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Trust Building Mechanisms for Electronic Business Networks and Their Relation to eSkills

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***Abstract*—**Globalization, supported by information and communication technologies, changes the rules of competitiveness and increases the significance of information, knowledge and network cooperation. In line with this trend, the need for efficient trust-building tools has emerged. The absence of trust building mechanisms and strategies was identified within several studies. Through trust development, participation on e-business network and usage of network services will increase and provide to SMEs new economic benefits. This work is focused on effective trust building strategies development for electronic business network platforms. Based on trust building mechanism identification, the questionnaire-based analysis of its significance and minimum level of requirements was conducted. In the paper, we are confirming the trust dependency on e-Skills which play crucial role in higher level of trust into the more sophisticated and complex trust building ICT solutions.

***Keywords*—**Correlation analysis, decision trees, e-marketplace, trust building

I. Introduction

THE characteristics of the e-Commerce transactions are different from those in the traditional world of business. Personal face-to-face negotiation, exchange of information, obtaining references and reputations from customers and partners helps in physical business the transacting companies to use some instincts to build relative trustworthiness of the parties. Together, some legislative framework exists to help in developing an agreeable level of risk as regulatory aspect. The online business environment, where physical contact doesn't exist, is characterized by increasing number of potential unknown business partners. The barrier in technology acceptance is still significant and many old habits and online specifics decrease the possibilities for e-trust building [1].

In electronic commerce, and in networked business informatics generally, trust and security has received significant attention, as it is related to growth in this area of business [2][3]. The Commission of the European Communities noted that, in order to win consumers as well as businesses over to e-commerce, it is necessary to build trust and confidence. In concrete terms, consumers and businesses must feel confident that their transactions will not be intercepted or modified, that both sellers and buyers own the identity they claim, and that the transaction mechanisms are available, secure and legal [4][5]. For example, for digital ecosystem, initiative activated by the Directorate General Information Society and Media of the European Commission, the trust is most crucial factor for achieving self-regulation functionality of the environment [6].

There is a growing body of research literature dealing with trust. The issue of trust within supply chain relationship was received considerable attention in the academic literature [7][8] as well as in the popular press [9]-[13] years ago. Trust has been hypothesized to be a valuable economic asset because it has been described as an important antecedent to effective inter-organizational collaboration [6][14][15]. In several studies, trust is considered to be the factor that reduces transaction costs and allows to respond to changing market conditions in more flexible way [6][8][16][17]. Together, it leads to superior information sharing routines which improve coordination and joint efforts to minimize inefficiencies [18]-[20], and facilitate investments in transaction or relation-specific assets' which enhance productivity [21]-[23]. Some studies even claim that national economic efficiency is highly correlated with the existence of a high trust institutional environment [13][24][25][26]. For example, Fukuyama [13] argues that the economic success of a nation depends on the level of trust inherent in the society.

Several studies contend that e-commerce cannot fulfill its potential without trust [27]-[29]. Lee and Turban [30] highlight lack of trust as the most commonly cited reason in market surveys why consumers do not shop online. The reason for this is that online sellers are not well known to the consumers, the consumer has no opportunity to physically examine the product before buying, and the consumer cannot protect any sensitive private or financial information that the seller receives. In research on e-commerce, trust is regarded as a mental short-cut to a buying decision, where the buyer is faced with the uncertainties of product quality and vendor reputation together with appropriate fund transfer [30].

II. Trust and Trust Building Research

Trust is a complex notion. Current literature on trust tends to be theoretically fragmented and the definitions show a great degree of disparity (e.g.[32][33]). In the field of B2B relations many studies do not even define trust and those that do refer

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[32][34] the trust was defined as confidence in the other party's reliability and integrity [35]. The trust is perceived firstly, as a belief, sentiment or expectation about the trustworthiness of an exchange partner, and secondly, as an intention or behavior reflecting vulnerability and uncertainty on behalf of the party who trusts, here referred to as the 'trustor' [35]. It means "a willingness to rely on an exchange partner in whom one has confidence". On the other hand, Ganesan defined trust as consisting mainly of credibility and benevolence [37]. Credibility refers to the vendor's expertise to do the job effectively and reliably. Benevolence is the vendor's intentions and motives to be beneficial to the buyer in a new situation for which there is no previous commitment [36].

When defining trust for e-commerce, the nature of the trustee is crucial. Several researchers have disputed whether trustors and trustees always must be human or if they may be artificial as well, such as computer software or some kind of information system. Some of them, for example Friedman, provide an opinion that only human can build trust [38]. It seems that some studies confirm this idea and show still low confidence in technology. On the other hand, they also see big perspectives in technology solutions providing trusted services [39].

According to the level of trust in an electronic environment, the positive outcomes of trust emerged [40]. In a B2C e-commerce setting, such a positive outcome is the act of paying online [41][42][43], or the sharing of personal information and acting on the advice of web vendors [33].

