

## RESEARCH ARTICLE

## Trust levels within categories of information and communication technology companies

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## Abstract

The arguable claims of levels of trust in politics and business situations motivated this study, which investigates the degree of trust within micro, small, and medium categories of Hungarian Information and Communication Technology (ICT) companies. Different sizes of companies have varying interactions between internal members and their business partners. This study concentrated on exploring Hungarian ICT companies due to their significant role in supporting Industry 4.0. The study population are active Hungarian ICT companies. This research implemented random cluster selection related to the location of ICT firms. It exploited 100 samples, including micro, small, and medium-sized companies, and implemented discriminant analysis to examine the description and hypotheses. First, this study found that the level of trust in institutions within micro, small, and medium-sized companies varies significantly. The level of trust in institutions proliferates within corporations due to the capability of the formal institution to provide fair public services. This research additionally underlined that the performance of the Hungarian government would improve trust amongst the companies. Second, this study concluded that the level of interpersonal trust within three categories of companies was similar. A high level of interpersonal trust would expand internal engagement among the members of companies. Finally, the level of trust in business partners varied significantly within the distinct sizes of Hungarian ICT companies. A high level of trust in corporate associates improves business collaboration, reduces uncertainty, and supports long-term business connections. Levels of institutional trust and inter-organizational trust differed amongst different categories of companies. However, the level of interpersonal trust remained similar within companies of the various sizes.

## Introduction

The government's performances and policies support business activities; for instance, firms must deal with state administration and tax. This study argued that firms trust institutions to run their business [1]. Companies, from micro to large businesses, deal with government policies and regulations in business. When government can provide fair public administration, companies trust the government [2]. In the current conditions in Hungarian politics, trust in government remains low [3]. Consequently, distrust of government leads to distrust in business.

On the other hand, trust in government, supported by fair public administration, inspires business trust, and support a favorable business environment [4]. The debatable degree of confidence in the politics and business situation inspired this study's authors to investigate the level of government trust within Hungarian Information and Communication Technology (ICT) companies. This study focusses on examining ICT firms because they have an essential role in supporting manufacturing industries and other sectors in the economy, simplifying online trade, and providing critical services during pandemic conditions [5].

Subsequently, employees have personal confidence in the government. When employees interact with their colleagues, they bring their unique ideas and experiences into their workplace [6–8]. Therefore, social interaction between employees, their colleagues, and their managers represents social capital. Frequent interaction between managers and employees creates a different level of interpersonal trust [9] within the Hungarian ICT firms. Furthermore, the frequency of interactions between managers and employees differs within the different categories of companies. This study argues that different sized companies influence the frequency of internal interaction between firms' various elements.

In the business-to-business (B2B) relationship, companies cooperate with partners to support their primary business. The firm develops a network, then connects to its providers to access notable inputs [8, 10]. The firm also collaborates with other similar companies to access valuable resources and experience to support business activities [1, 11]. The manager, acting as the company's representative, conducts the collaboration process through interaction with other directors' affiliates. Frequent interaction between the manager and his or her business partners contributes to trust between them. Frequent interaction between them plays a significant role in enhancing inter-organizational trust [12, 13].

This study examines how the different levels of trust in government, interpersonal trust, and inter-organizational trust shape business within micro, small, and medium corporations in the Hungarian ICT sector. It investigates the different levels of confidence in government, interpersonal trust, and inter-organizational trust within Hungarian ICT firms. This study summarizes the previous insights relating to social capital as a comprehensive theory, describes the type of trust, determines the research approach, presents the results, discusses the findings, and sums up the analysis.

## Development of hypotheses and conceptual framework

### Social capital

This study briefly reviews social capital perspectives related to various types of trust, then classifies types of institutional trust, interpersonal trust and inter-organizational trust, and develops the hypotheses.

The discussion of social capital started from the initial academic debate over the nature of social capital, followed by a description of its characteristics, and its implementation in organization and networks. Social capital emerged in academic discourse in 1916. Scholars argued

that social capital indicates tangible substances occurring in regular natural life, for instance, goodwill, cooperativeness, compassion, and communal interaction between the persons and relatives who constitute a social organization. An employee communicates with his/her colleagues. They will then acquire social capital, which fulfils their social requirements, and correspondingly provides a need for social opportunities to improve their livelihoods for a company [6]. From 1973 until 1993, various scholars clarified the social capital concept. Firstly, Granovetter [14] showed the prominence of sympathy connected to links with particular people who acquire valuable information and assets in their networks [15] then went on to describe how social capital involves specific public attributes that allow or restrict the improvement of an entity.

Moreover, Bourdieu and Wacquant [16] maintained that social capital is the participation of entities in a network as established affiliations, which offers an access of acquiring specific or prospective assets. Furthermore, Coleman [17] asserted that social capital denotes features of social structures that simplify activities between parties. At the same time, Putnam [2] recognized social capital as the characteristic features of social corporation; for instance, trust, norms of mutuality, and the connections of community commitment that make possible organized achievement, and consequently make communities and organizations more efficient [18].

Putnam [2] made a seminal contribution by arguing that social capital is characterized by social life-linkages, norms, and confidence, which enables individuals to perform organized actions more successfully to achieve common goals. The magnitude of norms, networks, and trust connects prominent organizations and bridges the main social differences which separate them, then improves collaboration to provide corporations with distinct interests which are broadly accepted. Expanding Putnam's study, Woolcock and Narayan [6] classified social capital into four different approaches, namely communitarian, network, institutional, and synergy perspectives.

