

VIRTUAL CHARACTERISTICS MEASUREMENT USING FACTOR ANALYSIS

Ghazal Afrozzi Milani

Department of Computer Science &Eng., Shiraz University, Shiraz, Iran

Koorush Ziarati

Department of Computer Science &Eng., Shiraz University, Shiraz, Iran

Alireza Tamaddoni-Nezhad

Department of Computing, Imperial College London, UK

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Abstract: Increasing development of using Information and Communication Technology and globalization issue leads to fundamental changes in classic principles of organizations. Hence, neglecting these changes can lead to the organizations failure. Substitution of virtual organization is one of the most important of these changes that many corporations claim. Of crucial necessity is the criterion for measuring the amount of their success in getting virtual characteristics. In this paper, we measure the degree of virtual characteristics by using the properties of an ideal virtual enterprise as a reference point and comparing each company with that point. To assess the degree of virtual characteristics, factor analysis method is used. Our aim in this paper is to perform an empirical research, besides improvement of previously used methods to measure the degree of virtual characteristics. The proposed method has been used to assess the degree of virtual characteristics of Iranian Petrochemical Corporations.

1 INTRODUCTION

In the early 1980s, business theorists found out that many large companies lacked the flexibility and agility needed to remain competitive in global markets. After the Internet became involved in commercial affairs in the late 1980s, many theorists adopted it as the engine that would drive the development of a new generation of business models. One of these models was virtual organization that Mowshowitz introduced to the academia for the first time in 1986. However, the academic world (Franke, 2001) paid little attention to this new organizational network approach. Only since Davidow and Malone's book in 1992 and Byrne's article in 1993 were published about virtual corporations, they became interested in this topic. From that time on, many authors have created a variety of different terms and definitions to describe this new form of network organization and its

underlying organizational concept, such as virtual factory, virtual corporation and virtual enterprise.

But such definitions have caused some confusion about the concept of virtual contexts, because of the different interpretations (Franke, 2001) of the term 'Virtual'. The fundamental idea of these definitions is a partnership that is created when it is needed, by using information technology. In fact, the establishment of cooperation agreements between enterprises (Comarinha-Matos and Afsarmanesh, 1999) is not a new phenomenon, rather belonging to the very nature of the business world. The use of information and communication technologies to support agile cooperation brings this approach to a new level of effectiveness.

Based on case studies, it is understood that most of traditional organizations (Bauer and köszegi, 2003) exhibit some of the characteristics of virtualness. In other words, the binary classification of organizations to virtual and non-virtual should be

replaced by the gradual virtualization, which specifies organizations according to their adoption of virtual characteristics on a continuum. The amount of the adoption indicates the degree of virtual characteristics belonging to a firm.

Consequently, an important question might be emerged: "how the degree of virtual characteristics can be measured?" To evaluate the degree of virtualization of companies, there are some models that can be divided into two main groups.

The first group includes evolutionary-path models to explain different stages of development from a non-virtual to a virtual organization. Every scholar who uses this kind of model, proposes different stages for evolution of gradual virtualness. For example, Arnold, Faisst et al. in 1995 (Bauer & köszegi, 2003) proposed five evolutionary stages of development from a non-virtual structure (stage0) to a virtual corporation (stage4) in addition Venkatraman and Henderson in 1997 (Bauer & köszegi, 2003) distinguished three stages of virtual organizing. The considerable point of this group is that they can't explain why organizations should follow exactly this path of development.

The second group is concerned with other attempts for measuring the degree of virtualization that use the characteristics of an "ideal" Virtual Corporation (VC) as reference point. For example Sieber and Suter in 1996 (Bauer & köszegi, 2003) used nine characteristics of an ideal VC, and Bauer and köszegi in 2003 proposed eight factors to measure the gradual virtualization. However, these measuring attempts are limited to case-studies and empirically validated cases. We also follow the second approach to measure the degree of virtual characteristics.