In the field of electronic markets, some studies show empirical evidence of outcomes such as increased satisfaction with the exchange relationship, reduced uncertainty about products and transaction partners, an expectation of future transactions [44] and other evidence as described in next section. Although, Stahl through his critical view argues that we cannot trust to academic positive research in this field [45].

Trust is usually conceptualized as a cumulative process that builds on several, successful interactions [35]. Each type of process increases the perceived trustworthiness of the trustee, raising the trustor's level of trust in the trustee [40]. It is not known exactly what trust-building processes are relevant in an ecommerce context. It is suggested that, in this setting, trust-building is based on the processes of prediction, attribution, bonding, reputation and identification [40]. Reputation has a very high relevance in a trust-building process on e-commerce markets (e.g. [46]). According to the Chopra and Wallace classification, identification based trust refers to one party identifying with the other, for example in terms of shared ethical values [34]. Identification builds trust when the parties share common goals, values or identities. In e-commerce, these attributes perhaps may relate to corporate image [40] or codes of conduct.

There is also a lack of empirical knowledge about how trust in the e-marketplace impacts buyer-seller trust [44][47]. As an example, the role and importance of institutional arrangements that B2B e-marketplaces offer in order to build buyer-seller trust and increase liquidity is not known [47]. Although, some investigations [36][48] conducted later, show several evidences of trust impact. It can be summarized as follows:

- trust has a significant positive direct impact on buyer–supplier cooperation,
- trust has a significant positive effect on relationship commitment,
- supplier relationship policies and practices show a significant positive direct effect on trust,
- there is a significant negative direct impact of opportunistic behavior on trust,
- there is a significant direct effect of communication and information exchange on trust,
- perceived e-marketplace reputation is positively correlated to trust in the e-marketplace,
- trust in the seller/buyer is positively correlated to intention to buy/sell,
- buyer's/seller's trust in the e-marketplace is negatively correlated to perceived risk,
- trust in the e-marketplace is positively correlated to commitment to the e-marketplace,
- trust in e-marketplace is positively correlated to satisfaction with sellers/buyers in the e-marketplace,
- trust in the seller/buyer is positively correlated to satisfaction with sellers/buyers in the e-marketplace (The relationship between trust in the seller/buyer and satisfaction with sellers/buyers is weakly to moderately strong (R=0,40) but statistically non-significant (p = 0,16). This result contradicts that of Pavlou [44],
- results of the positive correlation of perceived monitoring and feedback to trust in the buyer/seller are contrary, by [36] were not statistically significant in contradiction to [44]. But it was explained by no practical experiences of respondents.

On an open consultation on "Trust barriers for B2B e-marketplaces" [49] conducted by the Enterprise DG Expert Group in 2002, but also in other studies, it was identified [1][2] [3][50] that the most important trust barriers are issues regarding the technology (security and protection), trust marks and dispute resolution absence, online payments support, lack of relevant information about partners, products, contract and standardization issues. A trust building process must be set up to resolve these issues. Results in this field were focused more on trust impact than on factors that build trust. The research on significance and acceptance of trust building mechanisms (TBM) absences and is necessary for future development in this field.

If we take into account mentioned approaches to trust definition but also the character of electronic business networks with added services possibly provided by external service providers integrated into the platform, we can develop our definition. It will better represent our research and

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practical problems in this field:

"*Trust is objective and subjective quantifiable confidence of trustor in some level of competence, truth, security and reliability of other subject or in third party in the specific context built on the base of historical activities and functionalities of environment.* "

This definition contains not only interaction between business partners but also functionalities of environment, where these interactions are created and together, ability of the environment to manage and maintain these interactions. Managing and maintaining of interactions related to an ability of solving trust disruption and restoring its status.

III. Trust Building Mechanisms

As we saw in the section above, trust is most important for supporting cooperation and commitment. For providing trust as a driving factor for increasing participation of companies in electronic business networks, trust building (TB) mechanisms must be identified. Identified trust building mechanisms varied according to their complexity and acceptability, especially among low e-skilled companies. Appropriate selection and user friendly implementation can enhance trust and liquidity on the electronic marketplace.

In our research [1] conducted within national project APVV (APVV) [51] and DEN4DEK [52] we focused on trusted operational scenarios for electronic business networks proposal. We have conducted broad survey in Slovakia supported by control sample of EU companies. In this paper, we will focus on more sophisticated trust building mechanisms identification and esp. on analysis of relation between eSkills of user companies conducting business in electronic business networks and identified trust building mechanisms. The purpose of this analysis is the proposal of most suitable and efficient implementation strategy for e-market makers. We would like to contribute to strategy development for improving participation of companies into electronic business networks as, according to several studies conducted within eBusiness w@tch [53], the percentage of companies using services on e-marketplaces is still very small.

