Almeida and Zemsky, 2007).

Foon and Nair (2010) mentioned the network itself, an intangible resource, as a source of competitive advantage including network identity as an antecedent of trust; communication as an antecedent of both trust and organizational learning; commitment as the result of both trust and organizational learning; and, lastly, both trust and commitment result in sustainable competitive advantage. As well, King (2007) mentioned tacitness, complexity and interconnectedness as main characteristics of inter-firm competencies. Therefore, taking into account knowledge gained thus far, we think that:

H2: Relational investment results in sustainable relational advantage.

It is worth noting that, alongside the resource-based and relational theories, a general view of a firm's positioning was developed as the industrial organization. It is based on the structure-conduct-performance paradigm assuming that a firm's performance depends upon the conduct of the buyers and sellers in the market. They depend on the market structure determined by the number and size of the sellers (Porter, 1980, 1981). The strategy of the firm is to adapt to the industry environment by seeking an attractive position in the market. Success results from an attractive market position and related market power due to the selection of either the strategy of a lower cost base or product differentiation. Its sustainability depends on the changes in industry structure which are relatively slow for matured markets (Porter, 1991). Then, the competitive advantage comes from a dominant position over suppliers, buyers and competitors instead of internal or external valuable resource generation (Porter, 1985). The industrial organization's competitive advantage comes from a dominant position over rivals instead of idiosyncratic partnerships with suppliers, buyers or competitors.

The resource stocks of the networking partners are subject to an ongoing process of reproduction and change. Sustainable relational advantage needs relational specific investments. It is worth noting that processes of relational resource development differ in different industries. In this study our interest focuses on relational resources instead of market positioning of the firm which is dominating the industrial organization's thinking. Industrial organization's rationales are not being used endogenously, but we refer to the industry structure as the exogenous/constant context of the studied relationship. Therefore, in the next part of this paper the overall structural context of the exemplified industry influencing the studied resource ties is discussed.

4. The context of the fruit and vegetable industry

Porter (1980) states that differences in products and buyers create industry segments. There are five competitive forces determining industry competitiveness: threat of mobility, rivalry, buyer and supplier power, as well as threat of substitution. He also defined a fragmented industry as an industry with a large number of small or medium size firms where no firm has a significant market share or strong influence on the industry. They are characterized by low overall entry barriers, the absence of economies of scale, high transportation and inventory costs, no advantage of size when dealing with buyers or suppliers, high product differentiation, exit barriers, newness. Developing a competitive strategy in these industries is connected mainly with overcoming fragmentation by creating economies of scale, standardizing diverse market needs, neutralizing or splitting off the aspects that are most responsible, making acquisitions for a critical mass, recognizing industry trends early, backward integration to lower costs.

Agrifood industry segments are examples of a fragmented industry structure, including the fruit and vegetable industry. Fruit and vegetables are characterized by the need for intensive cultivating and perishability when fresh. Perennial crops have implications for investment. The fruit and vegetable sector contribute mostly to food and nutrition security (Joosten *et al.*, 2015; Traill and Pitts, 1998). A little research shows that, in the fruit and vegetable industry, the agrifood business networks may have different resource profiles. They may differ for agrifood producers', processors' or distributors' networks. The research by Sauvée (2002) shows, for example, that the investments in a specific input provider for organic vegetable farming appear to be a strategic resource and complementary investments are made in human capital, complete information and traceability systems tracking the products' origins. Also, for vegetable processors human capital seems to

be of key importance. The diversity of the participants and the intensity of interactions between them are beneficial to the development of a variety of relationships between them based on sustainable resource ties.

This study is carried out in the Polish fruit and vegetable industry which has undergone an important transformation in recent years. Fruit and vegetable products are an important part of agrifood production in Poland. It plays a major role in ensuring food security and nutrition for a wide segment of the population. In Poland, the fruit and vegetable industry can be regarded as typical of the agrifood sector. It has distinctive production features, and the supply chain is linked to its natural, technical and infrastructural requirements. The businesses within the sector have various structures, but most of them are micro-businesses, and fewer are small and medium sized enterprises. Traditionally, fruit and vegetables are sold by specialist greengroceries who purchase them from wholesalers who in turn purchase them from individual farmers. As well, prepared and processed fruit and vegetables are a significant part in the market. The processing sector is far more concentrated than the fresh market. Processed products are mainly sold through supermarkets (Kapusta, 2002).

Some results of earlier empirical research show that the convergence of domestic and international markets and equalization of competitive conditions decreased the competitive potential of the Polish fruit and vegetable producers and forced them to make significant improvements. First of all, the applied forms of competition, where maintaining low cost is rated the most important, reaffirm fragmentation of the industry. Secondly, to strengthen producers in the industry they must adapt to the qualitative requirements of the international market and high qualitative competitiveness of products. Thirdly, the innovative disadvantage of enterprises is mainly a result of continuous fragmentation in the industry and fall in investments (Wiśniewska, 2012).