In this paper, we applied a modified version of measuring the degree of virtual characteristics, which Bauer and Köszegi proposed, in Iranian petrochemical industry. We modified it from three aspects; the first modifications are in virtual characteristics view, the second changes in items of measuring instrument and the last one in calculating the degree of virtual characteristics and its underlying concepts.

The reminder of this paper is arranged as follows. Section 2 discusses some definitions of virtual concepts and their relationships as a background to provide some criteria for assessment of the degree of virtualization. Section 3 introduces the extracted characteristics of an ideal virtual enterprise, on the base of its definitions. Section 4 is allocated to discuss assessment of degree of

virtualization. Finally, section 5 concludes this paper and gives some directions for further research.

2 BASIC CONCEPTS

As in any other scientific branch, virtual organizations require some standard definitions to develop methods and tools for better evaluating of its performance. However, there are not yet standard definitions of virtual concepts; we select some of them to extract not only their relationship but also their common characteristics of virtualness.

Virtual Enterprise(VE) (Comarinha-Matos and Afsarmanesh, 1999) is a temporary alliance of enterprises that come together to share skills or core competencies and resources in order to better respond to business opportunities, and whose cooperation is supported by computer networks. The other concept that is very similar to virtual enterprise is Virtual Corporation.

Virtual Corporation (VC) (Byrne, 1993) is a temporary network of independent companies—suppliers, customers, and even rivals—linked by information technology to share skills, costs, and access to one another's markets. This corporate model is fluid and flexible—a group of collaborators that quickly unite to exploit a specific opportunity. Once the market opportunity is met, the virtual corporation will usually disband.

Virtual Organization (VO) (Comarinha-Matos and Afsarmanesh, 2004) has a concept similar to a virtual enterprise, comprising a set of (legally) independent organizations that share resources and skills to achieve its mission / goal, but not only limited to an alliance for profit enterprises. Hence, a virtual enterprise is a particular case of virtual organization with economic goals.

All of these definitions indicate that to form a VE/VO it is needed to establish a cooperation. As well as, to reply market opportunities fast, the members of this cooperation must be chosen from a club like VBE. Virtual Breeding Environment (VBE) (Comarinha-Matos and Afsarmanesh, 2004) represents an association or pool of organizations and their related supporting institutions that have both potential and the will to cooperate with each other through the establishment of a "base" long-term cooperation agreement. When a business opportunity is defined by one member, who acts as a broker or virtual management, a subset of these organizations can be selected. But, on the base of what conditions the members are selected or the effectiveness of an established VE can be evaluated.

To answer these questions, we want to develop some criteria to measure the degree of virtual characteristics as companies' readiness to participate in virtual cooperation. Hence, the next section is allocated to discuss extracted characteristics of an ideal VE/VC, on the base of their definitions.

3 CHARACTERISTICS OF AN IDEAL VE

In the following, we discuss the characteristics of an ideal VE from three aspects:

3.1 Intra-organizational Aspect

It refers to the intra-organizational strategies which are performed in an ideal VE.

- **Focused on core competence.** On the base of VE/VC definitions, each enterprise as a partner of VE has to focus on core competencies. Core competence (Hamel and Prahalad, 1990) is referred to an area of specialized expertise that is the result of harmonizing complex streams of technology and work activity. According to this definition, the company which has the strategy of focused on core competences can exploit from some benefits, like providing potential access to a wide variety of markets, increasing customer benefits and hard for competitors to imitate.
- **Customer-based.** It (Larson and McInerney, 2002) refers to the ability to customize the product or service to the customer.

3.2 Inter-organizational Aspect

This aspect is allocated to specify the characteristics of an ideal virtual enterprise's inter-organizational communications. In other words, the communications of the companies in an ideal VE have special characteristics that we identify them as follows.

- **Independence of cooperation partners** It is directly resulted from VE/VC (Byrne, 1993; Comarinha-Matos and Afsarmanesh, 1999) definitions.
- **Temporary structure** Virtual enterprises (Franke, 2001) are as a response to market opportunities. When such opportunities arise, virtual enterprises are emerged to exploit them and after that will be disband.

