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The Impact of the Internet on Relational Goods: Empirical Evidence from European Countries

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Abstract

Along with behavioral approaches in economics, a new social concept has emerged which is built on human relationships. Being called relational goods, this concept represents the advantages that people derive from their relationships with each other, such as social approval, friendship, companionship, etc. Relational goods that make people feel satisfied and content are generally produced/consumed in positive family and friendship connections. Nowadays it might be expensive to maintain this kind of relations. Spending time on the internet or social media has become more and more appealing for many people. Especially in European countries, where the percentage of people who prefer to be isolated is rising rapidly day by day, the rate of internet use is quite high. This study aims to investigate the impact of the internet on relational goods in Europe based on the data from the 10th Round of the European Social Survey. In this direction, firstly, categorical principal component analysis was employed in order to construct proxy indicators coded as "social relations" and "family relations" instead of relational goods. Afterwards, the relationship between these indicators and internet use was analyzed with the help of figures. The figures suggest that as average daily internet use increases, both social and family relationships weaken. The findings reveal that in countries where people spend less time online, social ties with family, friends, neighbors or close friends are relatively robust; on the contrary, in countries where people use the internet intensively, communication within the family and in social life is generally poor. The results of the regression indicate that in addition to the internet, socio-economic and socio-demographic factors are also determinants of interpersonal relationships. This study, contrary to the literature, finds that in European countries, the use of the internet weakens the ties between people and reduces the production/consumption of relational goods.

Keywords: Relational Goods, Internet, European Countries.

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1. INTRODUCTION

Standard economic theory assumes that only the rational choices of individuals matter, and that their relationships with each other must be treated as a hypothesis in the models. The standard models, in order to analyze economic behavior, regard human beings as abstract rational agents who act only out of self-interest. Emotional reactions as a result of interactions such as sorrow, rage, joy, etc., and therefore subjective experiences of life are not included in the models. Yet, non-economic behaviors might cause economic outcomes. Hence, it is vital to consider not only one part of human life but also different aspects of it, including personal relationships such as friendship and companionship (Becchetti et al., 2019, pp. 377-378).

The recent integration of psychology into economics has led to a more robust analysis of economic behavior. Attempts to interpret economic behavior with the understanding of the discipline of psychology have brought acceptance that human beings can act not only out of self-interest, but also out of an intrinsic motive that does not expect anything in return. Experimental studies, particularly those based on human decisions, have found that an individual may have an innate urge to share his or her feelings. Thanks to this, social concepts built on human relationships have been included in the models.

Relational goods represent one of these social concepts that were previously regarded as extrinsic. These goods appear in relationships that are formed between two or more people. These values, which are shared in common between people, fulfill social-level needs, which are considered as one of the basic human needs in the discipline of psychology, just like eating, drinking and shelter. Meeting these needs, including a sense of love and belonging, ensures that the individual is content and achieves self-actualization (Donati, 2014, p. 31).

Relational goods entail the interaction of at least two people at the same time. This simultaneous reciprocal communication induces interdependence in the preferences of the people to be interacted with each other. The person who initiates communication may not know in advance how the other party will behave. The other party may rather prefer individual leisure activities or working instead of interacting with him or her. Therefore, there may not exist a sufficient level of production/consumption of relational goods. Today, relational goods appear to be scarce as there are many more alternatives to maintaining relationships compared to the past century. Due to the spread of technological developments to the fields of communication, the cost of maintaining interpersonal relationships face-to-face has increased and individuals prefer to spend time on the internet. Given that the opportunity cost of time allocated for socializing has increased with the massive use of the internet, the risk of people getting caught in the "relational poverty trap" has also increased (Gui, 2013, p. 297; Pugno, 2022, p. 75).