It is worth noting that cost and price advantages are slowly ceasing to be a primary source of building competitive advantages for food producers, particularly for fruit and vegetable producers from Poland. A decisive factor for competitiveness of the Polish fruit and vegetable industry is the importance of non-price sources of competitive advantages (Szczepaniak, 2014a). With the processes of convergence of the Polish economy within the EU market, the importance of cost and price advantages in the fruit and vegetable industry is decreasing, hence the importance of the effective low-price competition strategy clearly declined in favor of the effective quality competition strategy (Szczepaniak, 2014b). This tendency requires the Polish producers, retailers and distributors to seek new sources of competitive advantage, other than prices, to enable them to improve their competitive position in the European and global markets. Nowadays, domestic and export markets are regarded as having increased value and rising awareness from consumers. It requires supply chain integration and strong business relationships within the supply and value chains (Wiśniewska-Paluszak and Paluszak, 2019b).

The competitiveness of the Polish food sector is also growing due to cooperation in the form of cluster initiatives, including common fruit and vegetable clusters and producer groups. Cluster group companies operating in the same region, with similar scopes of activity which, despite being competitors, establish cooperation to leverage synergy effects: they prepare joint offerings, conduct joint promotional activities, develop joint distribution channels, etc. Food clusters are the third most numerous groups of clusters in Poland (PIFIA, 2011).

On the demand side, Polish consumers are changing their eating habits and are becoming aware of quality fruit and vegetables and they are obtaining knowledge from corporate social responsibility reports. Therefore, the non-price factors are gaining in importance in consumers' decisions. On the supply side, producers, retailers and distributors are more sensitive and responsive to the expectations of consumers who intend to buy not only cheaper products but to buy more expensive, environment-friendly and safe food of very high quality (Wiśniewska-Paluszak and Paluszak, 2017).

Polish consumers and producers, retailers and distributors take part in relations as stakeholders on the ground of corporate social responsibility and they are creating intangible assets in the social network and business network. They are contributing to building interpersonal ties and mutual trust and are able to cooperate for

the multidirectional and mutual benefit of their networks and are seeking to share value in the networks (Wiśniewska-Paluszak and Paluszak, 2019b).

Polish consumers and producers, retailers and distributors take part in the mutual catching-up process on the demand and supply sides of green market economy. In this economy, demand and supply sides interplay to create economic, social and ecological added value. In this sense, competitiveness and competitive advantage requires multidirectional and mutual relations to create crucial added and shared value between stakeholders on both the demand and supply sides, but not only competition in order to exclude rivals.

This why the green market economy is becoming a social market network aiming at long-term shared value for stakeholders, not just short-term profit for shareholders. Shared value is an economic, social and ecological added value which it is created in the network for the stakeholders of the network, but not only for the shareholders (Wiśniewska-Paluszak and Paluszak, 2019a). Shared value requires a broader perspective than just economic. Also needed are social and ecological benefits for stakeholders. This understood shared value may thus ensure sustainable competitive advantage for producers, retailers and distributors and other stakeholders.

5. Sample and method

The theoretical background of a resource-based view determined the use of the VRIN's criteria. Although, its use in practice is quite problematic. This discussion brings important leads for methodological framing of this study (Brahma and Chakraborty, 2011; Kraaijenbrink *et al.*, 2010; Lockett *et al.*, 2009; Miller, 2019; Priem and Butler, 2001). The most challenging part of this research lies in the measurement of unobservable constructs and using proxy variables for such measures common in resource-based research. Most scholars suggest adopting qualitative methods of measuring latent constructs and using indicator variables. Barney and Clark (2007: 222) suggest a way that researchers can measure the potential of resources to create value: by measuring the value created by the strategies the firm creates and implements using its resources.

Whether to conduct a single-industry or multi-industry study is also a difficult question for researchers. A single-industry study provides a rich context of examining resources and capabilities critical to a particular market, whereas a multi-industry study provides greater generalizability. As Miller (2019) stated, the resource-based theory needs to be developed for a particular context because resources and their characteristics can only be clearly valued and measured in a particular setting. The time period of analysis may also pose a challenge to the researcher in terms of cost and time because the examination of the sustained competitive advantage involves a longitudinal approach (Brahma and Chakraborty, 2011).

In the present study, we intend to test the relational investment activities as a source of sustainable relational advantage. We decided to continue to study a single agrifood industry but, in the present study, the unit of analysis is the inter-firm relationship constituting investment activities. The data for this study were gathered through a direct questionnaire conducted with the firm managers. Unless noted otherwise, the items used in the study rely on the 5-point Likert scale anchored on 'very important' to 'unimportant'. This case study is of a qualitative nature.