- **Fast contract** To reply market opportunities fast, it is necessary to contract general agreements and orally agree on details.
- **Trust** between the cooperating partners (Bauer & köszegi, 2003) has a fundamental impact on the success of virtual organizations. It is a mechanism to coordinate networks and plays an important role in virtual enterprises. For instance, without having trust, it is impossible to contract general agreements without written details. In trust-based systems, behaviour is guided by shared norms and values and control of output is replaced by self-control.
- **Observe other partners' rights** causes to provide an honesty atmosphere in VE and this leads to make trust.

3.3 Information and Communication Technology

Information and communication technology (ICT) (Byrne, 1993; Comarinha-Matos and Afsarmanesh, 1999; Bosch-Sijtsem, 2002) plays central role in a VE. The distributed nature of VE/VC (Bauer & köszegi, 2003) requires integration both on a social and on a technical level. ICT is also required to guarantee the efficient coordination of activities in a VE.

4 ASSESSMENT OF VIRTUAL CHARACTERISTICS

As mentioned before, we measure the degree of virtualization by using the characteristics of an ideal VE as a reference point and comparing each company with that point. Hence, on the basis of VE characteristics – as described in the previous section – we design a questionnaire (as shown in appendix 1) which will be used to assess virtual characteristics of corporations. The questionnaire includes 39 items which are measured on a 5-point Likert scale. The scale ranged from 0 "never" to 4 "always". This questionnaire has been used to assess the corporations' virtual characteristics in a case study which will be described in the next section.

4.1 Case Study

To measure the degree of virtualization, petrochemical industry is selected as a typical

industry of the country. The important reasons of this selection can be identified as follows.

- The pioneered industry of the country for the sake of existing oil and gas resources as the main core competence.
- The considerable number of petrochemical corporations in the country.
- The similarity between definitions of VE and what happens in petrochemical corporations.

It is considerable that each petrochemical corporation produces various products by using natural gas. In addition, they cooperate with companies from the whole of the world to provide initial resources, catalysts, facilities, etc. Hence, it is assumed that this industry exhibits a higher degree of virtual characteristics than other industries in the country.

Then, the managers of the active petrochemical corporations of the country, which included 20 centres, were interviewed to respond the questionnaire. Consequently, the necessary information of corporations as questionnaires was gathered.

We use factor analysis not only to analyze the initial allocation of items to the dimensions that Bauer and köszegi mentioned in 2003, but also to assess the degree of virtual characteristics of corporations. With regard to the importance of using this method, we explain it in the next subsection.

4.2 Factor Analysis as a measurement method

Factor analysis is a branch of statistical science that is generally ascribed to Charles Spearman in 1904. This method (Harman, 1962) came into being specifically to provide mathematical models for the explanation of psychological theories of human ability and behaviour. In general, factor analysis (Kline, 1994) consists of a number of statistical techniques the aim of which is to simplify complex sets of data which are called factors. In other words, the object of factor analysis is to represent a variable z_j in terms of several underlying factor, or hypothetical constructs. Two general types of factors (Harman, 1962) were distinguished, common factors which involved in more than one set of variables and unique factor that involved in a single variable set.

The mathematical model for describing a variable z_j for a particular individual i ($i = 1, 2, \dots, n$) in terms of m common factors $F_{1i}, F_{2i}, \dots, F_{mi}$ and unique factors U_{ji} might be written as follows.

$$Z_{ji} = a_{j1}F_{1i} + a_{j2}F_{2i} + \dots + a_{jm}F_{mi} + a_jU_{ji}$$

The basic problem of factor analysis is to determine the coefficients, a_{j1}, \dots, a_{jm} of the common factors, which are called factor loadings. In order to perform this determination, we use principal component extraction method.

The next step is to interpret the determined factor loadings. Since, factor loadings are the correlations of the variables with the factor, the interpretation of variables- which are the items of our questionnaire- with several large factor loadings are difficult. To solve this problem, we use varimax rotation method.

As mentioned above, each factor loading is a correlation which runs from -1 to +1 and these variations between coefficient factors indicate the different importance of variables in factors. Hence, factor scores can not be measured by aggregating into one final index.