Communitarian insights connect social capital among members from local organizations, clubs, associations, and public groups. The number and concentrations of these groups are numerous because they make social capital naturally better. Social capital's existence has an affirmative influence on a society's prosperity. The network perspective measures benefits and costs. It emphasizes the importance of vertical or horizontal associations between the members and the organization. This view highlights the substantial extent of intra-community bonds that provide the community with a sense of identity and a common goal. The third perspective of social capital is the institutional view. This view holds that social capital in a vital community network and civil society emerges from its political, legal, and institutional surroundings. The institutional perspective perceives social capital as a conditional variable. This concept denotes that social groups perform within the frame of their collective interest in accordance with the capacity of the formal institution network in which they operate. It also emphasizes that governments and firms' performance rely on their internal consistency, integrity, expertise, and the external assessment of civic society. The final perspective of social capital is the synergy approach. This idea attempts to combine studies arising from systems and official backgrounds. Synergy between government and organizations relates to synchronization and boundedness. Synchronization illustrates the mutual support of connections between public organizations and firms and is framed in legitimate structures that guard society's privileges. For instance, through chambers of commerce, the government facilitates and supports business between companies and their partners. Boundedness indicates the type and degree of the bonds linking companies and public bureaucrats [6].

This study adopts the social capital as synergy perspective as its central concept because social capital emerges from the frequency of the relationships between employees and

managers within a conducive organization and work environment. They engage in the company's organization to achieve a shared objective. Besides, the company connects to business partners to perform business goals following mutual agreement. The government and other public institutions support the internal and external social capital bonds.

The social capital perspective also inspires this study in terms of institutional synergy. The institutional perspective of social capital indicates that government and other institutions' performance creates interpersonal and inter-organizational trust. This view also holds that the company's organization and policies develop internal trust. The synergy view illustrates the mutual connections and networks between companies and business partners as social capital, making it simpler to perform activities organized more effectively to accomplish collective objectives [6].

Moreover, social capital helps the company mobilize the internal organization to achieve its purposes [19]. Social capital affects the degree of social interconnection, horizontal relationships, and the character of affiliations [11]. As a result, the corporation or connection defines the corporate associates' coherence and improves manufacturing ability for reciprocal achievement [20].

Likewise, this study uses social capital theory with a dual perspective, consisting of ego-centric attitudes within a network and socio-centric frames. The ego-centric system perspective demonstrates that the supervisor or primary actor provides and acquires resources from the company's organization [21] in terms of social interactions, shared norms, and trust [22]. Social capital considers social connections between employees and managers to be closer in motivating them to acquire values and achieve collective goals. Meanwhile, social capital also describes shared norms as rules and outlooks that explain how workers and supervisors will behave within the company. Trust among directors and staff increases their social interactions, and thus intensifies the relationship. As a result, interpersonal trust alters their future behavior in the company [22].

Furthermore, this research considers social capital as having a socio-centric purpose. This approach is in line with the following scholars. Putnam [2] emphasized that social capital is not only an individualistic characteristic but refers to associations between parties, such as social associations and the norms of trade-offs and honesty [23] that facilitate coordination and collaboration to achieve advantages. Social capital engages the company and its partners closely in the business relationship, and motivates them to cooperate through a collective purpose to acquire mutual benefits [22]. Social capital simplifies the firm's task of accessing its partners' resources and competences and exchanging resources within the bounded network [10].

## Types of trust

Putnam [2] explained that there are various types of social capital, such as social lifetime linkages, customs, and confidence. Accordingly, this study focuses on illustrating trust concepts, types of trust, and their definitions, starting by explaining the concept of trust as understood by scholars, as follows below.

Lewicki and Bunker [24] classified trust as a personal representation of relational connections and organized experience. Some scholars argued for a different definition of trust in the context of micro-organizational behavior strategies, or economics. Initially, psychologists described trust as an expectancy of social transactions, concentrating on the contextual features which develop or constrain the improvement and continuance of confidence. Economists and sociologists have claimed that institutions and incentives minimize the uncertainty and concern related to contracts between unfamiliar parties [25]. The various perspectives

consider trust in terms of enrichment and behavior. Some scholars have pointed out vulnerability as the central element of trust [26]. Mayer, Davis [27] defined trust as the commitment of a trustor who is in a vulnerable condition due to the trustee's activities. The trustee probably accomplishes a specific accomplishment crucial to the trustor, regardless of whether the trustor can supervise or regulate the other party.

From behavioral perspective, Rousseau, Sitkin [28] described trust as a spiritual statement consisting of the intention to become vulnerable relating to the positive probabilities of the potential activities of another. The previous description is consistent with the insights of Sabel [29], and Bhattacharya, Devinney [25]. Economists viewed trust as concerned with actors' competence to organize agreements or incentives and enact penalties; thus, they perform a specific behavior. The consideration arises that the parties are nearly trustworthy, but they are probably not [25]. The economists' perspective is consistent with the findings of Zaheer, McEvily [12] who comprehensively described trust as the anticipation that a group which is trusted will accomplish obligations, perform in an envisaged way, and prevent speculation; they also discuss probability of risk [30]. For instance, academics have examined the economic model of trust in a relatively symbolic approach. Trust provides a unique, fundamental brand, which indicates a steady behavior rather than an attempt to cheat partners [25].

This research supports the view of trust as a social relationship with economic implications. For instance, in social behavior within a company, employees can cooperate with their colleagues or supervisors due to interpersonal trust or an influential manager. The pivotal employees or supervisors trust each other, but their actions are vulnerable to perceived risk, such as unfinished assignments. To reduce this risk, managers can monitor and control, or punish, workers. In terms of its economic impact, interpersonal trust between workers and company managers enhances the targeted job performance [27]. Trust between a company and its business partners guarantees agreements will be carried out in the business network context. However, each party suffers exposure to vulnerabilities and is subject to risks. The vulnerabilities and risks lead to costs [27]. Control systems are one alternative method for anticipating risk in relationships [31]. When the company and business partner trust each other, trust operates as an assurance minimizing the need for expensive insurance, such as complicated contracts and thorough checking. Actors behave so as to complete agreements and avoid opportunistic behavior; thus, they can boost business performance [32–34].