Supplementary Table S1 displays the characteristics of the sample. In October 2017 the study invited eighteen profiled entities to participate in the survey. The purposive sample selection has been used. It was aimed at the most representative sample for the studied industry. The invited firms declared all together 962 buyer-supplier relationships. Within these companies, the resulting sample comprises data on seven entities (40% of total sample) which declared accomplished or intended investments undertaken within 866 buyer-supplier relationships (90% of total sample). As we can see, the investing entities have many more extensive business relationships than non-investing ones. The resulting sample is comprised of three producers, one processor, one wholesaler and two retailers. Most of the surveyed businesses are microenterprises (1-9 full-time employees) and one is small enterprise (10-49 full-time employees). The sample consists of organizations

of diverse age from 1 to 23 years of activity. Five of the investing entities participate in different formal forms of integration. Among them are supply chains (four), producer groups: occasional cooperation (two) and status (one), cooperatives (two), contracting (two), strategic alliance (one), and cluster (one).

Supplementary Table S2 displays the variables and indicators used in this study. The literature review and the practice show that in these times seven investment areas are particularly salient in the agrifood industry: food safety and social responsibility, human capital, organization of supply and provision, ecology, financial capital, technology, and real capital (Abdirahman and Sauvée, 2014; Abdirahman *et al.*, 2014; Lazzarini *et al.*, 2001; Lefebvre *et al.*, 2012; Lu *et al.*, 2008). In the empirical setting of this study, relational investments into food safety and social responsibility include, for example, investments into early warning and withdrawal system. Relation-specific investments into human capital comprise, for example, investments into development and staff exchange programs while relational investments into optimization of supply and provision comprise, for example, investments into logistics and distribution hubs and so on.

The literature study together with the pre-study interviews with managers and industry experts determined the VRIN's indicators. We decided to define them by empirically testable assertions in form of positive sentences depicting the most expected relational results in certain area of relational investments. As did Barney and Hesterly (2018) we assumed that the VRIN's criteria are multiplicative, not additive, since all relational results must be positive for certain relational investments. Investments with positive assessments are considered as those creating sustainable relational advantage. Relational investments with negative assessments suggest unexploited relational advantage (one negative assessment) or temporary relational advantage (two negative assessments). Relational investments assessed only as valuable indicate relational parity and those with four negative assessments show relational disadvantage.

To evaluate the survey outcomes, common methods of descriptive statistics are used. The research results were mostly presented in relational values. Firstly, the queried entities were asked to indicate accomplished and intended investments undertaken in conjunction with contractors. These indications are regarded together as positive. Their percentage share in total indications was computed. Subsequently, the ratio of positive responses (accomplished and intended) to total responses was compared with the ratio of positive to negative responses (not accomplished and not intended) (Sabey *et al.*, 2018). In this way the main investment areas of the queried entities have been investigated.

Secondly, the queried entities were asked to evaluate the relational results of accomplished investments undertaken in conjunction with contractors. The number of given ranks were related to the total number of ranks. The percentage shares of each rank were compared. Subsequently, the ratio of positive ('very important' and 'important') to total responses was compared with the ratio of negative ('less important' and 'unimportant') to positive responses (Sabey *et al.*, 2018). According to evaluation of all VRIN's criteria the potential of sustainable relational advantage was investigated.

Last but not least, the ρ -Spearman's ordinal correlation coefficient is estimated (Equation 1). The calculation of rank correlation is tested with the independence t -test of ρ -Spearman (Equation 2). To assess correlation of certain variables the following scale is used: strong |1.0-0.61|, medium |0.6-0.31|, weak |0.3-0.00| (Sobczyk, 2007: 118).

$$\rho = 1 - \frac{6 \sum_{i=1}^n d_i^2}{n(n^2 - 1)} \quad (1)$$

where, d_i -rank difference of converted values of variables x_i, y_i ($i = 1, 2, \dots, n$) (Kenkel, 1984: 754; Sobczyk, 2007: 117-118).

$$t = \rho \sqrt{\frac{n-2}{1-\rho^2}} \quad (2)$$

where, n is number of observations (Gajek and Kałuszka, 2000: 118; Kenkel, 1984: 754; Sobczyk, 2010: 284).

The level of probability is evaluated with the P -value. In this research it is the probability (assuming H_0) of a test statistical value equal to actually observed value. Very small P -values indicate strong conclusive evidence for rejecting the null hypothesis (H_0) and support the research hypothesis (H_1). We assumed that:

$$H_0 = P \leq 0 \quad (3)$$

$$H_1 = P > 0 \quad (4)$$

The P -value is called the attained significance level of a statistical test. Statistical significance implies only that a null hypothesis can be rejected with a specified low risk of error (Hildebrand and Ott, 1996: 260-263). The 95% confidence interval is assumed for the research population. Confidence intervals express that allowance for error (Hildebrand and Ott, 1996: 226). All the statistical measures were computed on Statistica ver. 13.1. software (StatSoft Polska, Kraków, Poland).