Through increased trust, increased usage of network solutions by companies and higher financial effectiveness and competitiveness can be achieved. From several researches and reports conducted in past years [54]-[62], we have identified the set of mechanisms needed for trust, which we need to analyze with regard to the level of significance to trust building, especially for B2B e-marketplaces.

One of the most mentioned preconditions to trust is improving identification of potential business partners, what can be called credibility assessment, where a range of information must be verified by (third) trusted subject. For this purpose, several trust marks have emerged on the Internet, which has to prove fulfillment of agreed necessary information. To enhance trust and basic trust marks, the several elements for improving confidence in e-business were identified [1], e.g.:

- *reputation building* – to build credibility through ratings, feedbacks, discussion forums;
- *information quality*, where it must be ensured that information is correct, valid, up-to-date and potentially validate by third trusted party;
- *certificates and references* to provide quality labels and information about past activities – partners or business information;
- *online dispute resolution support* – is a branch of dispute resolution which uses information and communication technology to replace the traditional out of court processes to facilitate the resolution of disputes between parties. It primarily involves negotiation, mediation or arbitration, or a combination of all three supported by intelligent software solutions e.g. for automatic negotiation of penalties etc.;
- *standardization activities* – for ensuring standard, ethic and fair processes and behavior through code of conduct, interoperability in the exchange of business documents with multilingual support based on ontologies etc.
- *contract execution support* – support to create a legally enforceable agreement in which two or more parties commit to certain obligations in return for certain rights [63]. Efficient support of contract execution support can be achieved for example through contract clauses databases integration with data flow support.
- *escrow services* – which reduce the potential risk of fraud (for example the breach of contract) by acting as a trusted third party that collects, holds and disburses funds according to buyer and seller instructions.

In this paper we will focus on more complex or sophisticated services for companies which were decomposed into simplified examples of implementation strategy for e-market makers:

Contract execution support can be supported in the network e-business platform in several ways. By providing one or more of following services "Integration data from negotiation into contract proposal form", "Basic contract clauses", "Outsourced comprehensive database provided by specialized company" and "Explaining contract clauses and conditions".

"*Integration data from negotiation into contract proposal form*" has to provide the correct use of negotiated data in orders and invoices to avoid mistakes or changes in official business documents.

"*Basic contract clauses and templates*" is a database of most frequently used contract clauses. This information should be integrated into network platform in two ways: integration into the contract proposal with particular level of automation (sentences with fields automatically filled from

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negotiation documents or company profile) or a simple database of templates. It should also support creation and storage of its own template, which can be used next time by another similar transaction.

"*Outsourced comprehensive database* provided by specialized company" provides databases from a specialized outsourced company which can include several thousands clauses and templates. In this case, it could be difficult to implement automation of the updating clauses by negotiated data if the company is not able to provide it.

"*Explaining contract clauses and conditions*" should be implemented in the case of providing basic clauses. It supports higher awareness and understanding of used clauses in a contract and helps to avoid some misunderstandings.

As basic contract clauses, together with a contract clause explanation are most necessary among our respondents (35-37% of all and 50% of e-skilled EU companies and around 25% of Slovak companies) and very important for trust (38-40% of all 53.57% of e-skilled EU and SK company) it would be useful to implement such a service into the network platform.

For effective and mistake free contract preparation, the *integration of negotiation outcomes into the contract proposal* has to be implemented. In this case, the templates have to have rules for dataflow which will allow the automatic copying of data from the negotiation document into contract fields.

Regarding *tracking and recording functionality*, the survey showed a low necessity and lower level of trust. Tracking functionality requires complex automation and integration of business processes with higher implementation effort but this functionality in a contract and negotiation phase can support very effectively ODR processes if necessary and can provide the possibility of saving frequent contract templates.

Online dispute resolution is generally recommended for the best future practice of e-marketplaces. For the network platform we have identified following possibilities/ functionalities:

ODR advisory support is a minimal service to support dispute resolution. Providing a simple list of experts can save time and leave self-selection to the company. It is necessary to provide advice on how to start an ODR process or what are the key success factors in the process.

Technical support is a standard support provided on electronic platforms, which has to solve technical problems and minimize inconveniences when conducting business transactions. Fast and efficient response on identified problems can increase trust in the platform and improve customer's loyalty.

Limited ODR is a model, when only the minimum of the ODR services are provided. When more complex problems emerge, external partners are usually offered. Limited solutions are usually free of additional charge or for a very small fee. In many cases, it can bring efficient and fast problem solving esp. in relation to monitoring and recording of business communication on the platform. One of the main basic limited services is mediation, which should be supported by an efficient source of evidence. In the case of unsuccessful mediation, partners will choose whether to use a specialized external ODR provider or a traditional court.

Outsourced specialized ODR service, as a strategic alliance can be carried out in two ways: 1) The agreed ODR partner can be integrated and has the option of checking all evidence from the platform with communication directly with the platform. 2) The ODR provider will offer services outside the platform although with evidence support.