There is no denying the fact that the internet facilitates people's communication and saves time, but it is also well known that it further reduces the time spent socializing, especially in countries where individualism is an issue. For example, in Europe, where individualistic cultural values are at the

forefront, the intensive use of the internet by individuals contributes to the reduction of the number of people with whom they can share their sorrows and joys. Europe is known to lack traditional family characteristics that prevent loneliness and preserve the bonds between people. Children often live far away from their parents and family ties are not very strong. In this respect, it is clear that the harmful effects of the internet on family relations will be more pronounced in Europe. Furthermore, in Europe, where materialistic values are highly appreciated, the internet may lead to an increase in the number of people with a tendency towards materialistic values, as they are more likely to be exposed to messages encouraging materialism.

Considering the foregoing, one would expect the internet to reduce the quality and, more importantly, the level of production/consumption of relational goods in European countries. From this perspective, this study empirically investigates the impact of internet usage on relational goods in Europe. Research on internet use and relational goods is quite limited in the literature and the majority of existing studies are not empirical. There is almost no study that specifically investigates the question "What is the role of time spent on the internet on the decline of relational goods?" in the scope of European countries. Therefore, this study aims to reveal empirically whether the internet may lead to a weakening of social ties in Europe and thus accelerate the decline in relational goods.

In the second section of the study, the definition of the concept of relational goods from different perspectives is explained and the differences between public goods, private goods and social capital are mentioned so that the concept may be understood more clearly. In the third section, the relationship between internet use and relational goods is explained. In the fourth section, a literature review has been conducted. In the first part of the fifth section, information about the data set, variables and methodology used in the analysis is provided. In the second part, firstly, the indicators to be used as proxies instead of relational goods are constructed and then the findings are interpreted. In the last section, general evaluations are carried out based on the results, suggestions are made and the restrictions of the study are addressed.

2. RELATIONAL GOODS

A new theoretical tool for analyzing interpersonal relationships appears in economic studies: the concept of relational goods. Benedetto Gui (1987) and Carole Uhlaner (1989) are the first economists to introduce this concept. In subsequent years, economists have enriched the concept by considering different aspects of it. Therefore, since there is no single generally accepted definition and measurement of the concept of relational goods, the definitions of the pioneers will be presented for a clearer understanding of the concept.

Carole Uhlaner (1989) defined them as goods that "can only be 'possessed' by mutual agreement that they exist after appropriate joint actions have been taken by a person and non-arbitrary others." As Uhlaner argues, the benefits of a private good or a public good such as a road or a dam hinge on the

individual's own consumption, whereas the benefits of a relational good depend on both the individual's own consumption and the consumption of others with whom he or she interacts. As an example, watching a sunset by oneself in nature is considered a public good that may be consumed individually, but the extra pleasure of enjoying a sunset with one's significant others is characterized as a relational good. Since relational goods arise as a result of joint actions at the moment of interaction, they therefore may not be conceived independently of the preferences and status of the other party. The other party must either be a particular person or a member of a particular group. Uhlaner cited social approval, solidarity, friendship, the desire to be recognized or accepted by others, the desire to be respected by others, the desire to maintain an identity and the feeling of being appreciated when fulfillment of a duty or moral norm of the examples of relational goods (Uhlaner, 1989, pp. 253-255).

Benedetto Gui (1996, p. 270) defined relational goods as "intangible capital assets that inhere in enduring interpersonal relationships and provide both intrinsic and instrumental benefits." Gui (2005) defines forms of communication as a specific production process, which he calls "economic encounters." Gui cites the interactions between an employer and an employee, two customers in the same store, a tenant and a landlord, two coworkers at work, a patient and a doctor as examples of economic encounters. In these encounters, relational goods are produced in addition to economic outputs such as the transfer of property rights, the performance of a task or the provision of a service. For example, when an elderly person goes to a neighborhood market, it may be seen as if he or she just buys fruits and vegetables or gets information about new products, but he or she also gets other economic outputs. He or she also gets an additional output (relational goods) that makes him or her satisfied by chatting with the sellers and other shoppers in the market (Gui, 2005, pp. 32-37).