6. The main areas of relational investments

The first aim of the query was to identify the areas of relational investments. The queried businesses were asked to evaluate 44 types of investment activities assigned to seven investment areas. The 308 variables were received in the query for investment areas evaluation. The accomplished investments in conjunction with contractors inform on the past directions of the resource developments. The intended investments in conjunction with contractors inform on the directions of future resource developments. The sample entities indicated that they have invested in conjunction with their contractors. They undertake relational investment activity. Most of the positive indications (accomplished and intended) were assigned to investments in food safety and social responsibility (31%), human capital (29%), optimization of supply and provision (25%), and ecology (24%). Somewhat fewer indications were assigned to investments in financial capital (17%), technologies (16%), and real capital (11%).

The highest level of accomplished investments in food safety and social responsibility is indicated for labelling and health claims (45%). The highest level of intended investments is indicated for standards of

Figure 4. Relational investments in food safety and social responsibility in the fruit and vegetable firms (n=49, in %).

food quality management and social responsibility (30%). The rest of the specified directions of investments are equally important for the responding entities (Figure 4).

There are three most important relational investments in human capital accomplished by the queried entities which received almost 60% of indications: technological training, staff education on cooperation and management as well as environmental, bio-production, food safety and social responsibility trainings. The last one is also intended in the future by almost 15% of the queried entities (Figure 5).

The most often made relational investment to optimize supply and provision was building a platform of marketing cooperation (43%). The second most accomplished relational investments were connected with outsourcing and implementation of coordination and synchronization of financial and material flow system. They are also indicated by 20% intended in the future. The most intended investments in this direction are implementation of efficient and rapid flow of information such as systems applications and products as well as establishing specialist logistics and distribution hubs, which received over 30% of acceptance in the query (Figure 6).

Accomplished investments in ecology are mostly centered in construction or reconstruction of sewage plants, reduction of chemicals, fertilizers, and plant protection as well as implementation of a system of flow and

Figure 5. Relational investments in human capital in the fruit and vegetable firms (n=42, in %).

Figure 6. Relational investments in optimization of supply and provision in the fruit and vegetable firms (n=42, in %).

exchange of materials and energy streams – 43%. The most often intended investment is the purchase or installation of technology for reducing power consumption, greenhouse gas or replacement energy sources (Figure 7).

The queried entities had already made investments or planned to invest in more traditional ways, i.e. in financial and real capital and technologies. The most indicated accomplishments are self-financed from their own funds (57%) or European Union funds (29%). Investment loans or mortgages are not intended. The indications for the other forms of financial capital investments are above 14% (Figure 8).

Next, often relational investments are technologies. The most often accomplished are implementations of new technologies (43%) and the most often intended is purchase or creation of non-patented technical knowledge (43%). Also, to purchase patent, license, know-how, new technology or production facilities are of interest to future investors. Some of the respondents seem to be innovative in relationships since they have undertaken resource and development activities also in bio-resources and bioproducts and creation of proprietary new technology (Figure 9).

The least indicated investments undertaken in conjunction with contractors are in real capital. The most accomplished are purchases of machinery and equipment and the most intended are constructions of office buildings (28%). About 14% of responses show accomplished and intended investments in land (Figure 10).

Figure 7. Relational investments in ecology in the fruit and vegetable firms (n=56, in %).

Figure 8. Relational investments in financial capital in the fruit and vegetable firms (n=49, in %).

Figure 9. Relational investments in technology in the fruit and vegetable firms (n=49, in %).

Figure 10. Relational investments in real capital in the fruit and vegetable firms (n=21, in %).

When pooling together all assessments of accomplished investment areas we can see the ones most and least often used. The most often accomplished investments in the queried entities are in: self-financing, environment, bio-production, food safety and social responsibility training, technological training, and staff education on cooperation and management. The least often accomplished investments were: (1) office; (2) production and service building and non-patented technical knowledge; (3) land (Figure 11).

The same analysis for intended investments shows that the most often intended relational investments in the queried entities were: power consumption, greenhouse and energy sources as well as non-patented technological knowledge. The least often intended relational investments are: machinery and equipment, production and service buildings, staff education on cooperation and management, technological trainings, new proprietary technology, implementation of new technology, research and development, bio-resources and bioproducts, sewage plants, platforms of marketing cooperation and investment loans or mortgages (Figure 12).

These findings identify the main areas and types of accomplished and intended investments in the queried businesses. We can see that areas of accomplished and intended investment differ significantly. It shows that relational investing is a dynamic process of generating specific relational resource bundles. The respondents indicated that most of the mutually accomplished investments were connected with self-financing and staff trainings. The firms most often intend to invest in reduction of power consumption and greenhouse gas, new energy sources as well as non-patented technical knowledge. It seems to be consistent with the current requirements and changes in the agrifood industries where the problems of food safety and social responsibilities increase technological and social pressures. On the other hand, it seems that future mutual investments aim at cost reduction in connection with environmental protection.

Figure 11. Accomplished relational investments in the fruit and vegetable firms (n=308, in %).

Figure 12. Intended relational investments in the fruit and vegetable firms (n=308, in %).

