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CONSTRUCTS OF QUALITY RELATIONS IN COOPERATION OF INNOVATIVE ENTERPRISES WITH SCIENTIFIC AND RESEARCH AND DEVELOPMENT INSTITUTIONS

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Purpose: The aim of the article is to learn about the attitudes of innovative enterprises representatives towards the strength and importance of relations in regard to scientific/research and development institutions.
Design/methodology/approach: The presented analyzes constitute a part of a broader study on the determinants of the quality of relations between enterprises in the quadruple helix. The article focuses on the enterprise – scientific institutions plane. The research was carried out with the use of CATI method on a sample of 200 innovative enterprises
Findings: The results show that in the case of the relationships strength, communication is an important construct in relation to scientific and R&D institutions, while in the case of the relationships importance it is commitment. The significance of trust and satisfaction with regard to the strength and importance of the relationship between an innovative enterprise and scientific and research and development institutions was not indicated. Moreover a high positive correlation was indicated between the individual relationship quality constructs.
Research limitations/implications: The research sample is a limitation. The research was conducted on a sample of 200 innovative enterprises, but only 22.5% declared maintaining relations with scientific and research and development institutions.
Practical implications: The article indicates which quality constructs should be paid attention to by representatives of scientific and research institutions in managing relations with enterprises.
Originality/value: The article indicates that in some aspects of relationship management, commitment and communication are more important components than trust and satisfaction.

Keywords: relations, relations quality, relations quality constructs, enterprise, business environment institutions.

Category of the paper: research paper.

1. Introduction

Enterprises that wish to create and maintain a competitive advantage on the market are doomed to constantly introduce new solutions. This, in turn, forces them to carry out scientific as well as research and development activities – conducted independently or with the use of external entities. They can also implement of a policy of joint research and development works with other organizations (Lavoie, Daim, 2019).

On the other hand, more and more attention is paid to the quality of relationships as a source of competitive advantage (Samiee, Walters, 2003, Leonidou et al., 2014; Inków, 2017) and to its importance for organizational performance in a turbulent environment. This corresponds to the fact that for many years enterprises have noticed the need for skilful relationship management and have implemented it in practice (Vieira et al., 2008). Therefore, it becomes important to examine the business relations between enterprises and scientific and research and development institutions. The more so because in contemporary value creation mechanisms the importance of relations cannot be overestimated at all levels of shaping relationships (Tu et al., 2014; Belderbos et al., 2004; Moczydłowska et al., 2017).

The aim of the article was to indicate which of the constructs of relationship quality is the most important from the point of view of the strength and importance of the relationship between innovative enterprises and scientific and research and development institutions.

2. Literature review

2.1. The essence and subjects of the research and development sphere

The research and development sphere includes organizations conducting research and development activities, the results of which are often product innovations, new services and technologies, as well as new organizational and management solutions, regardless of their organizational affiliation (Czerniachowicz, Świadek, 2014). Research and development (R&D) is a systematic creative work undertaken in a methodical manner in order to increase the amount of knowledge and find new applications for it. The features of R&D should be novelty, creativity, unpredictability, methodology and transferability (OECD).

According to the most commonly adopted classification, R&D includes three types of research – basic, industrial and developmental. Basic research is undertaken primarily in order to gain new knowledge about the foundations of phenomena and observable facts, without focusing on practical application or use. Industrial research aim to acquire new knowledge and skills with the aim of developing new products, processes and services or introducing significant improvements to existing products, processes or services. They include the creation

of complex systems components. Development works include the acquisition, combination, shaping and use of the currently available knowledge and skills in the field of science, technology and business as well as other knowledge and skills for production planning and the creation and design of new, changed or improved products. They do not include routine and periodic changes, even if they are improvements in nature (stat.gov.pl).

The entities conducting R&D activity include (stat.gov.pl):

- scientific and research and development entities, the basic type of which is research and development,
- science service units – scientific libraries, scientific archives, scientific associations,
- development units – economic entities, mainly enterprises with their own R&D facilities, conducting research and development activities in addition to their basic activities,
- higher education schools,
- other entities.

On the other hand, when considering entities conducting scientific and research and development activities in an institutionalized manner, the following elements can be listed (Szopik-Depczyńska, 2009):

- enterprise sector – economic entities, organizations and institutions involved in the production of goods and services as well as non-profit institutions serving them,
- government sector, including local government – ministries, offices and other bodies providing public services to citizens, usually free of charge,
- private non-profit sector, composed of non-market entities operating for the benefit of households, including individuals, associations and trade unions,
- higher education sector, which includes higher than secondary education institutions and research institutes, experimental stations and clinics under the direct control, administration or affiliation of higher education unit,
- foreign sector consisting of institutions and individuals located outside the country (except for means of transport and satellites) and international institutions and organizations (excluding enterprises).