Fulmer and Gelfand [35] differentiated trust from a level and from a referent perspective. The former type describes trust as collectively shared by individuals. Meanwhile, the latter refers to trust as implemented through interpersonal, team and organizational perspectives. Regarding trust as a referent, trust also supports the organizational operation in interpersonal relationships and inter-organizational networks [36–38]. The concept, as mentioned before, is consistent with various scholars, as follows. Some researchers have classified trust into three types: interpersonal trust [8], inter-organizational trust [12], and institutional trust [2]. Meanwhile, Sako [39] divided the three major types of trust based on the predictability of mutual behavior into three categories: competence trust, contractual trust, and goodwill trust. Here, this research considered using the types of trust proposed by Putnam [2] and Zaheer, McEvily [12]

This research describes inter-personal trust, inter-organizational trust, and institutional trust, relying on previous scholars. This research proposes that inter-personal trust refers to an employee's willingness to trust in managers [12, 40, 41] and company organization Employees expect that a manager will take specific decisions that are important to employees. Managers also trust workers without monitoring and controlling them every time [41, 42]. Trust in managers indicates that employees believe that the manager can apply a high level of skill to solve a particular problem. Besides, a manager encourages workers to accomplish their jobs [43]. The

internal management also stimulates the employee's trust because its organization operates competently, is concerned about staff welfare, and handles stakeholders honestly and fairly [44].

This study argues that inter-organizational trust represents the declaration of confidence between the company and the business partners, clients and contractors, and the network. The company believes that others will comply with promises [12, 39, 45, 46], and behave in a certain and reciprocally tolerable way [36, 47].

Finally, the concept of institutional trust in this study indicates the company's trust in the government [2, 48, 49] and various institutions [50]. The company believes that government and public institutions can perform public services without pressure from politicians. The government and public institutions provide adequate public services to support firms' activities because they have professional capabilities and expertise [2, 36, 49, 51].

After summarizing the previous research, this study proposed three hypotheses.

Hypothesis 1. The level of trust in institutions differs in companies in different categories.

Hypothesis 2. The extent of interpersonal trust differs within different sizes of firms.

Hypothesis 3. The degree of trust in business partners differs in different types of companies.

## Research method

### Population, sample and data collection

The population included existing Hungarian ICT firms with at least a mutual collaboration within the industry. This research investigated nearly 90 per-cent of about 1800 firms currently in business. The majority of Hungarian ICT enterprises are in Budapest, i.e. about 71%. The other firms are found in other cities, namely, Debrecen, Budaörs, Székesfehérvár, Szeged, Győr, Nyíregyháza and others, making up 29% of the total [5].

The study uses random cluster sampling regarding the location of Hungarian ICT businesses. The statistics within this study were restricted to currently operating firms, in Budapest and other towns within Hungary, which have a mutual partnership with an affiliate. An online survey was administered from January until March 2019, with a questionnaire to business owners and or managers as essential informers and prominent industry spokespersons. The research received 149 responses from the 250 questionnaires sent out, and there were 49 outliers; hence, the final number of samples was 100. The study was reviewed and approved by the Research Ethics Committee of the University of Debrecen before the study began.

### Variables and operational definition

This study had three latent variables, namely institutional trust, interpersonal trust, and inter-organizational trust. This study measured each question of trust on a five points scale, ranging from very low to very high. The indicators of each latent variable are cited from previous scholars. Table 1 presents definitions of the latent variables and their measured operations.

### Method of analysis

This study implemented Discriminant Analysis to examine the hypotheses and discriminant level of trust. Discriminant analysis is a suitable statistical technique to examine the dependent variable, a non-metric (categorical scale) variable, and the metric's independent variables. In this case, the dependent variable consisted of three sizes of Information and Communication



**Table 1. Variables and operational definition.**

Latent variables definition	Items	Indicators
Institutional trust (IT) describes the company's trust in the government [2, 48, 49] and various institutions [50]. The company believes that government and public institutions can independently perform public services due to their professional and expertise [2, 36, 49, 51].	IT1	1) the extent of confidence in public government, ministries, government agencies
	IT2	2) the level of faith in public administration
	IT3	3) trust in local government [48, 50, 52, 53].
Interpersonal Trust (IPT) defines employees' willingness to trust in managers [12, 40, 41] and a company's organization [44, 54]. Employees trust that managers will perform competently, taking decisions that affect a conducive corporate culture and an atmosphere of trust within a company [55, 56].	IPT1	1) trust between workers and supervisors or the owners and management, or confidence amongst the company's employees and colleagues [8, 43].
	IPT2	2) critical policies generate the company values and a climate of confidence [55, 56].
Inter-organizational Trust (IOT) represents the declaration of confidence between the company and its business partners, clients and contractors, and networks. The company believes that they will comply with promises [12, 39, 45, 46], act in a reliably and mutually tolerable way [36, 47].	IOT1	1) the amount of trust in a business partner [57].
	IOT2	2) the level of trust in customers and clients [58, 59].
	IOT3	3) the extent of trust in suppliers and subcontractors [60].
	IOT4	4) the degree of trust in other similar ICT providers in the company [53, 60]

Source: Authors' summary review (2020)

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and Technology (ICT) companies, namely, micro, small, and medium firms. Meanwhile, the independent variables were institutional trust, interpersonal trust, and inter-organizational trust, measured from low to high.

Discriminant analysis requires the originating of a variate. The discriminant variate is the linear grouping of the two (or more) indicators of independent variables that will distinguish most correctly between ICT companies' categories. Discrimination is accomplished by estimating the variate's weights for each independent variable to expand the differences in the discriminant scores between the groups of ICT firms.