Gui (2013) argues that the benefits arising from relationships fulfill the necessary criteria to be characterized as "goods." Today, relationships may be sustainable by sacrificing alternative goods or activities. For example, an individual may prefer to spend his/her free time on the internet or social media rather than with family or friends. Maintaining friendship and family relationships will require time. In this respect, relational goods involve an opportunity cost. At the same time, relational goods, as mentioned before, satisfy the need for socialization. Yet, even if the individual is willing to pay for the effort and time devoted to a relationship, especially the human resources of the other party, there may not be sufficient supply. This is because the basic composition of a relationship is mutual positive emotions and it is not possible to purchase these emotions with money.

Influenced by Gui's studies, economist Robert Sugden (2005) defined relational goods as "the affective and communicative components of interpersonal relations." Sugden explained the production process of a relational good based on the concept of Adam Smith's fellow-feeling. Fellow-feeling refers to the capability to share someone else's emotion, whether it is pleasurable or painful, and to put oneself in his/her shoes in terms of emotion or thought. Considering this, Sugden suggested that an individual may benefit from relational goods by realizing that positive emotions during interaction tend to be

reciprocal. To illustrate, if a paid caregiver who provides personal care services to a patient approaches the patient in a friendly manner and the patient recognizes and responds to this positive feeling, fellow-feeling emerges (Sugden, 2005, pp. 66-69).

Many studies with a rich theoretical background (see Becchetti & Santoro, 2007; Becchetti et al., 2011; Becchetti & Pelloni 2013; Becchetti et al., 2019; Becchetti et al., 2022) have highlighted a distinctive aspect of relational goods. These goods are labeled as a type of good, the use of which may neither be excluded nor competition arises between interacting parties. This implies that since relational goods are produced/consumed in reciprocal relationships by their very nature, there will be no need for the parties to compete with each other in accessing such goods. Since the existence of these goods depends entirely on the joint actions of the interactants, it will not be possible to deprive the parties of this good at the time of communication. The studies underlined that relational goods may be classified as a subcategory of local public goods since their existence is restricted to those who are in communication.

Relational goods may be confused with the concept of social capital as they hold a similar meaning. However, although they have similar characteristics in terms of abstractness, there are some differences between them. Social capital, despite the existence of different definitions, refers to a set of relationships between people based on trust, co-operation and respect. Relational goods on the other hand represent benefits that are shared through these relationships and fulfil socio-emotional needs such as belonging, social approval, attention and affection. From this perspective, the production/consumption of relational goods heavily hinges on the existence of social capital (Robinson et al., 2020, p. 1290). In addition, as Antoci et al (2007) argue, when social capital refers to permanent and strong ties established through social participation, relational goods may accompany the accumulation of social capital as a by-product. For example, strong ties between individuals are established through repeated communication that is fueled by a certain emotion such as caring, fellowship, admiration, etc.

Defining separate indicators for these interconnected and intertwined concepts may be quite challenging. Following Putnam (2000), social capital indicators may be categorized under four main headings: membership in organizations, trust proxies, level of interaction with networks in the immediate environment and participation in group activities. Relational goods and social capital have a bidirectional relationship that feeds each other, hence, networks in the close environment such as family, relatives, friends and participation in activities and events serve as indicators of relational goods (Sabatini, 2009; Sarracino, 2012). These indicators, as seen in Table 1, represent a measure of the networks dimension of social capital, which is called relational capital.

Table 1. Indicators of Relational Goods: Relational Capital

Macro	Micro		
Ethno-linguistic fractionalization	Political participation	Relational Capital	Structural
Contract enforcement	Individual social support		
Quality of government/bureaucracy	Kinship connections		
Corruption and rule of law	Friendship connections		
Political Stability and liberty	Associational activity		
Cooperative culture	Volunteering and Reciprocity		
Cross country measures of trust	Quality of social/family relations		Cognitive
Social norms	Trust in community/neighbors		
Beliefs			

Source: (Bruni et al., 2019, p. 3329).