The willingness to participate in ODR should be clearly stated in "Company Profile" and in each contract.

In the field of ***escrow service***, we have identified the following possibilities of implementation:

An *Internal Escrow Service*, which is provided internally on the electronic platform. The internal provider will receive money from the buyer in the bank account in a selected bank. After the product delivery, according to the agreed conditions (check in the shipping company), money will be transferred to the bank account of the seller. All processes can be electronically and integrated into network platform processes. To keep the service simple, checking condition for internal ES should be focused only on the condition of payment and delivery. Breach of other contract conditions will be solved by the ODR service.

The bank as a financial institution, which was the most accepted model in our survey. The bank offers products for their clients like documentary credits to ensure payment against agreed documents. The service guarantees the payment against terms/times of delivery. Banks don't guarantee quality of products or quantities. In this case, breach of other conditions is resolved by the ODR service. According to some surveys (e.g. [64]), banks have an interest in integrating services with the business community. In this case it would be an ideal solution of integrated strategic banking alliance.

Specialized external ES company, with experience in this field, can offer a very professional ES service with integration of ES solution into the electronic marketplace platform. Specialized companies as ES providers (ESP) can also provide control of some additional contract conditions such as quantities, quality etc. However, such a service may be more expensive.

The differences between mentioned models can be in fees and the range of provided services, and efficiency is dependant upon the selection of an appropriate ES provider.

In the "Company profile", it would be useful to implement information about the willingness to participate in ES and number/percentage of successfully conducted ES transactions.

Efficient Escrow services are complex services, where integration or at least agreement with shipping companies is needed, especially for tracking relevant information in real time. ES can be integrated with ODR to enhance trust in the after-contractual phase.

As *standardization* is one of the most important requirements by professionals in the field of e-marketplace processes, we have examined which possibility from socio-

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economic aspect will help the issue of standardization in addition to the already mentioned mechanisms (for example contract platform and especially clauses also supporting standardization, etc.). "Code of conduct" and "ontology/ multilingual support" were identified as the main issues.

"*Code of conduct*" A very important document from service agreement field regarding requested and ineligible practices on the platform and guidelines as to what to do in such cases.

Ontology can support standardization *and multilingual issues* in the field of product categories, product attributes, business documents, contract clauses, etc. According to survey results, both services are really necessary and if they are to be developed professionally, it will be a significant element for increasing trust in the network platform.

IV. Research

A. Research Methodology

To identify suitable trust building mechanisms and strategies regarding implementation into electronic business network platforms, a questionnaire survey was carried out. The purpose of the analysis was to identify the most suitable sets of trust mechanisms for a business network platforms, to identify a minimum set of trust mechanisms needed to implement in initial phase, to identify future shifts in trust perception, acceptance and requirements according to e-experiences and generally to identify the most frequented patterns regarding the trust model.

For the purpose of this paper, size and eSkills of companies was selected as the factor for results segmentation. As we would like to identify relations between particular trust building mechanism and practical level of added trust into the environment and collaboration possibilities practical question raised:

1. How significant is the level of added trust according to a particular trust element or trust building mechanism?
2. Which trust building mechanisms are necessary for joining an e-market?
5. What differences are there between different sizes of companies and other relevant factors regarding trust perception and acceptance?

Research in this paper was conducted with data gathered from Slovak business environment (sample of 447 companies) and it was based on our past similar research conducted within Seamless ICT STREP FP7 project focused on 6 EU countries (5 NMS and 1 western EU country – together 150 companies). The questionnaires and interviews were realized with purchasing and selling managers. In order to achieve a greater understanding of the questions, in every block of related questions, the description of related issues was added. The questionnaire is accessible from [4].

The population of respondents in this national research is given in Table I.

TABLE I
Population of Research Sample

Size of company:	Experience of company in electronic commerce:	Count
Micro (0-9 employees)	No experience	22
	Low experience	161
	Experience with internal ERP, e-business solutions	45
	Experience with electronic marketplaces	8
Small (10 – 49 employees)	No experience	5
	Low experience	70
	Experience with internal ERP, e-business solutions	27
	Experience with electronic marketplaces	2
Medium (50 – 249 employees)	No experience	3
	Low experience	27
	Experience with internal ERP, e-business solutions	24
	Experience with electronic marketplaces	4
Large (250+ employees)	No experience	2
	Low experience	14
	Experience with internal ERP, e-business solutions	31
	Experience with electronic marketplaces	2

B. Motivation for Hypotheses

Several studies provide evidence that knowledge or eSkills has significant role in technology adoption. As mentioned before, low level of trust was identified as one of the most important barriers in marketplace or network business solutions adoption and usage. Without reducing trust barriers, benefits and competitiveness improvement opportunities raised from usage of network e-business services by companies will delay. It was identified that esp. knowledge barriers delay adoption time and firms whose managers are less knowledgeable about technology are not able to decide predictable to IT adoption what causes later adoption or making not efficient decisions. [3][65]-[69]