Discriminant analysis is a suitable statistical approach for examining the average of a set group of trust levels within three sizes of ICT company. Discriminant analysis examines the mean of indicators of latent variables for all the sizes of ICT firms. A centroid indicates the average group. When the examination comprises three sets, there are three centroids. The centroids designate the most typical ICT companies, and an evaluation of the group centroids displays how distant separately the sets are in terms of a particular discriminant function. The group centroids examine the discriminant function's statistical significance by evaluating the groups' allocations. If the similarity in the distributions is small, the discriminant function splits the groups well. After examining the significant discriminant functions, the subsequent analysis evaluates each discriminant function's estimation percentage. This evaluation requires an assessment of group membership prediction accuracy by evaluating the classification matrix [61–63].

## Results

### Company profile

This section describes the features of the Information and Communication Technology (ICT) firms which were surveyed in this study. The discussion starts by examining the classifications of ICT companies, and their employees. The classification of the observed companies, as

**Table 2. Company classification according to the number of employees.**

Classification <sup>a</sup>	Figure	Total employees
Microenterprise without employees	1	0
Microenterprise with 1 to 9 employees	39	209
Small enterprise with 10 to 49 employees	44	971
Medium enterprise with 50 to 249 employees	16	1435
<b>Total</b>	<b>100</b>	<b>2615</b>

Source: Primary data analyzed (2020). n = 100.

<sup>a</sup> classification used referring the Hungarian Central Statistical Office [64].

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shown in Table 2 refers to the Hungarian Central Statistical Office [64], is of three types, namely micro, small, and medium-sized companies.

Based on the number of staff employed, the percentage of small companies was the highest, at about 44%. Subsequently, the percentage of micro-companies differed slightly from small firms, by about four per-cent. The lowest number was medium-sized companies.

The examined firms employ a total of 2,615 workers. Naturally, the medium-sized companies employ the most, with about 1,400 workers. Next were the small enterprises, with 1,000, making up about half of all employees. Lastly, micro-enterprises—without employees and with one to nine employees—employed around 200 staff, almost one-tenth of the total number.

This research uses as a reference the International Standard Industrial Classification of All Economic Activities (ISIC). The surveyed companies are in division 62, which classifies the ICT companies into four business services. The ICT companies are in category 62.01, companies providing expertise in information technologies involving writing, modifying, testing, and supporting software. Firms which offer proficiency in planning and designing computer systems that combine computer hardware, software, and communication technologies, are classified in category 62.02. Those companies in category 62.03 support on-site management and the operation of customers' computer systems and or data processing services. Lastly, enterprises providing other professional and technical computer-related service are categorized in category 62.09.

Table 3 illustrates the number of observed companies associated with the cross-tabulation between their business activities and firm classification. The greatest number of observed ICT companies—43—provided expertise in computer programming, half of which are small companies. Next, 30 of the surveyed ICT firms offered information technology consulting, a sector dominated by the micro and small firms. Then followed business in other information technology activities—20 firms, while small and micro firms had similar proportion, at nine. Finally, the lowest figure was for companies providing services in computer operation.

**Table 3. Company classification according to activity type.**

Business activities	Company Category			Total
	Medium	Small	Micro	
Computer programming activities (62.01)	10	20	13	43
Information Technology Consulting (62.02)	3	12	15	30
Computer Operations (62.03)	1	3	3	7
Other information technology service activities (62.09)	2	9	9	20
<b>Total</b>	<b>16</b>	<b>44</b>	<b>40</b>	<b>100</b>

Source: Primary data analyzed (2020). n = 100.

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**Table 4. Company classification, institutional trust and Box test.**

Company size	Mean			Box Test	Value
	IT1	IT2	IT3		
Medium enterprise	2.94	3.13	2.87	Chi-Square $\chi^2$	21.03
Small enterprise	2.50	2.52	2.50	Df	12
Micro enterprise	2.70	2.55	2.72	p-value	0.02

Source: Primary data analyzed (2020). n = 100. IT1, trust in state government, ministries, and government agencies; IT2, trust in state administration; IT3, trust in local government.

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### Institutional trust description

This section describes the level of institutional trust within the observed companies. This study used discriminant analysis to examine the level of trust within company sizes, from micro, small, and medium-sized companies, omitting large companies from the analysis because their number was below the minimum requirement for implementing discriminant analysis. This study evaluated the distinct characteristics of institutional trust within various company categories, the discriminant functions, factor contributors, canonical structure, and classification prediction.

Firstly, the study investigated the degree of institutional trust by company size. [Table 4](#) presents simple descriptive statistics for the indicators of institutional trust at different company sizes.

It was evident in this case that the levels of trust in state government, state administration, and local government within medium-sized companies were consistently higher than in other types of companies. Small enterprises had the lowest level of all trust types compared to other categories of firms.

The varying extent of institutional trust indicators within distinct groups of companies was coherent with the Box test result. [Table 4](#) also shows the Box test, which indicated that the within-company class of covariance matrices were different [61, 62], due to the p-value below five per-cent. This result confirmed the first hypothesis. Thus, it revealed that the level of institutional trust within the observed companies varied significantly. This study then produced an analysis of discriminant functions which differs from the existing group for the purposes of accounting for and grouping the indicators. The discriminant functions represent a latent variable, and the correlations are loadings related to factor loadings [61, 62].

[Table 5](#) shows that two discriminant functions could accommodate indicators of institutional trust. The first discriminant was substantial as it accounted for about 74% of the reliable variance, whereas the second one was relatively small in comparison as it explains about 26%.

Regarding the Wilks' lambda test, the discriminant functions were not statistically significant due to the p-value higher than five per-cent. Consequently, one discriminant function consisting of one factor distinguishes the categories of companies.