3. RELATIONAL GOODS AND THE INTERNET

Today, people widely use the internet for various purposes such as working, chatting, researching, watching films, shopping, playing games, making appointments. The penetration of the internet into all areas of life has caused people to modify the way they learn, work and communicate. Most people now communicate with each other via instant messaging, e-mail or social networks instead of face-to-face communication. This increasingly prevalent form of communication has occupied an important place in our daily lives. This is mainly owing to the fact that the internet is remarkably cheap and accessible at any time of the day (Stanca, 2016, pp. 467-469).

Virtual communication, like relational goods, is a type of communication that is carried out reciprocally with one or more persons. The person himself or herself often determines with whom he or she interacts. However, one can use the internet to communicate with family, friends, neighbors and relatives, as well as with an unknown person. In an online interaction with a stranger, it is not always easy to perceive the feelings and sensitivity of the other party, so online conversations are more prone to disagreements and misunderstandings. Facial interactions, on the other hand, allow a person to better express his/her ideas, opinions and feelings. It allows one to better understand the gestures and facial expressions of the person with whom he or she is interacting (Sabatini & Sarracino, 2019, p. 249). From this point of view, the communication established in the virtual environment has a content that is not sincere, natural and genuine. Due to its remote structure, it lacks a deep level of sharing as it is based on artificial participation and the level of satisfaction of the parties involved is low. Thus, virtual communication, which is easily and quickly carried out, may be characterized as “pseudo-relational goods” that undermine the value and quality of relational goods (Bruni, 2012, p. 123).

The internet has partly favored the production/consumption of relational goods, which are quite costly to access in terms of time and effort, while increasing the opportunity cost of time devoted to real relationships. The internet allows people to communicate with each other without committing to time

and location; however, it has also brought with it a number of limitations. Intensive use of the internet has a close link with the decline in active participation in social life. All kinds of transactions such as purchasing, banking and education may be carried out online via the internet. This saving of time has led to a decline in people's face-to-face interactions and social relations. To put it differently, the time allocated for face-to-face meetings with family, friends and colleagues diminishes as the number of online activities and the time allocated for these activities increases (Stanca, 2016, p. 475; Bauernschuster et al., 2014, pp. 74-75). Notably, the internet eases people's access to contacts located in the distant environment, while reducing the quality of those relationships located in the close environment. The internet, in this sense, shifts the proportion of strong and weak ties in society through the emergence of virtual relationships and may result in a decline in the emotional support provided by strong ties. This in turn may lead to low levels of relational goods.

The internet has deeply affected the relationships such as friends, relatives, neighbors and especially family relationships, which represent strong ties. The dimensions in which the internet affects family communication the most appear to be the time spent with the family, the relationships between spouses and the parent-child relationship. Intensive use of the internet causes family members to spend lesser amounts of time together and reduces the frequency and intimacy of their communication. Family members now mostly spend time on social networking sites. This may encourage spouses to communicate with other people virtually. As a consequence, there may be trust problems between the spouses, disputes may occur in the family and most importantly, divorces may also be experienced. The internet is used by young people mostly for chatting or gaming purposes. Parents' expectations would probably contradict with such usage. This is because parents expect their children to connect to the internet at home for educational purposes. This leads to increased conflicts between parents and children (Mesch, 2006, pp. 121-122).

The most prominent reason why the internet causes communication breakdowns in family and social life may be seen as the fact that it creates various addictions, as these addictions eventually result in people becoming isolated from society. Due to the widespread use of the internet as well as the conveniences it provides, the time spent on online applications increases and many people become addicted to screens without even being aware of it. In the internet environment where there is a huge amount of entertainment and game content, the individual may turn to a very different use than he or she planned and becomes unable to control his/her online behaviours. When he or she fails to connect to the internet, he or she feels extremely irritable, tense and restless. He or she experiences family and social unrest and his/her relationships gradually diminish. As a result, they become distant from their immediate social environment and become trapped in a virtual world as time passes. Such addiction may result in various disorders such as long-term distraction, inability to remember past events, complex thinking, insecurity, anxiety and depression. Thus, this leads to loneliness and a socially isolated life (Pugno, 2022, pp. 74-75).