The basic assumption regarding cooperation between the spheres of science and business is to support the implementation of research and development projects carried out jointly by entrepreneurs and the science and research sector, as well as the implementation of their results on the market. The activities undertaken as part of this cooperation are mainly focused on strengthening the links between business and science, increasing the degree of commercialization of R&D results and on supporting and developing innovativeness of companies (Tomaszuk, Wasiluk, 2021).

2.2. The quality of relationship and its dimensions

An unambiguous definition of a relationship has not been adopted in the literature (Kolemba, 2009; Wasiluk, Tomaszuk, 2020). A similar situation exists with regard to the quality of the relationship (Skarmeas, Robson, 2008; Kumar et al., 1995; Ahamed, Skallerud, 2013; Lages et al., 1995; Lages et al., 2005). A popular approach among researchers when defining the quality of a relationship, which at the same time provides the basis for creating tools for its measurement (Danik, 2017), is to define it as a metaconstruct consisting of a number of components (Holmlund, 2008); while the sets of the relationship quality components differ depending on the adopted research approach (Barry, Doney, 2011). The most common among the analyzed and considered key constructs are trust, satisfaction and commitment (Hennig-Thurau et al., 2002; Ulaga, Eggert, 2006; Barry, Doney, 2011; Tung, Carlson, 2013; Leszczyński, 2014; Walter, 2003; Ahamed, Skallerud, 2013; Hajli, 2014; Vieira et al., 2008; De Wulf et al., 2001; Skarmeas, Robson 2008; Liang et al. 2011; Chu, Wang, 2012). Some researchers also consider communication as an additional dimension of the relationships quality (Jiang et al., 2016; Heroux, Hammoutene, 2012; Whipple et al., 2010, Athanasopoulou, 2009; Fynes et al., 2005; Mohaghar, Ghasemi, 2011; De Burca et al., 2011), although it is worth mentioning that by others it is sometimes considered one of the determinants of satisfaction (Mohr, Sohi, 1995). Conflict (or the lack of it) may be considered a construct of relationship quality by some researchers (Leonidou et al., 2006; Skarmeas, Robson, 2008; Ghzaiel, Akrout, 2012; Heroux, Hammoutene, 2012; Hoopner et al., 2015; Athanasopoulou, 2009; Roberts et al., 2003). Apart from the above-mentioned five, the analyzed constructs are sometimes also cooperation, distance, understanding, dependence, and adaptation (Leonidou et al., 2006), atmosphere (Woo, Enew, 2004) or reputation (Kühne et al., 2013).

Undoubtedly, the most frequent dimension of relationship quality is trust (Inków, 2017). From the point of view of inter-organizational trust, it can be assumed that it is the belief of one company that actions undertaken by its partners will have positive effects, as well as the belief that partners will not undertake actions that could have unexpected negative effects (Anderson, Narus, 1990; Fynes et al., 2004).

From the point of view of the relationship quality commitment can be understood as deepening and broadening the existing exchange relationships (Anderson et al., 1994), as the exchange partner's belief that the ongoing relationship is important enough to justify making maximum efforts to maintain it, thus contributing to the belief of the involved party that the relationship is worth ensuring its longest possible duration (Morgan, Hunt, 1994, p. 23). It is also worth noting that commitment often has a growing tendency – showing commitment by partners causes its further increase (Gundlach et al., 1995). Moreover, commitment that occurs together with trust promotes efficiency, productivity and effectiveness of jointly undertaken activities (Morgan, Hunt, 1994) and protects against opportunism (Sap, Anderson, 2003; Czakon, 2005).

Another dimension of relationship quality, satisfaction, helps to build and secure future revenues, creates barriers for competitors' activities and reduces future transaction costs (Lewin, 2009). When analyzing satisfaction in the institutional market, according to Tikkanena and Alajoutsijärvi (2002) attention should be paid to the internal context of the relationship, the context of interconnected network and the external context. The internal context of the relationship consists of a structural characteristic, expressed in continuity, complexity, symmetry and unofficial character, as well as a process characteristic expressed in adaptation, level of cooperation, social interaction and routine. The context of the interconnected network is made up of a network of relationships to which both (all) partners belong – the satisfaction of a given entity depends in this case on business relationships with other entities from its network. The external context is an extension of the interconnected network context and it is made up of all entities relevant in any way to a given relationship. Contexts overlap, thus creating a background for the emergence of satisfaction (Danik, 2017).

As mentioned while distinguishing relationship constructs, communication is sometimes analyzed as one of the separate components, however, it is also related to both trust and commitment and satisfaction. When analyzing communication as a separate component of relationship quality, it should be remembered that the prerequisites for good communication are long-term orientation, network coordination and the use of information techniques and technologies facilitating communication (Paulraj et al., 2008). Long-term orientation makes the partners willing to invest in creating stronger ties due to the expected future profits – this contributes to creating an atmosphere of mutual understanding and promotes cooperation. Network coordination is based on informal social norms and systems based on solidarity, reciprocity, flexibility and information exchange, which contributes to supporting the development and exchange of knowledge and thus also to higher competitiveness of the partners in the relationship (Paulraj et al., 2008). There is no doubt that the third premise – the use of technologies facilitating communication (and media used in relationships) – is in the present world a factor that is obligatory to be used in the communication process and it is conducive to the flow of information.