The study then described the significant contributor of each discriminant. [Table 6](#) shows the indicators contributing to each discriminant function.

**Table 5. Discriminant functions of institutional trust and Wilks' lambda test.**

Measures	F1	F2	Wilks' Lambda Test	Figure
Eigenvalue	0.06	0.02	Lambda	0.93
Discrimination (%)	73.66	26.34	F-value	1.21
Cumulative %	73.66	100	p-value	0.30

Source: Primary data analyzed (2020). n = 100. df1 = 6. df2 = 190.

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**Table 6. Structure matrix and centroids' discriminant factors of institutional trust.**

Indicators of Institutional Trust	F1	F2	Types of Companies	Centroid	
				F1	F2
IT1	0.35	0.86	Medium enterprise	0.50	0.11
IT2	0.82	0.58	Small enterprise	-0.01	-0.16
IT3	0.24	0.90	Micro enterprise	-0.19	0.13

Source: Primary data analyzed (2020). n = 100. IT1, trust in state government, ministries, and government agencies; IT2, trust in state administration; IT3, trust in local government

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Trust in state administration was the most significant contributor to the first discriminant. Trust in local government and trust in government and bureaucracies was the dominant contributor to the second one. This study concluded that trust in the administrative state was substantial, contributing to about 74% of the first discriminant factor variance, compared to other institutional trust indicators. This study implied that the companies had confidence in the state administration procedure related to business audits, tax certificates, fairness procedures, e-administration, regulations, tax reductions, automatic instalment payment discounts, fees, and overpayments.

Next, the discussion examined the group centroids, which illustrates the group averages of canonical variables. The canonical structure describes correlations between company sizes and the unobserved discriminant functions (dimensions). Group centroids show the level and features in which the companies categories are distinguished on each function. The group centroids' absolute scale implies the extent to which a company size is distinguished on a function. The centroid sign implies the direction of the differentiation [61, 62].

Table 6 describes the centroids of discriminant factors of trust in government based on the different groups of companies. The first function discriminated medium-sized firms from small and micro-enterprises. Medium-sized firms achieved the first function at the positive end, while the other company groups were at the negative end of a similar function. The previous result implied that the first function with the dominant contribution of trust in the state administration differed between medium-sized firms and micro-companies. The second function distinguished medium and micro-companies from small firms. Medium and micro firms had positive figures within the second function, but the small firms scored at the opposing end of a similar function. This finding revealed that the second function with the significant representation of trust in government and local government discriminated small enterprises from the two other types of firms.

The Confusion Matrix indicates the number of cases accurately and inaccurately designated to each of the groups. Each case in the analysis is classified by the functions derived from a different company size to predict others [61, 62]. Table 7 denotes the confusion matrix within the three categories of companies in terms of institutional trust indicators.

**Table 7. Confusion matrix of different group of institutional trust.**

From \ to	Medium enterprise	Micro enterprise	Small enterprise	Total	Percentage correct
Medium enterprise	0	5	11	16	0.00%
Micro enterprise	1	15	24	40	37.50%
Small enterprise	0	14	30	44	68.18%
<b>Total</b>	<b>1</b>	<b>34</b>	<b>65</b>	<b>100</b>	<b>45.00%</b>

Source: Primary data analyzed (2020). n = 100

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**Table 8. Interpersonal trust level and the Box test.**

Company size	Mean		Box Test	Value
	IPT1	IPT2		
Medium enterprise	4.19	3.50	Chi-Square $\chi^2$	12.60
Small enterprise	4.27	4.13	Df	6
Microenterprise	4.45	4.22	p-value	0.82

Source: Primary data analyzed (2020). n = 100. IPT1, trust between employees and managers; IPT2, trust in a decisive role in creating a corporate culture and a climate of trust.

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The total of precise forecasts was only about 45%. The small firm was the most accurately predicted, at about 68%. Meanwhile, the micro-company was less accurately predicted, at half of the small enterprise percentage.

### Depiction of interpersonal trust

This section describes the discriminant measure of interpersonal trust among the three types of observed companies. This section evaluates the distinct degree of interpersonal trust in three different groups, the prominent factor of contributors, the canonical structure, and the accurate group estimate. Initially, this study examined the interpersonal trust degree within different company categories.

Table 8 illustrates the level of indicators of interpersonal trust within three separate categories of company.

The trust level between the managers and the workers in the micro, small, and medium-sized companies remained high. The level of trust in essential policies supporting corporate culture and the trust climate in small and micro firms was higher than in medium-sized firms. In general, the level of indicators within the interpersonal trust at various company sizes was high, with average values above three.

The Box test result indicated that levels of interpersonal trust were similar among the various company classes. Table 8 also presents the finding which indicated that the covariance matrices of interpersonal trust within different types of companies remained similar. The p-value above five per-cent supported the result. This study concluded that trust between managers and workers, and trust in companies' decisions remained high and was not significantly diverse among the different company groups. This implied that this study rejects the second hypothesis.

This study disclosed two various discriminant functions from the indicators of interpersonal trust among the surveyed companies. The first discriminant determined about 85% of the reliable variance; meanwhile, the second discriminant explained the rest, as shown in Table 9.

As seen in Table 9, the discriminant factors significantly differentiate the three firm size classifications because the p-value was below five per-cent. This study extended the discussion of the factors contributing to each discriminant factor, and displayed significant contributors as follows.

The first discriminant factor consisted of confidence in an essential role in supporting corporate culture and a climate of trust, as listed in Table 10. Then the second discriminant factor dealt with trust among managers and workers. These two indicators made a significant contribution in two separate discriminant factors. This study confirmed that trust in the company's prominent policies contributed predominantly to the first discriminant factor, at about 85%. The analysis of group centroids supports the previous finding.