7. The potential of sustainable relational advantage

The second aim of the query was to evaluate the potential of sustainable relational advantage. The queried businesses were asked to evaluate VRIN's indicators for mutual investments in seven areas. The query got 196 indications. It is worth noting that in total positive indications exceed the negative ones and the same tendency is observed for each area of mutual investments (Figure 13). It seems that in general relational investments are evaluated very positively, but this does not mean that all of them lead to sustainable relational

Figure 13. The evaluation of the VRIN's criteria in different areas of relational investments in the fruit and vegetable firms (n=196, in %).

advantage since VRIN's criteria are not additive. Some of them bring on unexploited or temporary relational advantage. It is worth noting that none of the relational investments is assessed as creating neutral or negative results, i.e. relational parity or disadvantage.

The average highest evaluation was granted parallel to relational investments in food safety and social responsibility as well as optimization of supply and provision. Value indicators for both of them are assessed equally as the highest. Therefore, relational investments in these areas imply sustainable relational advantage.

The second ranked are technological investments and third ecological. For technological investments the highest assessed variables are rareness, value and imperfect imitability and for ecological investments value, nonsubstitutability and imperfect imitability. Therefore, relational investments in the area of technology and ecology imply unexploited relational advantage. Ranked fourth are financial capital and human capital, and fifth real capital investments. The lowest assessment is given to the rareness and nonsubstitutability of financial, real and human capital. Therefore, these resources are assessed as the least heterogeneous and immobile ones. They are not specific enough for the branch and they are not perceived as a source of long-term advantage. It follows that human, financial and real capital investments imply temporary relational advantage.

It is worth noting, that the valuation of VRIN's indicators measured by the ratio of positive to total responses is above 60% for all areas of relational investment (Figure 14). The highest level of the ratio was reached equally by relational investments in the area of optimization of supply and provision as well as food safety and social responsibility (86%). Furthermore, for these areas of relational investments negative evaluation, measured by the ratio of negative to positive responses, equals zero. These relational investments were not negatively assessed at all. It means that for joint investments in these two areas the VRIN's indicators are positively verified. We may conclude then that they encounter sustainable relational advantage since all evaluations are positive which fulfills the assumption that the VRIN's criteria are multiplicative, not additive.

Figure 14. The potential of sustainable relational advantage in the fruit and vegetable firms (n=196, in %).

The VRIN's indicators in the other areas of relational investments were verified by the respondents positively as well as negatively. The technological and ecological investments are highly positively assessed as well at around 80% or more of positive to total responses. Furthermore, they received negative scores but ratio of negative to positive responses is lower than 10%. In this study they cannot be included into the group of sustainable relational advantage creators even if the relational results of both areas of relational investments are very highly accepted in the queried firms. This analysis confirms unexploited relational advantage in these areas of relational investments. Third ranked are relational investments in financial capital with 79% of positive to total responses, but with 22% ratio of negative to positive responses. The fourth group consists of relational investments in human and real capital. Their value is positively evaluated by respondents at 64 and 61% respectively. The ratio of negative to positive responses is 23 and 31% respectively. The temporary relational advantage has been confirmed for these areas.

Next, the research hypothesis is verified with the correlation analysis. Table 1 reports on correlations in the studied relational investment areas. Hypothesis 1 suggests a positive association between relational investments and specific relational resource bundles. Showing high correlations between relational investments in four out of seven analyzed areas the analysis provides confirming evidence for Hypothesis 1. It is confirmed, particularly with the assessments of the experienced businesses aged over 20 years. Their average evaluations have higher values of correlation coefficients in comparison to the whole sample. 31 out of 42 calculated coefficients are verified positively at $P < 0.05$. For the other 11 the null hypothesis (H_0) is not rejected at $P < 0.05$. In these 11 cases the P -value should be greater than 0.05 to support the research hypothesis (H_1) for all the firms' eleven positive correlation coefficients measured. For the businesses over 20 years old, 20 positive correlation coefficients are measured.

The highest correlation coefficient is measured for relational investments in the areas of optimization of supply and provision, food safety and social responsibility with ecological investments (0.96). As well, relational investments in the area of optimization of supply and provision are highly correlated with food safety and social responsibility investments (0.94). Ecological and technological investments receive a high correlation coefficient (0.92). Considering the findings, we may conclude that, in the queried sample, there are four areas of relational investments which determine the relational resource bundle: food safety and social responsibility, optimization of supply and provision, ecology and technology. The statistical analysis provides confirming evidence that the relational resource bundle conjoins resources in the most desired areas of relational investments.