3. Methodology

For the purposes of classifying market participants, the concept of a quadruple helix was used, covering the system of connections of representatives of four sectors – private (the so-called "business" sector), science (including research and development), public (the so-called administration sector) and civil society (represented primarily by business environment institutions – BEI) (Carayannis et al., 2012; Carayannis., Campbell, 2011; Bojar, Machnik-Słomka, 2014). The analyzes presented in the article are fragmentary – they concern the quality of relations between representatives of innovative companies in relation to scientific institutions and research and development organizations.

Relationship quality measurement was based on a multidimensional scale, consisting of four subscales: trust, satisfaction, commitment and communication. Regardless the subject of the study (the addressee of the relationship), the list of symptoms proving the quality of the relationship was formulated universally for all helixes. A set of statements reflecting the observable features of the analyzed constructs was adopted as the measuring instrument (Sankowska, 2017). Due to the complicated nature of the tested constructs (Blunsdon, Reed, 2003; Sankowska, 2011; Lewicka et al., 2016), the number of statements used to examine them was optimized and ranged from 3 (for satisfaction) to 5 (for the remaining constructs – trust, commitment and communication). Ultimately, the following statements were distinguished (Lages et al., 2005; Walter, Ritter, 2003; Ryciuk, 2013; Stach, 2013; Woo, Ennew, 2004; Roberst et al., 2003):

- for trust:
  (Z1) We are convinced that the scientific/research and development institutions we work with are fair.
  (Z2) We believe that the scientific/research and development institutions we work with know what they do.
  (Z3) We trust the scientific/research and development institutions we work with because they have trusted us.
  (Z4) We believe that cooperation with scientific/research and development institutions will be beneficial for us.
  (Z5) Scientific/research and development institutions usually keep their promises to our company.
- for commitment (devotion):
  (O1) We believe that scientific/research and development institutions treat cooperation with us as an element of long-term relationships.
  (O2) We believe that scientific/research and development institutions prefer long-term cooperation with us over short-term profits.
  (O3) We believe that the scientific/research and development institutions we work with would not do business with others at our expense.
  (O4) We believe that the scientific/research and development institutions we work with are ready to invest time and resources in developing relationships with us.
  (O5) From time to time we are ready to make sacrifices to help scientific/research and development institutions.
- for satisfaction:
  (S1) Taking into account all aspects of cooperation, our experience with scientific/research and development institutions is very satisfactory.

(S2) Our relations with scientific/research and development institutions have positively surprised us.

(S3) We are very pleased with the cooperation with scientific/research and development institutions.

- for communication:

(K1) The contents of messages from scientific/research and development institutions are clear to us.

(K2) Scientific/research and development institutions communicate with us in an open manner.

(K3) Our contacts with scientific/research and development institutions are very frequent.

(K4) Our contacts with scientific/research and development institutions are very often direct.

(K5) Scientific/research and development institutions make efforts to better understand us and our needs.

The reliability of the created scale was checked with the use of the Cronbach's alpha coefficient. The calculated statistics (Cronbach's alpha test for trust was 0.88, for commitment 0.89, for satisfaction 0.92, for communication 0.80) indicates high consistency of items included in the created scale. For each of the statements contained in the questionnaire, the respondent was asked to indicate his position by marking the category on a five-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree).

The survey was conducted with the use of CATI method on a sample of 200 innovative enterprises in the last quarter of 2021. The method used made it possible to achieve a high level of standardization and minimize the influence of the interviewer on the respondent's opinion and also made it possible to reach respondents with high positions in the surveyed companies and gave a sense of complete anonymity (Malhotra, 2010). The enterprises characteristics are presented in Table 1.

Table 1.
Research sample characteristics

Industry		**Enterprise size**	
Production	26%	10-49	57%
Construction	16,5%	50-249	34,5%
Trade	29,%	>249	8,5%
Transport	9%		
Service	19,5%		
Active in the market		**Operations range**	
Up to 1 year	0%	Local	21%
1-3 years	0,5%	Regional	18%
4-9 years	5,5%	Domestic	31,5%
More than 9 years	94%	International	29,5%

Cont. table 1.

Established relationships
With other enterprises – 98%
With administration units – 38%
With research and development units – 22.5%
With business environment units – 33%

Source: own study.

The analyzes presented in the article constitute a part of a broader research and concern the determinants of relationships quality in the enterprise – scientific/research institutions perspective. The characteristics of enterprises (N = 45) which established relationships with scientific/research and development institutions are presented in Table 2.