4. LITERATURE REVIEW

Recently, the number of empirical studies on relational goods has been increasing significantly in the literature. The majority of these studies investigate the impact of relational goods on happiness. Only a few studies have empirically examined how factors commonly observed in developed countries such as the internet, television, high income, and the desire to possess materialistic goods affect the relational goods. These studies can be summarized as follows.

Bruni & Stanca (2008) studied how time spent watching television influences the consumption of relational goods using data from the World Values Survey (WVS) covering the period between 1990 and 2004. Using the instrumental variable method (2SLS), they have concluded that there is a negative and strong correlation between time spent watching television and the consumption of relational goods. Accordingly, individuals who spend more than 2 hours a day watching television consume less relational goods. The time spent watching television had a crowding-out effect on the relational goods. Stanca (2009) also analyzed the relationship between high income and relational goods using the first five waves of the World Values Survey (WVS) (1981-2009). An index measuring the quality of social life was created as an indicator for the relational goods. OLS estimation revealed that there is a strong and positive correlation between high income and quality of social life. Therefore, individuals having a high standard of living also have a high quality of social life and consume more relational goods.

Using the first 3 rounds of the European Social Survey (ESS) dataset for 21 European countries (2002, 2004, 2006), Bünger (2010) examined the relational goods through the question of "How often socially meet with friends, relatives or colleagues?". With both OLS and the ordered logistic regression method, it was concluded that household income and social status positively affect leisure time spent for socializing, while leisure time spent for watching television negatively affects the leisure time spent for socializing. In the study, it was observed that individuals in European countries spend more time for socializing when their social status and income level increase. Becchetti et al. (2011) also explored whether high-income individuals consume relational goods with the fourth wave of the World Values Survey (WVS). They created an index representing the relational goods by using the question "How often do you spend time with the people around you?". With the ordered logit model, it was concluded that higher income level has a negative effect on the time spent on social relations, that is, the consumption of relational goods decreases as the income level increases.

Colombo & Stanca (2014) attempted to determine the price of relational goods within the hedonic approach using the Aspects of Daily Life Survey dataset covering the period 2001-2010. OLS estimation revealed that a one-unit increase in the frequency of meeting with friends is worth an extra €1150 per year in terms of foregone income and higher housing costs. In other words, a certain financial burden has to be incurred in order to live in cities like Italy where more time is spent with friends. Colombo et al. (2018) examined the relationship between the relational goods and macroeconomic conditions with the 2015 data of the Italian Household Survey conducted on 50,000 individuals. Using

the OLS regression method, the researchers concluded that the deteriorating macroeconomic conditions have a negative impact on socializing with friends, participating in social events and volunteering. Accordingly, the consumption/production of the relational goods decreases during the recession period.

Rasciute et al. (2017) also studied the effect of watching television on participation in social activities among young and elderly adults using the first wave (2005) of the Taking Part Survey dataset on 28,117 individuals in the UK. Using the ordered probit model, the researchers found that elderly adults prefer watching television rather than participating in social activities. This indicates that watching television can be a substitute for the relational goods. Schmiedeberg & Schröder (2017) explored the impact of watching television and using the internet on other leisure activities with the waves 1, 3, and 5 of the German Family Panel. As a result of the fixed effects regression estimation, it was concluded that using the internet and watching television for more than 3 hours a day negatively affects life satisfaction. This negative effect is due to the crowding-out of other leisure activities (meeting with friends, doing sports, and going on vacation) through the excessive use of television and internet.