If it can be assumed that the items of the questionnaire are ideally complete and all of the characteristics of virtual enterprise are included, i.e. there are not any unique factors in factor analysis model ($Z = AF$), factor scores (Harman, 1962; Gorsuch, 1974) can be directly measured as follows.

$$F = (A'A)^{-1} A'Z$$

Where A is the matrix of coefficient factors and Z is the matrix of the standard variables. Although, this solution is in terms of ideal variables, we estimated factor scores- which indicate the amount of virtual characteristics- by using regression method with the help of SPSS (Statistical Package for Social Science) software.

4.3 Results

We used factor analysis to analyze our questionnaire from three aspects of virtual characteristics, as follows:

Intra-organizational aspect In factor analysis of the items of intra-organizational aspect, we extracted three factors with the explanation of 72% of the total variance as follows:

- Speciality (S) is the first factor that includes items 16 and 17 from the questionnaire of appendix 1.
- Customer-Based (CB) is the second factor which consists of items 18, 19 and 14.
- Focus on Core Competence (FCC) is the last one which includes items 15 and 13.

Inter-organizational aspect The next factor analysis is to analyze the items of inter-organizational aspect. Five factors were extracted with the explanation of 60% of the total variance which we named as follows:

Table 1: the degree of virtual characteristics

Firm	S	CB	FCC	OPR	ACC	TCE	TIP	UP	IS	II
1	76.44%	67.91%	67.76%	93.44%	64.89%	52.65%	67.90%	72.69%	71.75%	38.77%
2	86.28%	42.71%	23.40%	95.13%	52.45%	60.24%	61.21%	68.75%	87.33%	47.26%
3	81.41%	05.93%	83.39%	86.52%	53.63%	59.84%	80.87%	62.44%	43.11%	60.61%
4	83.11%	60.00%	56.74%	86.75%	62.34%	36.06%	47.26%	52.78%	87.88%	27.84%
5	76.48%	70.23%	66.07%	89.92%	59.51%	52.41%	44.82%	50.18%	47.40%	25.78%
6	81.09%	36.76%	48.37%	90.53%	37.12%	53.28%	60.71%	82.64%	60.17%	28.41%
7	65.67%	57.55%	23.13%	92.36%	37.67%	48.36%	58.44%	54.35%	73.93%	56.46%
8	45.37%	60.58%	54.63%	81.40%	59.85%	51.29%	59.90%	75.15%	28.80%	52.18%
9	54.58%	32.13%	46.79%	68.05%	42.69%	78.91%	58.78%	63.39%	60.27%	69.67%
10	56.89%	45.43%	30.21%	90.27%	30.24%	63.06%	42.89%	72.88%	75.48%	50.02%
11	43.70%	65.67%	50.66%	71.46%	56.57%	50.47%	55.31%	45.93%	69.78%	48.97%
12	37.85%	54.71%	53.61%	80.38%	56.23%	60.92%	61.97%	46.51%	55.42%	34.15%
13	59.97%	62.40%	59.31%	73.25%	43.61%	54.91%	40.72%	31.64%	76.03%	26.49%
14	58.25%	35.01%	67.86%	69.26%	43.74%	49.46%	47.57%	58.39%	51.45%	62.82%
15	65.03%	38.98%	41.51%	92.64%	28.27%	46.94%	58.84%	68.27%	55.67%	16.64%
16	59.50%	44.90%	38.37%	80.13%	53.09%	41.91%	54.72%	25.98%	56.79%	58.11%
17	61.53%	29.59%	19.19%	86.58%	33.60%	48.83%	62.74%	20.17%	70.45%	64.47%
18	46.78%	36.64%	31.16%	79.53%	36.78%	51.80%	68.63%	33.75%	58.91%	35.83%
19	39.33%	40.78%	57.79%	84.13%	32.78%	39.79%	61.84%	33.34%	40.98%	25.42%
20	25.51%	32.98%	62.71%	65.42%	41.05%	34.26%	71.68%	38.55%	47.67%	32.65%

- Observe other Partner's Rights (OPR) which consists of items 34, 35, 36, 37, 38, 39, 29 and 26 of the questionnaire.
- Agile Cooperation Contracts (ACC) which includes items 28, 27, 23, 22 and 32 of the questionnaire.
- Temprary Cooperation Experience (TCE) which includes items 24, 25 and 30 of the questionnaire.
- Trust in Independent Partners (TIP) which consists of items 31, 33, 20 and 21 of the questionnaire which have been shown in appendix 1.