Also Furuholt & Ørvik [70] identified that the main reasons for the limited development of IT usage and implementation in disadvantaged regions resulted from the following: lack of top management engagement, knowledge barriers and staff resistance, lack of utilitarian value and other personal incentives, the symbolic value of information technology,

In the field of managerial skills to use and utilize benefits of network business solutions for supply and demand chain management, we assume that eSkills will play significant role also in level of trust into these services. With high level of trust, also incentives to use these solution increase. To identify this relation is crucial for most efficient implementation

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strategy of e-market makers. Many of network platforms not only in Slovakia were not able to survive as they provided complex or difficult solutions which were not trusted and used by companies. To find a portfolio most trusted services and mechanisms and to find a strategy how to adapt provided services to changes of eSkills and it means also to changes in trust preferences will speed up participation of companies, esp. SMEs in electronic business networks.

C. Hypothesis Formulation

In order to identify trust building mechanism, we decided to examine following hypotheses:

H1: There is a relation between eSkills of organizations and their trust into sophisticated ICT solutions.

H2: Organizational trust into sophisticated ICT solutions depends on eSkills of organization.

In order to test hypotheses H1 and H2 we chose 14 ICT solutions. These solutions were divided into two groups based on their level of sophistication (see Table II).

TABLE II
OVERVIEW OF TESTED ICT SOLUTIONS

Less sophisticated ICT solutions
Basic contract clauses and templates
Explaining contract template clauses and conditions
Advisory support - Recommendation of ODR experts to users, what steps should be taken
Technical support - support by solving technical problems
Internal service, where mediator is acting as ESP with appropriate bank account
Bank will be the mediator through documentary credits
More sophisticated ICT solutions
The integration of business negotiation outcomes into the contract
Contract negotiation process tracking and recording (according to requested privacy level)
Database/service with complex contract clauses for the fee provided by specialized company.
Limited ODR – till some (medium) level of complexity
Outsourced ODR service by specialized company (highest level of complexity)
Trusted Third Party – outsourced specialized company will provide the services (highest level of complexity)
Multilingual support with standard terms
"Code of Conduct"

Trust of organizations into ICT solutions was measured by survey. Organizations had to choose whether mentioned solutions have for them: 0 - no significance, 1 – medium significance, 2 - high significance for trust building into e-collaboration and into e-business network environment. It was decided to use only three level responses as it was identified, that managers had often problem to differentiate more detailed levels in Likert scale (1-5). ESkills of the organizations were also measure on scale. Organizations assessed their experience in electronic commerce and decided whether they have: 0 - no experience, 1 - low experience (e.g., using the Internet for searching web pages of companies, e-mail), 2 - experience with internal ERP or e-business solutions (e.g., internal system for e-procurement, electronic catalogues, document online exchange…) or 3 - experience with electronic marketplaces.

As can be seen all selected questions respectively their answers have ordinal character. Therefore to test hypotheses we decided to choose Kendall's tau-c, Somers'd. In addition to the hypotheses, we also use decision tree analysis. Its aim was to show how distribution of eSkills varies based on trust of organizations into particular ICT sophisticated solution.

1. Hypothesis H1

The purpose of the hypothesis 1 was to determine existence of relation between eSkills of organization and their trust into sophisticated ICT solution. Basically we are trying to find out whether level of ICT usage within organization correlate with trust of organization into sophisticated ICT. This hypothesis is based on premise that eSkills of organization influence the trust into sophisticated ICT solutions, as well as trust into sophisticated solutions influence the level of ICT usage within organization. Base on premise, ordinal structure of data and unequal possibilities of answers, Kendall's tau –c was used to examine this hypothesis. It is symmetric PRE measure of association used for ordinal data, which have different number of categories [71]. Its values are from interval <-1; 1>. Analogous to Pearson's correlation coefficient, the relation between variables can be considered as strong if values of coefficients are close to 1 (positive impact) respectively close to -1 (negative impact). The closer are values to 0 from both sides, the relation between variables is weaker [72]. We use this measure to test strength of relation between eSkills within the organizations and trust of organizations into particular ICT solution. In addition to coefficients, we test the null hypothesis: There is no relation between eSkills of organizations and trust of organizations into e.g. basic contract clauses and templates. (Ending of null hypothesis differ base on chosen ICT solution.) Test characteristics can be found in Brown and Benedetti [73]. To be more precise about value of Kendall's tau-c, we also used Bootstrapping (bootstrap sample size 1000) to create 95% confidence intervals of Kendal's tau-c .