Table 2.
Characteristics of enterprises which established relationships with scientific/research and development institutions

Industry		**Enterprise size**	
Production	40%	10-49	53,3%
Construction	13,3%	50-249	33,3%
Trade	28,8%	>249	13,3%
Transport	2,2%		
Service	15,6%		
Active in the market		**Operations range**	
Up to 1 year	0%	Local	8,9%
1-3 years	0%	Regional	13,3%
4-9 years	0%	Domestic	35,6%
More than 9 years	100%	International	42,2%
Established relationships			
With other enterprises – 100%			
With administration units – 33,3 %			
With business environment institutions – 42,2%			

Source: own study.

The analyzes were aimed to learn about the attitudes of innovative enterprises representatives towards the quality of relationships with scientific/research and development institutions. The following research questions were posed:

P1 – Which of the relationship quality constructs affect the strength of the relationship in the area of enterprise – scientific/research and development institutions?

P2 – Which of the relationship quality constructs affect the importance of the relationship in the area of enterprise – scientific/research and development institutions?

P3 – Is it possible to determine dependencies between particular constructs of relationship quality in the enterprise – scientific/research and development institutions area?

4. Analysis of research results

When analyzing the respondents' answers regarding compliance with individual statements, it can be noticed (Table 3) that the highest compliance occurs with regard to statements reflecting trust (4.24-4.44 according to the arithmetic mean). With regard to the remaining constructs, the compliance is much lower and ranges from 3.20 (statements reflecting communication behavior – K3 and K5) to 4.04 (for satisfaction – S1). Therefore, it can be presumed that in relation to scientific/research institutions, trust is the most important among the analyzed constructs of relationship quality. The levels of the median index remain similar (mostly 4); also the most common dominant answer is 4 – I rather agree. The standard deviation ranges from 0.66 (for Z3) to 1.1 (for K5), and can be considered low.

Table 3.
Assessment of respondents' compliance with the statements reflecting individual relationship quality constructs

Construct	Statement	$\bar{x}$	M_e	D	n_D	Min.	Max	Standard deviation
Trust	Z1	4,33	4	5	22	2	5	0,80
	Z2	4,33	4	5	21	2	5	0,74
	Z3	4,24	4	4	20	2	5	0,80
	Z4	4,44	5	5	24	3	5	0,66
	Z5	4,13	4	4	24	2	5	0,81
Commitment (devotion)	O1	3,84	4	4; 5	14	2	5	0,98
	O2	3,62	4	3	17	1	5	0,96
	O3	3,42	4	4	19	1	5	1,03
	O4	3,44	3	3	16	1	5	1,10
	O5	3,84	4	4	24	1	5	0,95
Satisfaction	S1	4,04	4	4	24	2	5	0,82
	S2	3,60	4	4	17	1	5	1,07
	S3	3,93	4	4	22	1	5	1,01
Communication	K1	3,93	4	4	18	1	5	0,96
	K2	3,97	4	4	19	1	5	0,99
	K3	3,20	3	3	17	1	5	1,04
	K4	3,57	4	4	23	1	5	0,92
	K5	3,20	3	3	17	1	5	1,10

Source: Own study.

The values reflecting the relationship strength and importance in the area of enterprise – scientific/research institutions are presented in Table 4. Comparing them with the other analyzed areas (enterprise – other enterprises, enterprise – administrative institutions and enterprise – business environment institutions), it can be noticed that both indicators have the lowest importance in terms of strength as well as importance of the relationship (the highest are for the relationship between enterprise and enterprise, 4.12 and 4.43, respectively).

Table 4.
The importance of relationships with scientific/research institutions in the respondents' perception

	$\bar{x}$	M_e	D	n_D	**Min.**	**Max**	**Standard deviation**
strength	3,38	3	3	17	1	5	0,98
importance	3,71	4	4	19	1	5	1,04

Source: own study.

Multiple regression analysis was used in order to determine which of the constructs primarily determine the strength and importance of the relationship. When analyzing the influence of constructs on the relationship strength, strength was considered a dependent variable, while trust, commitment, satisfaction and communication were assumed as independent variables. A similar analysis was performed for the validity of the relationship. The results of the multiple regression analysis are presented in Table 5.

Table 5.
Multiple regression analysis for the strength and importance of enterprises relationships with scientific/research and development institutions

Relationship strength				
N = 45	b*	SE with b*	t	p
constant			0,95	0,35
communication	0,60	0,12	4,91	0,01
Models parameters: R^2 = 0,36 F(1,43) = 24,064 p < 0,00001Standard error of estimation: 0,79				
Relationship importance				
N = 45	b*	bł. std. z b*	t	p
constant			2,63	0,12
Communication	0,48	0,13	3,62	0,01
Models parameters:R^2 = 0,23 F(1,43) = 13,087 p < 0,00078 Standard error of estimation: 0,90				

Source: own study.