**Table 9. Discriminant factors of interpersonal trust and the simultaneous test.**

Measures	F1	F2	Wilks' Lambda Test	Figure
Eigenvalue	0.09	0.01	Lambda	0.90
Discrimination (%)	85.50	14.50	F-value	2.44
Cumulative %	85.50	100	p-value	0.048

Source: Primary data analyzed (2020). n = 100. df1 = 6, df2 = 196.

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**Table 10. Structure matrix and centroids' discriminant factors of interpersonal trust.**

Indicators of Interpersonal Trust	F1	F2	Types of Companies	Centroid	
				F1	F2
IPT1	0.46	0.88	Medium enterprise	-0.65	0.06
IPT2	0.98	-0.17	Small enterprise	0.05	-0.13
			Micro enterprise	0.20	0.12

Source: Primary data analyzed (2020). n = 100. IPT1, trust between employees and managers; IPT2, trust in a decisive role in creating a corporate culture and a climate of trust.

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Table 10 additionally shows the structure illustrating the correlations between the types of firms and the discriminant factors. The analysis revealed that the degree of trust in different company classes was distinct in each discriminant factor. Meanwhile, the sign represented the direction of the difference. The first discriminant factor differentiated small and micro firms from medium-sized companies. Small and micro enterprises accounted for the positive figures at the first function, but the medium-sized firms accounted for the negative numbers. This study implied that trust in important policies distinguished small-micro companies from medium-sized companies. Meanwhile, trust between managers and workers distinguished micro and medium-sized companies from small firms.

This study then investigated the correct prediction of interpersonal trust levels within the three different groups, as listed in Table 11.

The total percentage of accurate estimation was about 47%. The small company group was the most accurately predicted, at approximately 60%. Then, the micro firm size was the second most accurate prediction, at about 50%. The medium-sized company was the lowest accurate prediction compared to the other company groups, at about 13%.

### Inter-organizational trust explanation

This part assessed the diverse discriminant level of inter-organizational trust within three classifications of companies. The analysis described the level of inter-organizational trust, the

**Table 11. Confusion matrix of different groups of interpersonal trust.**

From \ to	Medium enterprise	Micro enterprise	Small enterprise	Total	Percentage correct
Medium enterprise	2	4	10	16	12.50%
Micro enterprise	1	19	20	40	47.50%
Small enterprise	3	15	26	44	59.09%
<b>Total</b>	<b>6</b>	<b>38</b>	<b>56</b>	<b>100</b>	<b>47.00%</b>

Source: Primary data analyzed (2020). n = 100

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**Table 12. Inter-organizational trust level and Box test.**

Company size	Mean				Box Test	Value
	IOT1	IOT2	IOT3	IOT4		
Medium enterprise	3.56	3.87	3.94	3.44	Chi-Square <sub>t</sub>	31.4
Small enterprise	3.64	3.98	3.70	2.96	Df	20
Micro enterprise	3.82	3.97	3.87	3.28	p-value	0.06

Source: Primary data analyzed (2020). n = 100. IOT1, trust in a business partner; IOT2, trust in customers and clients; IOT3, trust in suppliers and subcontractors; IOT4, trust in other ICT providers.

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leading element of contributors, canonical structure, and precise group valuation. First, this study examined the degree of inter-organizational trust within different categories of firms.

Table 12 denotes the descriptive degree of observed inter-organizational trust variables at three different groups of the company.

On average, business partners' trust level remained high at micro firms, followed by that in small and medium-sized companies. The degree of trust in customers and clients was highest at micro-small categories of the firm as was the level of trust in business partners and degree confidence in suppliers and subcontractors at micro and medium firms. The degree of trust in other ICT providers was different, with the lowest average value at small enterprises.

The Box test result, shown in Table 12, indicated the within-companies class of covariance matrices were different due to the p-value below ten per-cent. Consequently, there was a different covariance of indicators of inter-organizational trust. This result confirmed the third hypothesis. Thus it revealed that the level of trust in business partners within three categories of observed companies varied significantly.

This research then described two discriminant functions accommodating four observed variables of inter-organizational trust in Table 13. The first discriminant verified about 80% of the reliable variance, whereas the second discriminant factors determined 20% in total.

This study concluded that the discriminant factors consist of one indicator due to the p-value of Wilks' lambda above five per-cent. Consequently, there was only one indicator in each discriminant factor, which differentiates three different company categories.

As listed in Table 14, this study revealed that trust in other ICT providers was a prominent contributor to the first discriminant factor. Trust in business partners was the only significant contributor to the second discriminant factor.

Table 14 similarly shows the structure illustrating the correlations between the types of firms and the discriminant factors. The analysis revealed that the degree of trust for each company class was distinct in each discriminant factor. Meanwhile, the sign represented the direction of the difference. The first discriminant factor distinguished micro and medium-sized companies from small firms, accounting for the positive numbers. The second discriminant factor separated micro-firms from others, also accounting for the positive numbers.

**Table 13. Discriminant functions of inter-organizational trust and the simultaneous test.**

Measures	F1	F2	Wilks' Lambda Test	Figure
Eigenvalue	0.08	0.022	Lambda	0.90
Discrimination (%)	79.31	20.69	F-value	1.23
Cumulative %	79.31	100	p-value	0.29

Source: Primary data analyzed (2020). n = 100. df1 = 8, df2 = 188.

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**Table 14. Structure matrix and centroids' discriminant factors of inter-organizational trust.**

Indicators of Inter-organizational Trust	F1	F2	Types of Companies	Centroids	
				F1	F2
IOT1	0.06	0.98	Medium enterprise	0.49	-0.22
IOT2	-0.14	0.22	Small enterprise	-0.29	-0.07
IOT3	0.42	0.18	Micro enterprise	0.12	0.17
IOT4	0.85	0.26			

Source: Primary data analyzed (2020). n = 100. IOT1, trust in a business partner; IOT2, trust in customers and clients; IOT3, trust in suppliers and subcontractors; IOT4, trust in other ICT providers.