2. Hypothesis H2

In addition to hypothesis H1 we decided to create hypothesis H2, which is based on slightly different premise. It assumes that organizational trust into sophisticated ICT solutions depends on eSkills of organizations. Apart from previous hypothesis, here is anticipated only one way relation. For that reason Somers'd was implemented. Somers'd is asymmetrical PRE measure of association, which is used for ordinal data in case the one way dependency is present. Its values are from interval <-1; 1> and they have the same

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explanation as in Kendall's tau-c [71]. Base on premise we decided to use questions measuring trust into sophisticated ICT solutions as depended variable. Question measuring the eSkills of organizations was on the other hand used like independent variable. Also for this hypothesis, the null hypotheses were created. They were formulated in this manner: Organizational trust into e.g. basic contract clauses and templates does not depend on eSkills of organization. (Begging of hypotheses differ based on tested ICT solution.) Their test characteristics can be found in Goodman and Kruskal [74]. Results of test are supported by 95% confidence interval of Somers'd created by bootstrapping.

D.Results

As was mentioned in previous sections, we examine hypotheses by comparing trust of organizations into 14 ICT trust building solutions with eSkills of organizations. Comparisons have three forms and can be found in Table III. Firstly, we create the measures of associations Kendall's tau-c and Somers'd (third column). Based on them we formulate null hypotheses which basically declare no relation (or dependency) between trust of organizations into particular ICT TB solution and their eSkills. Null hypotheses were accepted or reject based on approximated significance (fourth column). It represents approximated minimal level of significance needed to reject null hypothesis. Last step of analysis consisted in creation of the 95% confidence intervals of Kendall's tau-c and Somers'd (fifth and sixth column). These intervals define minimal and maximal strength of relation at level of significance 0.05.

In term of hypothesis H1, the statistically significant relation (at level of significance 0.05) between trust of organizations into ICT solution and their eSkills were observed only for 6 ICT solutions. More sophisticated ICT TB solutions were four of them: outsourced specialized ESP, outsourced ODR services, limited ODR, tracking and recording of contract negotiation process. However none of tested relations achieve the value of Kendall's tau-c higher enough to consider their strength as moderate. Technical support and internal service, where mediator is acting as ESP with appropriate bank account, are the reaming two, less sophisticated, ICT TB solutions. Although the relations between trust in these solutions and eSkills were statistically significant, they are also very weak. Values of their Kendall's tau–c are less than 0.11. For the rest 8 ICT solutions, the null hypothesis of no relation between variable cannot be rejected. Based on confidence intervals we can claim that there is a very weak or no relation between organizational trust into these ICT TB solutions and level of ICT usage within organization. Because conducted tests show none or only weak relations between the trust of organization into sophisticated ICT TB solutions and eSkills of organizations, the hypothesis H1 cannot be confirmed.

Hypothesis H2 was used to test dependency of organizational trust into sophisticated ICT TB solutions on eSkills of organizations. The premise that trust of organization into sophisticated ICT significantly (at level of significance 0.05) depends on eSkills of organizations were confirmed only in 6 cases. These solutions are the same six solutions which were identified in hypothesis H1. On the other hand, apart from Kendall's tau-c value, the values of Somers'd have been substantially higher. For two of tested ICT TB solutions was the value of Somers'd bigger than 0.3 what mean moderate strength of dependency. Those two solutions were: outsourced specialized ESP and outsourced ODR services. Mentioned solutions were also the most sophisticated ICT TB solutions that we tested. Although trust of organizations into other four ICT TB solutions significantly depends on eSkills of organization, the strength of the dependencies are very weak. As well as in hypothesis H1, for rest 8 ICT TB solutions we cannot reject null hypothesis and confirm existence of dependency. On the other hand, according to upper and lower limits of 95% confidence interval we can assume that if dependency even exists, it will be very weak.

In order to find the relation or dependency between trust into sophisticated ICT TB solution and eSkills, we examine trust of organizations into 14 ICT TB solutions. In 8 of these ICT solutions neither relation nor dependency can be confirmed. Most of these solutions are less sophisticated. In rest 6 solutions we observe statistically significant relation as well as dependency. Because observed relations were weak, we decided to not confirm hypothesis 1. On the other hand in term of dependency, we observe moderate dependency when we tested two ICT solutions with highest complexity. Therefore trust of organization into these highly sophisticated solutions substantially depends on level of organizational eSkills. Based on these results, it can be claim that trust into high sophisticated ICT solutions is influenced by level of eSkills that organization has.

Even though the moderate strength of correlations confirm the hypothesis, after later interviews with some of big companies with high eSkills, we have identified one interesting problem. As many of the companies, which don't trust or need no high sophisticated solutions, have too big monopsony power on the market they are according to interviewers in the situation when they really don't need any additional trust building service. They have stabile and qualified portfolio of suppliers. According to interviews, if situation would change, they will sure change also the opinion and shift to high level of trust into more complex and sophisticated solutions.

This market inefficiency reduces real strength of Sommer's d result. So if we will take into account these inefficiencies and our hypothesis H2 can be fully accepted.