For both analyzed variables, only one construct turned out to be an influencing construct. With regard to scientific and research institutions, communication turned out to be a construct influencing the strength of a relationship, while commitment was the construct influencing the importance of a relationship. Interestingly, no impact of trust or satisfaction was observed in the case of this group of entities, although both constructs are important from the point of view of shaping the relationship quality. The mutual correlations between the constructs were also analyzed (Table 6).

Table 6.
Pearson's r-correlation coefficient of quality dimensions

The relationships quality dimension		**1**	**2**	**3**	**4**
1	**trust**	1			
2	**commitment**	0,64	1		
3	**satisfaction**	0,78	0,76	1	
4	**communication**	0,60	0,74	0,59	1
The market correlation coefficients are significant with p < ,05000, N = 45					

Source: own study.

All analyzed correlations turned out to be positive and statistically significant. The most important ones were observed for satisfaction and trust as well as for satisfaction and commitment, the lowest - between communication and satisfaction. This confirms the thesis that individual relationship quality constructs cannot be fully analyzed separately (Leonidou et al., 2006; Danik, 2017) – also in the context of the relationship between the enterprise and scientific/research institutions.

5. Conclusion

The quality of relationship is not fully recognized in terms of its nature, conditions and effects (Inków, 2017). The discrepancies concern not only the very definition of the concept, but also the dimensions affecting it. The formulated assumptions of the study were based on the belief that it is possible to formulate a list of universal constructs of relationship quality that are adequate for all spheres of the quadruple helix, including the scientific one, and the following were adopted: trust, satisfaction, commitment and communication. The results obtained by means of the conducted research show that the construct of relationship quality that influences the strength of a relationship is communication, while in the case of relationship importance it is commitment. Interestingly, no relationship is shown for trust, which is considered the most important dimension of relationship quality. This may be due to the specificity of these relations (most studies indicating the importance of trust concern the quality of consumer or B2B relations) and/or the specificity of the research sample, which is also a significant limitation of the research. Only 22.5% of the analyzed enterprises indicated the established relations with the scientific sphere, which is covered by the research of other authors – the low percentage of cooperation of Polish enterprises with the R&D sphere is conditioned, inter alia, by poor cooperation with the scientific and research and development sector (Tomaszuk, Wasiluk, 2021). The conducted research also shows that with regard to the significance of individual relationship quality constructs, the area in which they are implemented may be important.

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References

1. Ahamed, A.F.M.J., Skallerud, K. (2013). Effect of Distance and Communication Climate on Export Performance: The Mediating Role of Relationship Quality. *Journal of Global Marketing*, *Vol. 26, No. 5*, pp. 284-300, https://doi.org/10.1080/08911762.2013.830170.
2. Anderson, J.C., Hakansson, H., Johanson, J. (1994). Dyadic Business Relationships Within a Business Network Concept. *Journal of Marketing, Vol. 58, No. 4*, pp. 1-15, https://doi.org/10.1177%2F002224299405800401.
3. Anderson, J.C., Narus, J.A. (1990). A Model of Distribution Firm and Manufacturing Firm Working Partnerships. *Journal of Marketing, Vol. 54, No. 1*, pp. 42-59, https://doi.org/10.1177/002224299005400103.
4. Athanasopoulou, P. (2009). Relationships Quality: a Critical Review and Research Agenda. *European Journal of Marketing, Vol. 43, No. 5/6,* pp. 583-610, https://DOI:10.1108/03090560910946945.
5. Barry, J.M., Doney, P.M. (2011). Cross-cultural Examination of Relationships Quality. *Journal of Global Marketing, Vol. 24, No. 4,* pp. 305-323, https://doi.org/10.1080/08911762.2011.602321
6. Blunsdon, B., Reed, K. (2003). The Effect of Technical and Social Conditions on Workplace Trust. *International Journal of Human Resource Management, Vol. 14, No. 1,* pp. 12-27, https://doi.org/10.1080/09585190210158493.
7. Bojar, M., Machnik-Słomka, J. (2014). Model potrójnej i poczwórnej helisy w budowaniu współpracy sieciowej dla rozwoju innowacyjnych projektów regionalnych. *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie, No. 1923(76),* pp. 99-111.
8. Carayannis, E., Campbell, D., (2011). Open Innovation Diplomacy and a 21st Century Fractal Research, Education and Innovation (FREIE) Ecosystem: Building on the Quadruple and Quintuple Helix Innovation Concepts and the "Mode 3" Knowledge Production System. *Journal of the Knowledge Economy, Vol. 2, No. 3,* pp. 327-372, https://doi.org/10.1007/s13132-011-0058-3.
9. Carayannis, E.G., Barth, T.D., Campbell, D., (2012). The Quintuple Helix Innovation Model: Global Warming as a Challenge and Driver for Innovation. *Journal of Innovation and Entrepreneurship, Vol. 1, No. 2,* pp. 1-12, doi:https://doi.org/10.1186/2182-5372-1-2.
10. Chu, Z., Wang, Q. (2012). Drivers of Relationship Quality in Logistics Outsourcing in China. *Journal of Supply Chain Management, Vol. 48, No. 3*, pp. 78-96, DOI:10.1111/j.1745-493X.2011.03259.x.
11. Czakon, W. (2005). Ku systemowej teorii przewago konkurencyjnej przedsiębiorstwa. *Przegląd Organizacji, No. 5,* pp. 5-8.
12. Czerniachowicz, B., Świadek, A. (2014). Działalność sfery badawczo-rozwojowej w funkcjonowaniu przedsiębiorstw w województwie lubuskim. *Zeszyty Naukowe*