Barbosa Neves et al. (2018), who analyzed the relationship between the use of the Internet and relational capital and how this relationship differs by age, used the survey data of 417 adults aged 18 and over living in Lisbon, Portugal. They analyzed the data using the Latent Class Modeling and logistic regressions. The findings suggested that elderly adults were less likely to have high levels of social capital; however, in this age group, frequent Internet users were reported to have higher levels of social capital than infrequent users or non-users. Kwilinski et al. (2020) investigated the impact of the level of digitalization on the risks of poverty and social exclusion in the member states of the European Union using The Digital Economy and Society Index and the indicator "People at risk of poverty or social exclusion" calculated by the European Commission in 2019. Using the Monte Carlo method and correlation analysis, it was concluded that EU countries with higher levels of digitalization have a lower percentage of population at risk of poverty and social exclusion. Sarracino & Piekałkiewicz (2021) also explored the changes in the level of the relational capital during the economic downturns in European countries. For this purpose, they analyzed the European Social Survey dataset for the period 2006-2012 with a Blinder-Oaxaca decomposition and regression analysis with interaction effects. The results of the analysis revealed that the relational capital tends to drop during economic downturns when financial concerns are at the forefront.

Carlsen et al. (2021) researched the role of using social media in offering social support during the COVID-19 pandemic with the survey data they performed on individuals between the ages of 16-99 in Denmark in 2020. The study revealed that the use of social media during the pandemic strengthened social networks and was effective in meeting the changing needs of vulnerable citizens. Kharisma (2022) analyzed the fifth wave of the Indonesian Family Life Survey (IFLS) with the instrumental variable (IV) method to determine the impact of internet access on the relational capital in Indonesia. Findings showed

that the use of the Internet strengthens the relational capital, particularly for men with strong internal cohesion and neighborhood relationships built on mutual trust. Albuquerque & Fontainha (2023) analyzed the differences in social exclusion between wage earners aged 49-58 and pensioners aged 65-74 in European countries using the European Social Survey data from 2002 and 2018. In the study, it was concluded that individuals switching from being wage-earners to retirees are more affected by social exclusion, and therefore, participation in the labor market has a role in protecting individuals against social exclusion.

Becchetti et al. (2024) addressed the difference between the relational goods and high income in determining life satisfaction in European countries with the data from the European Social Survey (ESS) for 2012 and 2016 and the European Statistics on Income and Living Conditions Survey (EU-SILC) for 2018. The questions "How often do you meet socially with friends, family or colleagues?" in the ESS and "How long in the last 4 weeks have you felt alone?" in the EU-SILC were used as indicators for the relational goods. Using OLS and 2SLS regression methods, they concluded that a change from the lowest to the highest level of relational life has an impact three times larger than the change from the lowest to the highest income decile. Chung et al. (2024) examined the impact of internet use on relational capital using data from the World Values Survey, which includes more than 120 countries, for the period 1990-2020. By applying a two-way fixed-effect panel analysis and logit regression method, they reported that there is a statistically significant and positive relationship between the internet and relational capital, and this relationship is particularly significant for social trust. This suggests that the Internet strengthens the relational capital between individuals.

5. EMPIRICAL ANALYSIS

The analysis has been performed in two steps in order to investigate how spending time online affects shared values in relationships. In the first step, indicators have been created as proxy variables for relational goods. In the second step, the relationship between internet usage time and relational goods has been discussed.

5.1. Data Set and Variables

The analyses have been performed in 29 European countries using Round 10-2020 data compiled within the framework of the European Social Survey (ESS). Conducted in Europe since 2001, the ESS aims to comparatively investigate the behavioral patterns, beliefs and values of different populations. The survey is implemented every 2 years in more than 30 European countries through a common questionnaire. The ESS, which is conducted online or face-to-face interviews with individuals aged 15 and over, consists of ten rounds and the last round has been completed between 2020-2022 with approximately 59000 participants.