TABLE III
RESULTS OF TESTED HYPOTHESES

	Experience of company in electronic commerce	The integration of business negotiation outcomes into the contract	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,08	0,10	-0,02	0,18
Kendall's tau-c	Symmetric Measures		0,07	0,10	-0,02	0,15

	Experience of company in electronic commerce	Contract negotiation process tracking and recording (according to requested privacy level)	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,14	0,00	0,05	0,23
Kendall's tau-c	Symmetric Measures		0,11	0,00	0,04	0,19

	Experience of company in electronic commerce	Basic contract clauses and templates	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,05	0,31	-0,05	0,15
Kendall's tau-c	Symmetric Measures		0,04	0,31	-0,04	0,12

	Experience of company in electronic commerce	Database/service with complex contract clauses for the fee provided by specialized company.	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	-0,02	0,66	-0,12	0,08
Kendall's tau-c	Symmetric Measures		-0,02	0,66	-0,10	0,07

	Experience of company in electronic commerce	Explaining contract template clauses and conditions	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,06	0,20	-0,04	0,17
Kendall's tau-c	Symmetric Measures		0,05	0,20	-0,03	0,14

	Experience of company in electronic commerce	Advisory support Recommendation of ODR experts to users, what steps should be taken?	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,04	0,43	-0,05	0,13
Kendall's tau-c	Symmetric Measures		0,03	0,43	-0,04	0,11

	Experience of company in electronic commerce	Technical support - support by solving technical problems	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,13	0,00	0,04	0,21
Kendall's tau-c	Symmetric Measures		0,11	0,00	0,03	0,18

	Experience of company in electronic commerce	Limited ODR – till some level of complexity	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,18	0,00	0,08	0,26
Kendall's tau-c	Symmetric Measures		0,14	0,00	0,07	0,22

	Experience of company in electronic commerce	Outsourced ODR service by specialized company	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,34	0,00	0,26	0,42
Kendall's tau-c	Symmetric Measures		0,28	0,00	0,21	0,35

	Experience of company in electronic commerce	Internal service, where mediator is acting as ESP with appropriate bank account	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,14	0,01	0,04	0,24
Kendall's tau-c	Symmetric Measures		0,11	0,01	0,03	0,20

	Experience of company in electronic commerce	Bank will be the mediator through documentary credits	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,05	0,34	-0,05	0,14
Kendall's tau-c	Symmetric Measures		0,04	0,34	-0,04	0,11

	Experience of company in electronic commerce	Trusted Third Party – outsourced specialized company will provide the services	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,36	0,00	0,28	0,44
Kendall's tau-c	Symmetric Measures		0,29	0,00	0,23	0,36

	Experience of company in electronic commerce	Multilingual support with standard terms	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,06	0,17	-0,03	0,14
Kendall's tau-c	Symmetric Measures		0,05	0,17	-0,02	0,12

	Experience of company in electronic commerce	"Code of Conduct"	Value	Approx. Sig.	95% Confidence Interval[a] Lower	Upper
Somers' d	Independent	Dependent	0,06	0,21	-0,03	0,16
Kendall's tau-c	Symmetric Measures		0,05	0,21	-0,03	0,13

[a] Confidence Interval was created by bootstrapping. Base on 1000 bootstrap samples.