Uniwersytetu Szczecińskiego. Finanse, Rynki Finansowe, Ubezpieczenia, Vol. 804, No. 67, pp. 565-576.

13. Danik, L. (2017). *Wpływ kultury na jakość relacji w międzynarodowej współpracy przedsiębiorstw.* Warszawa: Oficyna Wydawnicza SGH.
14. De Bürca, S., Fynes, B., Roche, E. (2004). Evaluating Relationship Quality in a Business-to-Business Context. *Irish Journal of Management, Vol. 25, No. 2,* pp. 61-75.
15. de Wulf, K., Odekerken-Schröder, G., Iacobucci, D. (2001). Investments in Consumer Relationships: A Cross Country and Cross-industry Exploration. *Journal of Marketing, Vol. 65, No. 4,* pp. 33-50, https://doi.org/10.1509/jmkg.65.4.33.18386.
16. Fynes, B., De Bürca, S. Marshall, D. (2004). Environmental Uncertainty, Supply Chain Relationship Quality and Performance. *Journal of Purchasing & Supply Management, Vol. 10, No. 4-5,* pp. 179-190, DOI:10.1016/j.pursup.2004.11.003.
17. Fynes, B., Voss, C., De Bürca, S. (2005). The Impact of Supply Chain Relationship Quality on Quality Performance. *International Journal of Production Economics, Vol. 96, No. 3,* pp. 339-354, DOI:10.5923/j.logistics.20160501.02.
18. Ghzaiel, K., Akrout, F, (2012). Dimensions and Antecedents of Relationship Quality in a Business-to-Business Context: an Exploratory Study. *Journal of Supply Chain and Customer Relationship Management*, pp. 1-17, DOI: 10.5171/2012.589977.
19. Gundlach, G.T., Achrol R.S., Mentzer J.T., (1995). The Structure of Commitment in Exchange. *Journal of Marketing, Vol. 59, No*. 1, pp. 78-92, https://doi.org/10.2307/1252016.
20. Hajli, M.N. (2014). The Role of Social Support on Relationship Quality and Social Commerce. *Technological Forecasting & Social Change, Vol. 87, No. C*, pp. 17-27, DOI: 10.1016/j.techfore.2014.05.012.
21. Hennig-Thurau, T., Gwinner, K.P., Gremler, D.D. (2002). Understanding Relationship Marketing Outcomes. An Integration of Relational Benefits and Relationship Quality. *Journal of Service Research, Vol. 4, No. 3,* pp. 230-247, https://doi.org/10.1177%2F1094670502004003006.
22. Heroux, L., Hammoutene, A. (2012). Relationship Marketing in the American and Canadian Export Sectors: a Matter of Trust. *The Journal of American Academy of Business, Vol. 18, No. 1,* pp. 39-46.
23. Holmlund, M. (2008). A Definition Model, and Empirical Analysis of Business-to-Business Relationship Quality. *International Journal of Service Industry Management, Vol. 19, No. 1,* pp. 1-46, http://dx.doi.org/10.1108/09564230810855707.
24. Hoopner, J.J., Griffith, D.A., White, R.C. (2015). Reciprocity in Relationship Marketing: a Cross-Cultural Examination of the Effects of Equivalence and Immediacy on Relationship Quality and Satisfaction with Performance. *Journal of International Marketing, Vol. 23, No. 4,* pp. 64-83, https://doi.org/10.1509%2Fjim.15.0018.
25. https://stat.gov.pl/cps/rde/xbcr/wroc/ASSETS_Dzialalnosc_badawcza_i_rozwojowa.pdf.