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**Table 15. Confusion matrix for different companies of inter-organizational trust.**

From \ to	Medium enterprise	Micro enterprise	Small enterprise	Total	Percentage correct
Medium enterprise	1	9	6	16	6.25%
Micro enterprise	0	21	19	40	52.50%
Small enterprise	0	16	28	44	63.64%
<b>Total</b>	<b>1</b>	<b>46</b>	<b>53</b>	<b>100</b>	<b>50.00%</b>

Source: Primary data analyzed (2020). n = 100.

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This study also examined the precise forecast of cases from three distinct categories of company. Table 15 displays precise predictions, as follows:

The total correct estimation was about 50%. The small firms were the most precisely projected, at about 64%, followed by micro-companies at about 53%. Meanwhile, the medium-sized enterprises were the least accurately estimated, at about six per-cent.

## Discussion and conclusions

### Discussion

This study aimed to examine the distinct level of trust in government, interpersonal trust, and inter-organizational trust within micro, small, and medium-sized ICT firms in Hungary. It proposed three hypotheses which derived from the goal of the research. First, the level of trust in institutions is different at different categories of companies. Second, the extent of interpersonal trust within different sizes of firms also differs. Lastly, the degree of trust in business partners at different types of companies is also different. This study summarized the testing of three hypotheses in Table 16, and extended the hypotheses discussed in the social capital framework perspective and compared them to previous findings.

**Table 16. Hypotheses testing.**

Hypothesis	p-value of Box Test	Decision
H1: $IT_o \neq IT_s \neq IT_m$	0.02 <sup>a</sup>	Accepted
H2: $IPT_o \neq IPT_s \neq IPT_m$	0.82	Rejected
H3: $IOT_o \neq IOT_s \neq IOT_m$	0.05 <sup>b</sup>	Accepted

Source: Primary data analyzed (2020). n = 100. IT, institutional trust; IPT, interpersonal trust; IOT, inter-organizational trust; o, micro companies; s, small firms; m, medium-sized firms.

<sup>a</sup> p-value below 5%

<sup>b</sup> p-value below 10%

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This research is supported by the literature in a few points. First, the research discovered that the level of trust in institutions in different company categories is different. Regarding [2], social capital has recognized characteristics, such as trust, mutuality norms, and community connections. These features simplify commitment, making organized achievement possible, and consequently making communities and organizations more efficient [18]. Besides, from the perspective of the institutional view of social capital, this study's first finding supported the idea that the high level of trust in institutions within Hungarian firms emerges from the political, legal, and institutional environment. This study supported the institutional view which perceives social capital as a conditional variable. This concept denotes that the level of trust in institutions improves due to the good functioning of the formal institutions in which firms operate. It also emphasizes that governments' performance can develop trust among the firms to represent civil society and motivate engagement. Firms depend on the internal consistency, integrity, and expertise of the Hungarian government.

Moreover, this study also supported the insights of the synergy approach to social capital. This idea combines networks and institutional foundations. The synergy between the government and companies relates to complementarity and embeddedness. Complementarity refers to mutually supportive connections between many institutions and private firms, framed in legal structures that protect private companies' rights. For instance, the government, local government, and state administrative agencies can facilitate and support Hungarian companies' business activities. Embeddedness indicates the type and degree of the bonds associating companies and public bureaucrats [6]. Some scholars have likewise argued that the extent of institutional trust encourages the business conditions within the inside company [49, 51] and the whole business climate [2, 65, 66].

This study concluded that trust between managers and workers, and trust in the companies' decisions remained high, and was also significantly similar within different companies. It concluded that second hypothesis is rejected. Therefore, this finding indicated that Hungarian ICT companies' perceived interpersonal trust was high and similar in general terms within the different company categories.

This study demonstrated interpersonal trust as a representation of relations of internal organization and the experience of organization within Hungarian firms [24]. According to Mayer, Davis [27], interpersonal trust is the commitment of managers as trustors and workers as trustees. The trustee probably accomplishes a specific objective crucial to the trustor, regardless of whether the trustor is able to supervise or regulate the other party. The previous view was consistent with the outcomes of [12], which described comprehensively how interpersonal trust could increase responsibilities, develop performance, avoid opportunistic behavior, and which also discussed the possibilities of risk within the company. The previous argument is consistent with trust providing an internal governance approach and perceived character [32].

This finding supported the idea that interpersonal trust is pertinent to a bond between managers and employees. Employees can cooperate with their colleagues or supervisors in their social behavior within the company due to interpersonal trust or an influential manager. The pivotal employees or supervisors trust each other, but their actions are vulnerable to perceived risk, such as unfinished assignments. To reduce this risk, managers can monitor and control, or punish, workers. The manager also cultivates interpersonal trust within the company to enhance targeted job performance [27]. To sum up, from a social capital point of view, interpersonal trust nurtures managers and employees to work in an organized and more constructive way to accomplish shared purposes [66, 67].

This study then discussed further insights relating to the third hypothesis. The main one to note here, is that there was a different covariance of indicators of inter-organizational trust. Thus, this study accepted the third hypothesis. It revealed that the degree of trust in business

associates within the three categories of companies varied significantly. Besides, the level of trust in business partner is high. This study revealed that trust in business partners boosts cooperation [35, 68, 69], diminishes doubt and encourages long-term business affiliation [69]. This study contributed to better insights into whether trust in business partners can sustain a conducive business relationship and collaboration.