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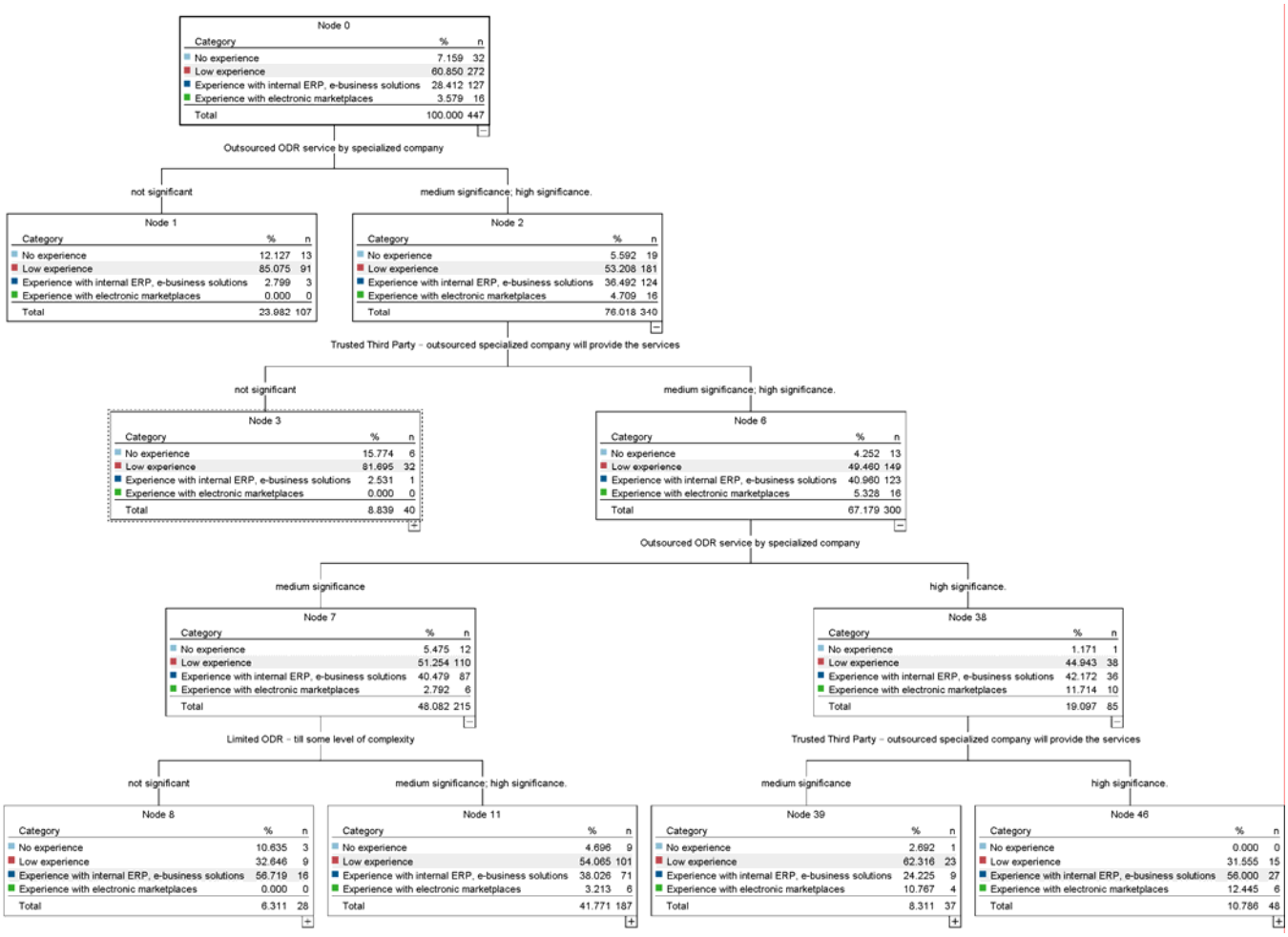


Fig. 1 Decision Tree

E. Decision Tree Analysis

The purpose of this analysis was to support our previous findings that level of eSkills significantly influences trust of organizations into highly sophisticated ICT solutions. Apart from previous research, here we look at the problem from another perspective. We use decision tree analysis to classify all 14 ICT solutions, based on the change in distribution of eSkills of all surveyed organizations. Result of this analysis can be found on fig. 1. At the top of the tree are those ICT solutions, which based on information entropy significantly influence the distributions of eSkills. By comparing of Node 1 with Node 2 it can be saw, that organizations with even a medium trust on outsourced ODR have better eSkills than those with no trust to this particular ICT solution. By moving from Node 0 down to Node 2, Node 6, Node 38 and Node 46, it can be seen that distribution of eSkills within the nodes is changing in favour of higher eSkills. On the other hand, Node 1 and Node 3 confirmed that organizations with no trust to highly sophisticated ICT solutions have mostly low experience with ICT. Only 2,8 % of organizations, which consider outsourced ODR as insignificant, have experience with ERP or e- business solutions and none of them have experience with electronic marketplaces. The tree has also another specific characteristic. By going from node to node at the same level from right to left, it can be observed how the percentage of high level e-skilled organizations declines. Decision tree supports our previous conclusion that level of eSkills significantly influence trust into highly sophisticated ICT solutions.

V. Conclusion

Trust building is significant driving factor for increase of participation into electronic business network platforms. Absence of trust is still the barrier in fulfilling new European Agenda of Digital Society. It also affects a utilization of economic benefits and opportunities for SMEs. To help European Electronic Single Market, support for trust building mechanisms development is needed. Our research revealed that implementation off and setting up the most complex solutions doesn't necessary lead to success. Trust into these solutions is low within low e-skilled companies. As right these companies we would like to convince to start utilize digital benefits, we need consider suitable and most appropriate implementation strategy.

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Results of our survey and research show, that eSkills are very important for trust into sophisticated trust building solutions. It revealed interesting variations among different levels of companies' eSkills. It exposed, that the higher the eSkills of the company, the higher is the trust in more sophisticated mechanisms and acceptance of comprehensive solutions for additional fees (solutions outsourced from specialized companies). However, the results imply that not all of the trust building mechanisms needs to be implemented at the initial phase of the e-biz network platform project because many participants at the start up have low eSkills. Nevertheless, after achieving certain skills and experience, the preferences shift to those, similar to e-skilled companies. Of course, it is necessary to provide more trusted solutions not only for low e-skilled companies. For really e-skilled companies, it is possible to provide customized services for fees which attract also those skilled companies-early adopters which recognize benefits of these more complex solutions. They can play role of driving forces and best practices also for other companies in e-environment.

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