Round 10 countries can be listed as follows: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania,

Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

Table 2. Descriptions of Variables

Variable Group	Variables	Descriptions
Relational Goods	How many people with whom you can discuss intimate and personal matters	Likert Scale, 6 categories: 1. One, 2. Two, 3. Three, 4. Four-Six, 5. Seven-Nine, 6. Ten or more
	Take part in social activities compared to others of same age	Likert Scale, 5 categories: 1. Much less than most, 2. Less than most, 3. About the same, 4. More than most, 5. Much more than most
	How often socially meet with friends, relatives or colleagues	Likert Scale, 7 categories: 1. Never, 2. Less than once a month, 3. Once a month, 4. Several times a month, 5. Once a week, 6. Several times a week, 7. Everyday
	Parent lives in same household	Binary, 2 categories, 1. Yes, 2. No
	How close to parent	Likert Scale, 5 categories: 1. Extremely close, 2. Very close, 3. Quite close, 4. Not very close, 5. Not at all close
	Speak with parent in person, how often	Likert Scale, 6 categories: 1. Several times a day, 2. Once a day, 3. Several times a week, 4. Several times a month, 5. Once a month, 6. Less often, 7. Never
Internet	Internet use, how much time on a typical day, in minutes	Numerical variable
Socio-economic and Socio-demographic Variables	Age	Numerical variable
	Gender	Dummy variable: Female, Male
	Main activity, last 7 days.	Dummy variable: Employed, Retired, Housewife, other
	Education	Dummy variable: Primary, Secondary, High, University
	Years of education	Numerical variable
	Income	10 Steps Cantril Ladder
Covid-19	Respondent had Covid-19	Dummy variable: Yes, No

The desire to maintain an identity, a sense of fellowship, the desire to be recognized or accepted by others, which Uhlaner (1989) exemplifies as relational goods, fulfill emotional needs. In order to fulfill these needs, one must be in a mutual relationship. As the frequency of meeting with the social environment, the frequency of participation in social activities and the number of people with whom personal issues can be talked about increases, individuals' interactions increase and they can benefit from relational goods more. Smith's concept of fellow-feeling suggests that the more time spent with the family, the greater the value of shared emotions since family members have a high sense of fellow-feeling as they know each other well. Those who are close to their family, live in the same house as their family and talk to them frequently have intense shared emotions and the quality of relational goods is

relatively high. In this context, the first six variables in Table 2 may be utilized as proxy variables instead of relational goods.

5.2. Method

The variables selected as proxies for relational goods are response variables possessing ordered categories. Categorical principal component analysis (CATPCA) has been employed to quantify and transform the selected categorical variables into a smaller number of new variables.

The purpose of principal component analysis (PCA) is to obtain the linear components of m variables and then to narrow them down to a smaller number of uncorrelated summary variables (principal components) that represent the information in these variables as accurately as possible. In PCA, it is often asserted that the relationships between variables are linear and all variables are assumed to be on a numerical scale so that the final output may be properly interpreted. These assumptions are generally invalid in social sciences and PCA may not always represent the most appropriate analysis method in this case. To circumvent these limitations, the CATPCA method, which has the same purpose as PCA and referred to as nonlinear PCA, has been developed (Linting et al., 2007, p. 336).

CATPCA is a convenient method for analyzing data sets containing variables of different scales (nominal, ordinal or numeric) that may be related to each other in a non-linear way. In this method, the categories of variables are assigned numerical values through a process called optimal scaling (optimal quantification/optimal scoring). During the optimal scaling process, the categories of the original variables are replaced with numerical values in such a way as to minimize the loss of information in the variables. This transformation is performed employing an algorithm that converges to a stationary point where the optimal quantifications of the categories do not change anymore (Meulman et al., 2004, p. 50; Linting et al., 2007, p. 337). To put it differently, optimal scaling, which is the basis of nonlinear PCA, refers to the process of repeating iterations until the loss function including category scores and the unknown object is minimized. Due to the minimum loss, the relationships between categories and variables in the real space are represented in a lower dimensional space. Therefore, CATPCA offers several advantages over PCA in analyzing categorical variables, including fewer limitations and a higher ratio of explained variance (Demir et al., 2021, pp. 444-449).