Table 1. The association between the VRIN's indicators evaluations for different areas of relational investments in the fruit and vegetable firms according to the firms' age (ρ -Spearman's ordinal correlation coefficient, $n=196$).¹

Variables		Real capital		Human capital		Technology		Ecology		Food safety and social responsibility		Optimization of supply and provision		Financial capital	
		a	b	a	b	a	b	a	b	a	b	a	b	a	b
Real capital	a	1		0.69		–		–		–		–		–	
	b		1	0.96		0.81		0.89		0.96		0.85		0.94	
Human capital	a			1		–		–		0.56		–		–	
	b				1	0.93		0.96		–		0.94		0.96	
Technology	a					1		0.70		0.53		0.73		0.53	
	b						1	0.92		0.93		0.88		0.92	
Ecology	a							1		0.64		0.69		0.51	
	b								1	0.96		0.96		0.94	
Food safety and social responsibility	a									1		0.56		0.46	
	b										1	0.94		0.95	
Optimization of supply and provision	a											1		–	
	b												1	0.85	
Financial capital	a													1	
	b														1

¹ a = all firms; b = firms aged over 20 years; correlation coefficients statistically significant at the level $P<0.05$; – correlation coefficients not statistically significant.

Table 2 shows the correlation results for VRIN's indicators. Correlation coefficients are measured for the average evaluations of VRIN's indicators. Correlation analysis supports Hypothesis 2 which proposes that relational investment results in sustainable relational advantage. First of all, twelve calculated coefficients are verified positively at $P<0.05$. Therefore, for all correlation coefficients the null hypothesis (H_0) is rejected at $P<0.05$. In all cases the research hypothesis (H_1) is supported by the P -value. In all cases its value is over 0.60 – the correlation is strong. It is worth noting that the highest level of measured coefficients is found for experienced businesses aged over 20 years. In their case all correlations are strong and over 0.80.

Table 2. The association between the average evaluations of VRIN's indicators in the fruit and vegetable firms according to the firms' age (ρ -Spearman's ordinal correlation coefficient, $n=28$).¹

Variables		Value		Rareness		Imperfect imitability		Nonsubstitutability	
		a	b	a	b	a	b	a	b
Value	a	1		0.62		0.67		0.62	
	b		1		0.85		0.81		0.95
Rareness	a			1		0.60		0.64	
	b				1		0.85		0.87
Imperfect imitability	a					1		0.72	
	b						1		0.83
Nonsubstitutability	a							1	
	b								1

¹ a = all firms; b = firms aged over 20 years; correlation coefficients statistically significant at the level $P<0.05$.

The highest correlation coefficients for all evaluations are reported for nonsubstitutability with imperfect imitability (0.72) and for imperfect imitability and value (0.67). The value is highly correlated with nonsubstitutability (0.95) and rareness (0.85) and rareness is highly correlated with nonsubstitutability (0.87) and imperfect imitability (0.85). The highest correlated attributes are nonsubstitutability with value (0.95) and rareness (0.87). Considering the findings, we may conclude that the statistical analysis provides confirming evidence that the evaluations of VRIN's indicators are highly correlated with each other, which means that relational investments have the potential of sustainable relational advantage.

8. Discussion

Earlier research demonstrates that competitive advantage and network relationships matter for the outcomes the businesses generate from their activities (Wiśniewska, 2012; Wiśniewska-Paluszak and Paluszak, 2019b). To date, however, research has mainly focused on one particular activity – relational investments as a source of relational advantage. It seeks to explain if and how relational investments contribute to the sustainable relational advantage of business relationships. Results are consistent with the broad notion of resource-based and relational theory that valuable resources create, and some of them sustain, relational rents. This article argues that relational investments generate specific relational resource bundles and sustainable relational advantage.

One significant implication of this research relates to the model of resource-based sustainable relational advantage in agrifood business relationships. Consistent with its arguments, empirical findings reveal that inter-firm investments aimed at optimization of supply and provision, food safety and social responsibility led to the generation of relation-specific resources which create the potential of sustainable relational advantage. Similarly, technological and ecological developments imply unexploited relational advantage. Subsequent human, financial and real capital investments lead to only temporary relational advantage. With these findings, the study at hand further extends extant theorizing by highlighting that relational investments are both a source of relation-specific resources and relational rents (Table 3).

The latest empirical studies investigating the link between the resource heterogeneity and the patterns of customer-supplier relationships show that the participants who see the resource as homogeneous have limited interaction and little or no resource relationships, whereas the participants who see the resource as heterogeneous have a much more extensive interaction and closer resource ties (Abrahamsen and Håkansson, 2015). These research results are consistent with the earlier observations since they find that those businesses which undertake relational investments have a huge number of business relationships in comparison to non-investing ones.

Resources are critical in business relationships not only in order to secure access to and transfer of existing resources but also for the development of resources. Heterogeneity in resources means that companies seek to utilize the development potential of their resources (Håkansson and Snehota, 1995). Thus, there are relationships where both parties make mutual investments. The results might be adaptations and increased interdependence where breaking relationships and building new ones will be costly and often counterproductive (Abrahamsen and Håkansson, 2015). Also confirmed by Sauvé and Coulibaly's (2007) research is that managers should consider neither the direct ownership nor the control of key resources, but should instead focus on mutually interrelated power network relationships. Achieving equilibrium between partners leads to avoiding the main pitfalls, such as hold up problems over key resources or brand goodwill.