ICT aspect To analyze the items of this aspect, we extracted three factors, with the explanation of 62% of the total variance, as follows:

- Updating Technology (UP) which includes items 1, 2, 6 and 11 of the questionnaire.
- Information System (IS) that includes items 3, 7, 8 and 9 of the questionnaire.
- Internet and Intranet (II) which includes items 5, 10, 12 and 4 of the questionnaire.

Estimated factor scores, in order to compare them with the reference point- as mentioned before- we calculated the result of an ideal VE in terms of factor score coefficient matrix. Consequently, factor scores which are indicated the degree of virtual characteristics of our case study companies as it has been shown in table 1.

As it can be seen from the results, in general, the corporations which have higher degree in three

factors of ICT aspects also have considerable degree in other virtual characteristics. With regards to their characteristics, the management of these corporations are flexible and most of them are smaller than other corporations of our case study.

A detailed analysis of the estimated factors delivers some considerable insights. In figure 1, we listed average degrees of virtual characteristics. As it can be seen, which was also resulted in Bauer and Köszegi findings, there is a dominantly high level of OPR (Observe other partner's rights) factor (82.86%) among the corporations of our case study that is in general an important lubricant for economic transactions.

In spite of the importance of Information and communication technology (ICT), the Internet-Intranet factor has the minimum average (43.13%) of aforementioned industry and this in turn necessitates a further degree of attention. Also, in this industry, regarding the two factors ACC and CB a noticeable flaw is observable. This implies a reconsideration of the strategies taken so far.

5 CONCLUSION AND FURTHER WORK

In this paper, we introduced the characteristics of an ideal virtual enterprise on the base of some considerable definitions. Then, with regards to the characteristics of an ideal virtual enterprise as a