26. Inków, M. (2017). Zaufanie a przewaga konkurencyjna przedsiębiorstw. *Handel wewnętrzny, Vol. 6, No. 371,* pp. 104-111.
27. Jap, S.D., Anderson E. (2003). Safeguarding Interorganizational Performance and Continuity Under Ex Post Opportunism. *Management Science, Vol. 49, No. 12,* pp. 1684-1701, https://doi.org/10.1287/mnsc.49.12.1684.25112.
28. Jiang, Z., Shiu, E., Henneberg, S., Naude, P. (2016). Relationship Quality in Business to Business Relationships – Reviewing the Current Literatures and Proposing a New Measurement Model. *Psychology & Marketing, Vol. 33, No. 4*, pp. 297-313, https://doi.org/10.1002/mar.20876.
29. Kolemba, A. (2009). Relacje przedsiębiorstwa z otoczeniem jako instrument budowania przewagi konkurencyjnej. In: M. Cisek (Ed.), *Kapitał relacyjny w nowoczesnej gospodarce.* Warszawa: Studio Emka.
30. Kühne, B., Gellynck, X., Weaver, R.D. (2013). The Influence of Relationship Quality on the Innovation Capacity in Traditional Food Chains, *Supply Chain Management: An International Journal, Vol. 18, No. 1*, pp. 52-65, https://doi.org/10.1108/13598541311293177.
31. Kumar, N., Scheer, L.K., Steenkamp, J.B.E. (1995). The Effects of Supplier Fairness on Vulnerable Resellers. *Journal of Marketing Research, Vol. 32, No. 1,* pp. 54-65, https://doi.org/10.1177%2F002224379503200107.
32. Lages, C., Lages, C.R., Lages, L.F. (2005). The REQUAL Scale: a Measure of Relationship Quality in Export Market Ventures. *Journal of Business Research, No. 54*, pp. 1040-1048. doi:10.1016/j.jbusres.2004.03.001.
33. Lavoie, J.R., Daim, T. (2019). Technology Transfer: A Literature Review. In: T. Daim, M. Dabić, N. Başoğlu, J.R. Lavoie, B.J. Galli (Eds.), *R&D Management in the Knowledge Era. Challenges of Emerging Technologies* (pp. 421-438). Cham: Springer.
34. Leonidou, L.C., Palihawadana, D., Theosiou, M. (2006) An Integrated Model of the Behavioural Dimensions of Industrial Buyer-Seller Relationships. *European Journal of Marketing Vol. 40, No. 1/2,* pp. 145-173, DOI: 10.1108/03090560610637365.
35. Leonidou, L.C., Samiee, S., Aykol, B., Talias, M.A. (2014). Antecedents and Outcomes of Exporter–Importer Relationship Quality: Synthesis, Meta-Analysis, and Directions for Further Research. *Journal of International Marketing, Vol. 22, No. 2*, pp. 21-46. https://doi.org/10.1509/jim.13.0129.
36. Leszczyński, G. (2014). *Adaptacja w relacjach business-to-business. Uwarunkowania i efekty.* Poznań: Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu.
37. Lewicka, D., Krot, K., Książek, D. (2016). Metodyczne aspekty badania zaufania w naukach o zarządzaniu. *Zeszyty Naukowe Uniwersytetu Ekonomicznego w Krakowie, Vol. 7, No. 955,* pp. 41-56, DOI: 10.15678/ZNUEK.2016.0955.0703.

38. Lewin, J.E. (2009). Business Customers' Satisfaction: What Happens When Suppliers Downsize? *Industrial Marketing Management, Vol. 38,* pp. 283-299, https://doi.org/10.1016/j.indmarman.2007.11.005.
39. Liang, T.-P., Ho, Y.-T., Li, Y.-W., Turban, E. (2011). What Drives Social Commerce: The Role of Social Support and Relationship Quality. *International Journal of Electronic Commerce, Vol. 16, No. 2,* pp. 69-90, https://doi.org/10.2753/JEC1086-4415160204.
40. Malhotra, N.K. (2010). *Marketing research. An applied orientation*. London: Pearson Higher Education.
41. Moczydłowska, J.M., Korombel, A., Bitkowska, A. (2017). *Relacje jako kapitał organizacji.* Warszawa: Difin.
42. Mohaghar, A., Ghasemi, R. (2011). A Conceptual Model for Supply Chain Relations Quality and Supply Chain Performance by Structural Equation Modeling: a Case Study in the Iranian Automotive Industry. *European Journal of Social Sciences, Vol. 21, No. 3,* pp. 456-470.
43. Mohr, J.J., Sohi, R.S. (1995). Communications Flows in Distribution Channels: Impact on Assessments of Communication Quality and Satisfaction. *Journal of Retailing, Vol. 71, No. 4,* pp. 393-416, https://doi.org/10.1016/0022-4359(95)90020-9.
44. Morgan, R.M., Hunt, S.D. (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing, Vol. 58, No. 3*, pp. 20-38, https://doi.org/10.2307/1252308.
45. OECD (2018). *Podręcznik Frascati 2015. Zalecenia dotyczące pozyskiwania i prezentowania danych z zakresu działalności badawczej i rozwojowej*. Warszawa: GUS.
46. Paulraj, A., Lado A.A., Chen, I.J. (2008). Inter-Organizational Communication as a Relational Competency: Antecedents and Performance Outcomes in Collaborative Buyer-Supplier Relationships. *Journal of Operations Management, Vol. 26,* pp. 45-64, https://doi.org/10.1016/j.jom.2007.04.001.
47. Roberts, K., Varki, S., Brodie, R. (2003). Measuring the Quality of Relationships in Consumer Services: an Empirical Study. *European Journal of Marketing, Vol. 37, No. 1-2,* pp. 169-196, DOI 10.1108/03090560310454037.
48. Ryciuk, U. (2013). Zaufanie międzyorganizacyjne – konceptualizacja, operacjonalizacja i pomiar. *Przegląd Organizacji, No. 12,* pp. 33-38, https://doi.org/10.33141/po.2013.12.06.
49. Samiee, S., Walters, P. (2003). Relationship Marketing in an International Context: A Literature Review. *International Business Review, Vol. 12, No. 2,* pp. 193-214, https://doi.org/10.1016/S0969-5931(02)00096-3.
50. Sankowska, A. (2011). *Wpływ zaufania na zarządzanie przedsiębiorstwem. Perspektywa wewnątrzorganizacyjna.* Warszawa: Difin.
51. Skarmeas, D., Robson, M.J. (2008). Determinants of Relationship Quality in Importer–Exporter Relationships. *British Journal of Management, Vol. 19, No. 2*, pp. 171-184, DOI: 10.1111/j.1467-8551.2007.00537.x.