Malak-Rawlikowska's (2018) research shows that specific investments may lead to hold up situation in the food supply chain because it may reduce bargaining power and increase additional inter-dependency, for example by limiting the freedom to change suppliers. The results of the present study, however, suggest that relational investments may be, first of all, the source of sustainable relational advantage. Considering the findings, results of relational investments in some areas are assessed fully positively in the queried sample with no negative answers at all. This means that the advantages from specific investments in some areas, for

Table 3. Relational advantages of investment areas in agrifood business relationships in the fruit and vegetable industry.

Area of relational investment	VRIN's criteria	Relational advantage
Food safety and social responsibility	value rareness imperfect imitability nonsubstitutability	sustainable
Optimization of supply and provision	value rareness imperfect imitability nonsubstitutability	sustainable
Technology	value rareness imperfect imitability	unexploited
Ecology	value nonsubstitutability imperfect imitability	unexploited
Human capital	nonsubstitutability imperfect imitability	temporal
Financial capital	value imperfect imitability	temporal
Real capital	value imperfect imitability	temporal

the queried businesses they are food safety and social responsibility as well as optimization of supply and provision, may overcome the threat of opportunistic behavior and breaking of relationships.

Gold *et al.*'s (2010) research finds that the challenge of incorporating comprehensive sustainability goals into corporate behavior due to the worldwide growth of environmental and ethical awareness induced the necessity of collaboration among entire supply chains and networks. Collaboration on social and environmental issues has a distinct opportunity to give a competitive edge over rivals. Substantial investments must be made by the firms beforehand and allotted to ecological and societal concerns. Vargas and Mantilla (2014) also use resource-based tools to study organizational capabilities of firms to adopt to implement sustainability initiatives and sustainable supply chain management through a literature review. They also concluded that to respond to sustainability concerns firms require interconnected and reinforcing types of relational or inter-organizational capabilities. This study's results further show that in particular relational investments in the area of environmental and social responsibility have the potential of sustainable relational advantage. This means that collaboration and interconnected, reinforcing types of relational or inter-organizational capabilities are not only required but they are also advantageous for the partners willing to invest mutually in environmental and social issues.

Recent studies are connected with drivers of close, long-term buyer-supplier relationships. Ebers and Semaru (2015) researched drivers of specific investments between buyer and supplier. The authors found that the allocation of these investments depends on power balances and trust. With this study's findings we highlighted that the allocation of relational investments depends on the expected relational advantage. In the queried sample the most relational investments were undertaken in the areas assessed as having the potential of sustainable relational advantage. The most intended relational investment activities are in the areas of food safety and social responsibility, optimization of supply and provision, ecology and technology. The least intended relational investment activities are in the areas of financial and real capital which are assessed as the least sustainable.

Other authors found that the specific investments of manufacturers and distributors both independently and interactively enhance manufacturers' acquisition of market knowledge from their distributors. In addition, manufacturers' absorptive capacity positively moderates the effect of specific investments on manufacturers' learning from distributors (Li *et al.*, 2017). With these research findings, most of the accomplished relational investments in the area of human capital aimed at development of technological training, staff education on cooperation and management, environmental, bioproduction, food safety and social responsibility training. This means that in the queried sample the development of knowledge acquisition and absorption is an important factor of relational advantage increasing. However, this research also shows that according to the queried assessments, investments in human capital bring only temporary relational advantage. This means that learning and knowledge acquisition and absorption is a continuous business task, but not one which implies sustainable relational advantage.

Next, the research shows that supplier partnership improves the operational cost performance of manufacturers and that its effectiveness is contingent on specific investments (Yeung *et al.*, 2013). Lu *et al.* (2012) proved that specific investments of Chinese agrifood small and medium-sized enterprises inter-personal trust improve the relationship satisfaction conceptualized as a positive effect on the focal firm's contentment in relationships with other parties like suppliers or buyers. With these research findings, relational investments in the area of optimization of supply and provision by fulfilling the VRIN's criteria are the sources of sustainable relational advantage.

This study displays a number of limitations that indicate additional opportunities for future research. Data collection for this study relied on key informant information provided by eighteen representatives investigated, all of whom declared they have business relationships with their contractors – suppliers, customers and others. The results of the query show that the fruit and vegetable industry entities are engaged not only in the pure exchange in the market with their contractors which means that they perceive their resources as not being homogenous but partially heterogeneous and immobile. However, 60% of them declared no interaction in investments. This means that their business relationships are not intended to create resource ties with their contractors and they limit their network to current, operational, short-term interactions.

The operationalization of resource-based constructs is a major problem in the research. The indicators used are highly industry and investment area specific, so that most of the measures developed cannot be used for cross-industry studies. No general survey measures for the codified resource constructs have been established in this study, principally because these constructs remain non-codifiable.