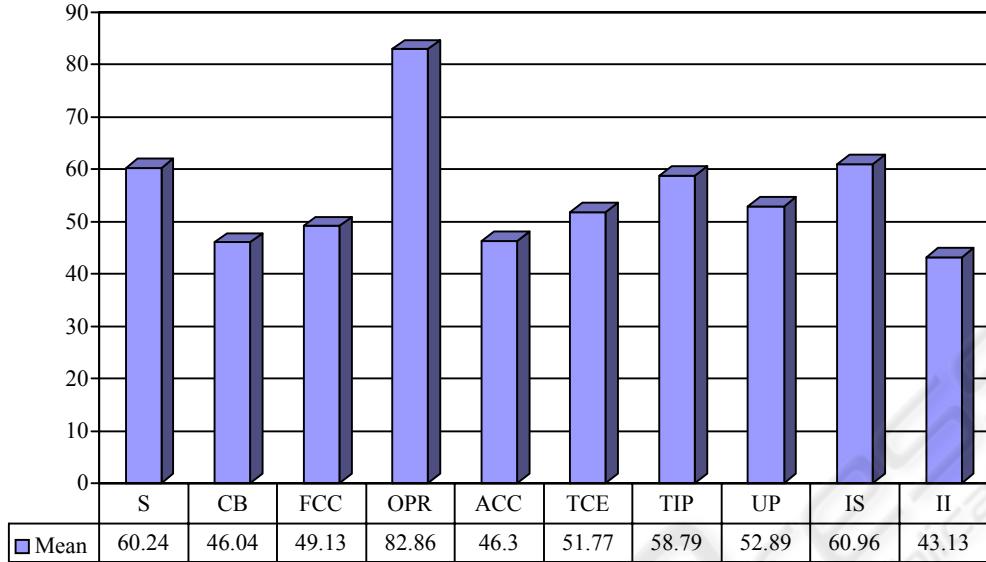


Figure 1: the average of virtual characteristics

reference point, we measured virtual characteristics of our case study. To do this, a questionnaire as a criterion to analyze virtualness was developed. After that we used factor analysis as a measurement method to estimate degree of virtual characteristics. The considerable point in measuring factor scores is different importance of variables which have different factor loadings. Hence, factor scores or degrees of virtual characteristics are not the aggregation of items which are categorized in factors. Moreover, since some factors have correlation to each other, it can't be averaged as an overall degree and we can compare each characteristic separately.

On the basis of our case study, the characteristics of intra-organizational aspect are categorized in three factors, speciality, customer-based and focus on core competence. Also, the characteristics of inter-organizational aspect are divided to four factors; observe other partners' rights, agile cooperation contracts, temporary cooperation experience and trust in independent partners. The items of information and communication technology are categorized in three factors, updating technology, information system and Internet-Intranet.

Moreover, on the base of our case study, the degrees of virtual characteristics of corporations that have flexible management are higher than others. So, we suggest the flexible management as a principal characteristic of virtual enterprise.

As mentioned previously, to measure more precisely the degrees of virtual characteristics, further research is needed in the characteristics of an ideal virtual enterprise. In addition, identifying the order of priorities between virtual characteristics is another issue which can be used to determine the overall degree of virtual characteristic.

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Appendix 1

Information and Communication Technology

	<input type="checkbox"/> never <input type="checkbox"/> <avg <input type="checkbox"/> avg <input type="checkbox"/> >avg
1- If technological changes of ICT occur, our company has enough readiness to update its personnel	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2- If technological changes of ICT occur, our personnel cope themselves with changes	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3- There is an active computer section in our company	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4- There is an intranet between our company and other cooperation partners	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5- We communicate with other companies by means of Internet	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6- We use an official automation package in our company	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
7- There is an active electronic filling system in our company	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8- Our company's data keep in a database	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
9- In our company, we use electronic communication standards for cooperation with other companies	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
10- In our company, buying and selling are done by Internet	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
11- Our company's customer can use selling service electronically	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
12- In our company, the rate of Internet is acceptable	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Intra-organizational aspect	
13- The core competence of our company differentiates us from our cooperation companies	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
14- It is hard for our competitors to imitate our strengths	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
15- Our company is only active in its field of core competence	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
16- Internal units of our company sell their strengths on the external market	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
17- It is important to concentrate on our own strengths	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
18- The products of our company are designed on the base of customer needs	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
19- The customers can influence the composition of the cooperation partners	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Inter-organizational aspect	
20- Our cooperation partners can produce and sell their products without us	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
21- Our cooperation partners are legally independent from us	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
22- The cessation of one partner directly affected other partners	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
23- The cooperation with other partners is disband after task is done and probably it is used the other partners	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
24- It is possible for us to select from several companies as our cooperation partner	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
25- A central coordination unit exists, which coordinates the work within the cooperation	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
26- Our company has some experience about cooperating with other companies	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
27- We only finalize general agreements and orally agree on the details	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
28- We have verbal agreements with our cooperation partners	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
29- We finalize only detailed contracts	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
30- We trust our colleagues to keep up our agreements	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
31- Our company tries to improve sense of trust and cooperation among cooperation partners	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
32- There are trust and accuracy between our personnel	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
33- In our company, we control the quality of imported products	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
34- In our company's communications, a breach of trust is being sanctioned	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
35- We keep up to verbal agreements, even if it brings us an economic disadvantage	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
36- Our company observes all the related rules	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
37- We keep up to written agreements, even if it brings us an economic disadvantage	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
38- We keep up to common market rules	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
39- We keep up to the other partners' rights	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Error! Bookmark not defined. Items 14, 16, 17, 19, 21, 22, 25, 27, 29, 34, 35 and 37 are taken from Bauer (2003). All other items have been developed for this questionnaire.

Error! Bookmark not defined. Items 22 and 29 are reversed items.