52. Stach, P. (2010). Jakość relacji z interesariuszami. *Ekonomika i Organizacja Przedsiębiorstwa, No. 1,* pp. 41-46.
53. Szopik-Depczyńska, K. (2009). Uwarunkowania działalności badawczo-rozwojowej w przedsiębiorstwach. In: W. Janasz (Ed.), *Innowacje w strategii rozwoju organizacji w Unii Europejskiej* (pp. 170-191). Warszawa: Difin.
54. Tikkanen H., Alajoutsijärvi, K. (2002). Customer Satisfaction in Industrial Markets: Opening up the Concept. *Journal of Business & Industrial Marketing, Vol. 17, No. 1,* pp. 25-42, DOI: 10.1108/08858620210415181.
55. Tomaszuk, A., Wasiluk, A. (2021) *Przedsiębiorstwo w poczwórnej helisie*. Białystok: Oficyna Wydawnicza Politechniki Białostockiej.
56. Tu, C., Hwang, S.H., Wong, J.Y. (2014). How Does Cooperation Affect Innovation in Micro-Enterprises? *Management Decision, Vol. 52, No. 8*, pp. 1390-1409, https://doi.org/10.1108/MD-07-2013-0388.
57. Tung, B., Carlson, J. (2013). Modelling a Formative Measure of Relationship Quality and its Effects: Evidence from the Hong Kong Retail Banking Industry. *Services Marketing Quarterly, Vol. 34, No. 2,* pp. 139-158, https://doi.org/10.1080/15332969.2013.770674.
58. Ulaga, W., Eggert, A. (2006). Relationship Value and Relationship Quality: Broadening the Nomological Network of Business-to-Business Relationships. *European Journal of Marketing, Vol. 40, No. 3/4,* pp. 311-327, https://doi.org/10.1108/03090560610648075.
59. Vieira, A.L., Winklhofer, H., Ennew, C.T. (2008). Relationship Quality: a Literature Review and Research Agenda. *Journal of Customer Behaviour, Vol. 7, No. 4,* pp. 269-291, DOI: https://doi.org/10.1362/147539208X386833.
60. Walter, A. (2003). Relationship-Specific Factors Influencing Supplier Involvement in Customer New Product Development. *Journal of Business Research, Vol. 56, No. 9,* pp. 721-733, https://doi.org/10.1016/S0148-2963(01)00257-0.
61. Walter, A., Ritter, T. (2003). The Influence of Adaptations, Trust, and Commitment on Value-Creating Functions of Customer Relationships. *Journal of Business & Industrial Marketing, Vol. 18, No. 4/5*, pp. 353-365, https://doi.org/10.1108/08858620310480250.
62. Wasiluk, A., Tomaszuk, A. (2020). *Organizacja w sieci relacji.* Białystok: Oficyna Wydawnicza Politechniki Białostockiej.
63. Whipple, J.M., Lynch, D.F., Nyaga, G.N. (2010). A Buyer's Perspective on Collaborative Versus Transactional Relationships. *Industrial Marketing Management, Vol. 39,* pp. 507-518, https://doi.org/10.1016/j.indmarman.2008.11.008.
64. Woo, K., Ennew, Ch.T. (2004). Business-to-Business Relationship Quality: an IMP Interaction-Based Conceptualization and Measurement. *European Journal of Marketing, Vol. 38, No. 9/10,* pp. 1252-1271, https://doi.org/10.1108/03090560410548960.