9. Research and managerial implications

This paper is grounded in the issue considering inter-firm investments as determinants of value increase. The resource-based sustainable relational advantage model has been executed in the present study. It assumes that continuous interaction with other business entities comprising relational investments constitutes the context within which the interactions endow the resources with meaning and a role. Any attempt to develop a business requires the shift in focus away from the way it allocates and structures its internal resources towards the way it relates its own resources to those of its contractors constituting its context. Although our resource-based and relational rationale relied on research to offer a new insight into relational and resource-based theories, they need to be confronted with further research and other theoretical backgrounds such as industrial theories. There is a body of research on resource ties, but they still have to be done in different industrial subsystems, in particular for agrifood industries. Future research may also bring the possibility of cross-industry comparisons of different areas and relational advantages of inter-firm investment activities and resources.

The resource-based sustainable relational advantage model proposed here is also a call to managers to focus on relational investments and relational resource bundles. The model may be used by managers to assess their firm's strengths and weaknesses in relational investment strategies. They can use it to evaluate relational

relevance in the context of well-known VRIN's criteria, i.e. value, rareness, imitability and substitutability. However, managers should, in addition, carefully assess the aspects of each unique cooperative relationship in which the firm is engaged. In so doing, they will gain an understanding of the potential and the limitations of its relationship network.

An important task for management is to control the balance and coordination of the relational investments in the various relationships of the firm. Business managers need to manage resources in business relationships and networks to reach the optimal bundles and configurations. The bigger the investments in relation-specific assets, the more potential for creating relational advantages. However, according to our findings, not all relational investments may create a sustainable relational advantage. Some of them may provide just unexploited or temporary relational advantage as well as relational parity or even relational disadvantage. It is worth knowing that among the studied areas of relational investments in the agrifood industry there is none assessed as leading only to relational parity or relational disadvantage.

According to our study, relational investment means to invest in conjunction with business partners like suppliers, customers and even competitors. It definitely means to combine resources to increase their value. It leads to setting up resource ties. A typical investment cycle takes time and effort to build up relationships while benefits tend to lie ahead in time. Costs and revenues tend to appear at different times. That is why the queried respondents with long business experience assessed relational investments as highly positive. Resource ties in business relationships that are better utilized and more difficult to substitute are stronger. They create and sustain relational advantages.

We have noted that among queried entities only 40% accomplished or intended investments in conjunction with their contractors. Their extensive interaction is based on an assumption of heterogeneity and immobility of resources, and they set up relationships with a greater degree of adaptation between the contractors. Examples of this may be that the counterparts have developed food safety and traceability systems together to increase their social responsibility or have developed common storage or transport activities to optimize costs of supply and provision. This type of interaction is direct and requires an active attitude, willingness to cooperate and investment in the relationship from both parties. They develop long-term relationships where they share resources.

This empirical study shows that businesses may, and do, develop resources and resource combinations in relationship with others because it is in such relationships that the use of resources is dealt with. Relationships activate and develop specific resource elements and different resource bundles. The study also confirms that resources are not entities given once and for all but variables. In the queried entities the accomplished and the intended investments represent different directions. Resource development is a long-term, dynamic and changing process.

In addition, our study informs managers that sustainable advantageous relational investments are connected with food safety, social responsibility and optimization of supply and provisions. They are the main directions of investing in relation to external users and providers of resources like suppliers and buyers. The sustainable relational advantage results directly from relational investments. They are assessed as very highly heterogeneous and immobile in the studied businesses. Therefore, these investments are made in business relationships. The other investments – technological and ecological are directly connected with the above mentioned but, they are rather internally provided resources since they indicate unexploited relational advantages. There are three nonspecific investments areas – human, financial and real capital in relational investing. They provide just temporary relational advantage. They are of less interest to be acted on by external providers because of their higher homogeneity.

We attempt in this article to provide an argument for the sustainable relational advantage of relational investments. We also develop the argument if and how relational resources across firms are heterogeneous and if and how they have the potential of becoming a sustainable relational advantage in the sense that they

create long-term values for firms involved in combining them. The strategy of resource acquisition and use by combining them with business partners' resources is a way to achieve sustainable relational advantage in business networks.

The results of the study show that resources are not a given, but network participants must develop them and decide on their investment strategies. Especially in business relationships, resource ties require co-specialization and learning over time. So, they undertake investments in conjunction with their contractors. Implemented in this study was an integrative approach which combines resource-based and relational views. It is assumed that, to attain sustainable relational advantage, networking partners implement value creating strategies by creating valuable, rare, imperfectly imitable and nonsubstitutable relational resources.

In this paper these values are measured with resource-based theory indicators. It is assumed that these attributes enable business partners to implement investment strategies that improve not only the value of the resource combinations but develop also sustainable resource ties in business networks which means long-term and satisfying business relationships with external users and providers of resources like suppliers, buyers or competitors. The tentative insights from resource-based and relational theories will hopefully provide the impetus for a new way of thinking about relational investments and resources.

Supplementary material

Supplementary material can be found online at <https://doi.org/10.22434/IFAMR2019.0149>

Table S1. The sample.

Table S2. Variables and indicators.

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