This study supported the experiment of [12] regarding micro-macro inter-organizational networks. The relationship between managers and their partners usually emerges during informal interpersonal relations [10, 70]. The social connection between managers and their corporate affiliates then develops the business's engagement with the business relationship [10]. Consequently, as the company's representative, the manager believes honestly in partners, adopting an inclusive attitude. The frequent relationship between two company representatives becomes more secure and steady in generating commitment to the partnership [12].

Trust between the company and business partners guarantees that agreements will be carried out [27]. When the company and business partner trust each other, trust acts as an insurance, minimizing constraints and complicated contracts and exhaustive checking [32–34].

Indeed, trust between companies and their partners enhances the agility of reciprocal relations. Inter-organizational trust also diminishes adaptation time, enriches the value of the business relationship [71], decreases the cost of coordination actions [68], minimizes the hesitation involved in collaboration and notably reduces the cost of dealing [72]. Mayer, Davis [27] also argued that the company expects to believe their partners will perform the promised activities without any direct monitoring of these activities [73]. The finding of this research substantially supported the previous results that the level of trust in the partner is high within firms [37].

Furthermore, Lewicki and Bunker [24] defined trust in business partners as being the source of guarantees of expectations. Trust in business partners anticipates intentions relating to risky conditions. Besides, trust in partners can justify partners' methods, predict companies' activities, or internalize the affiliates' wants and purposes [25, 74].

This study has some limitations. First, it investigated one sector as a case study. Thus, the results may estimate the distinct level of trust within specific industries, but this finding may not predict the different extent of trust in other industries. Thus, further study will investigate the trust level within various firms in developed or developing countries. Different countries may have a diverse business climate and culture.

Subsequently, the issue of how to measure the level of trust remains arguable. This study's results can describe the relative degree of trust within Hungarian ICT companies but cannot estimate absolute level of trust. Thus, further study will examine the level of trust through a different approach assessing the degree of trust.

## Conclusions

This research measured trust in institutions constructed by trust in state government, trust in state administration, and local government confidence. The level of trust in government and state administration within medium-sized companies was dependably higher than in other forms of enterprises. Small businesses had the lowest degree of all trust indicators in institutions compared to other types of corporations. Therefore, this study discovered that the level of trust in institutions within micro, small, and medium-sized companies varied significantly. Next, these three indicators were grouped into two discriminant factors; trust in state administration was the most significant contributor for the first discriminant, at about 73%. Then, trust in local government and trust in government and bureaucracies contributed predominantly to the second one. The first discriminant factor discriminated medium-sized firms

from small and micro-enterprises. Meanwhile, the second discriminant factor differentiated medium-sized and micro-companies from small firms. In terms of the predictive accuracy level, the small firm was the most accurately predicted, at about 68%. Meanwhile, the micro firm was less accurately predicted.

Subsequently, this research assessed trust between managers and workers, and trust in the companies' decisions as indicators of interpersonal trust within companies. It discovered that those two indicators remained high and significantly similar within the three categories of firms. Therefore, the study failed to prove the second hypothesis. Next, two indicators of interpersonal trust could be divided into two discriminant functions. The first discriminant, consisting of trust in a critical policy supporting corporate culture and the trust climate, verified about 85% of the reliable variance of the discriminant function. This study disclosed that the first discriminant factor distinguished small and micro firms from medium-sized companies. Meanwhile, trust between managers and workers, as a second discriminant factor, differentiated micro and medium-sized enterprises from small corporations. As a further prediction, the small companies category was the most precisely forecasted, at around 60%. The micro firm type was the second most accurate projection, at about 50%. The medium-sized companies size was the least accurate estimate.

This research measured trust in business partners constructed by four indicators: trust in a business partner, trust in customers and clients, trust in suppliers and subcontractors, and trust in other ICT providers. The trust level in customers and clients was high in the three categories of the firm as was the perceived extent of trust in business partners and the degree of confidence in suppliers and subcontractors. This study supported the third hypothesis; thus, trust in business partners varied significantly within the three categories of companies observed. As four indicators of trust in business partners were grouped, two discriminant functions accommodated these four observed variables. The main point to note is that each discriminant factor consisted of one indicator. Consequently, the first discriminant factor, comprising trust in other ICT providers, determined about 80% of the business partners' variance of trust. The second discriminant factor, consisting of trust in business partners, was the only other significant contributor, at about 20% of the variance. The first discriminant factor differentiated micro and medium-sized firms from small businesses. The second discriminant factor distinguished micro-firms from others. The small firms were the most precisely projected, at about 64%, followed by the micro-companies, at nearly 53%.

The first finding of this study supported the idea that the high level of trust in institutions within Hungarian firms develops from the political, legal, and institutional environment. The level of trust in institutions proliferates among firms due to the capability of the formal institution to provide fair public services. It also underlines that the Hungarian government's performance can cultivate trust among the corporations as a representative demonstration of civic society and engagement. The firms depend on internal consistency, integrity, and the expertise of the Hungarian government.

This study also revealed that the perceived level of interpersonal trust at Hungarian companies was high and similar, in general terms. Therefore, the study highlighted that interpersonal trust is pertinent to a bond between managers and employees. In their social behavior at an internal company, employees can cooperate with their colleagues or supervisors due to interpersonal trust or influential manager. In turn, interpersonal trust develops internal engagement among members of staff to support the firms' shared goals.

Finally, this research discovered that a high level of trust in other similar companies and business partners develops business collaboration, reduces uncertainty, and supports long-term business affiliation. This study contributed to understanding whether trust in business partners creates a conducive business relationship and collaboration. Trust between

companies and their partners expands the flexibility of mutual relationships. Inter-organizational trust also shortens adaptation time, develops the quality of the business relationship, diminishes the cost of coordination activities, improves confidence in collaboration, and markedly reduces transaction costs.

## Author Contributions

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