5.3. Results

5.3.1. The Relational Goods Indicator

The six variables considered to be indicators of relational goods have been subjected to categorical principal components analysis and narrowed down to two dimensions.

Table 3. Model Summary of CATPCA

Dimension	Cronbach's Alpha	Variance Accounted For (VAF)	
		Total Eigenvalue	Variance Percentage
1	0.741	2.613	43.550
2	0.572	1.911	31.850
Total	0.935	4.524	75.400

The variance accounted for and Cronbach's Alpha value of each dimension are reported in Table 3. The VAF, which is considered as the main criterion for variable selection, is represented by eigenvalues in principal component analysis, and the VAF of a component is calculated by dividing its eigenvalue by the number of analysis variables. Eigenvalues may be used as an indicator of how many dimensions are required. In the model, the eigenvalue of the first dimension is 2.613 and the eigenvalue of the second dimension is 1.911. The VAF of the eigenvalues are 43.550% and 31.850% respectively. It is seen that the total variance with the two dimensions is 75.400%. This rate points to a reasonable fit. In the literature, an explanation rate of 67% is generally considered to be adequate. However, this is not a widely accepted rule. The total Cronbach's Alpha coefficient, which is a measure of reliability, has been calculated as 0.935 in the model. This value indicates that the fit of the model is high. A threshold value of 0.7 is generally considered to be an adequate lower limit (Lopes & Calapez, 2012, p. 94).

Figure 1. Relational Goods Indicators in Two-dimensional Space

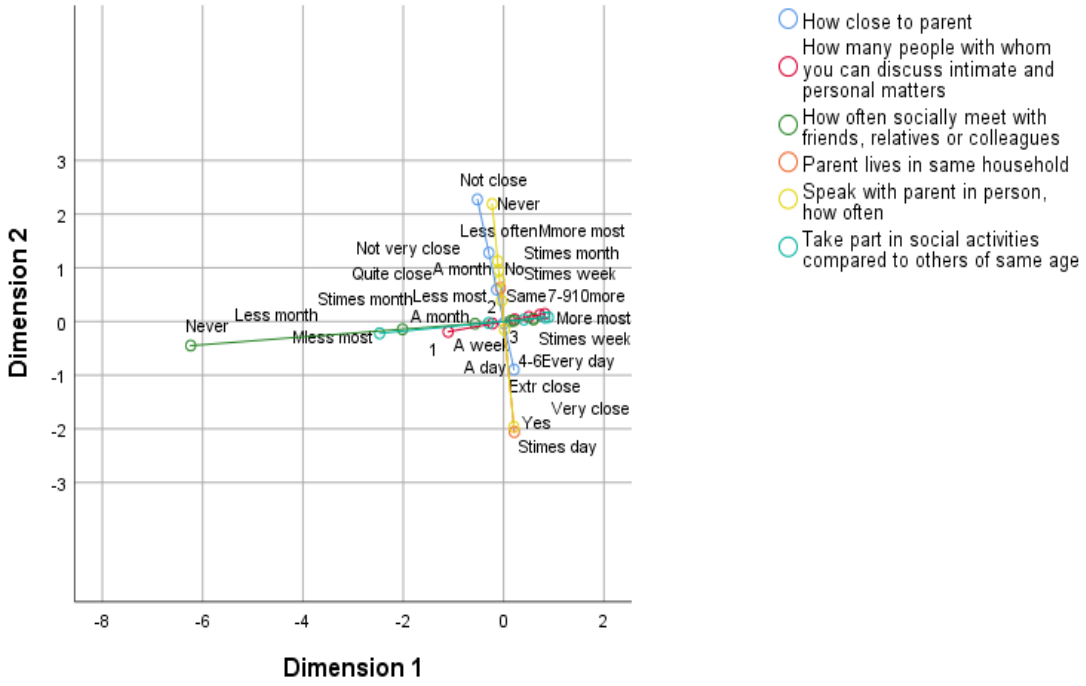


Figure 1 reveals a strong relationship between the frequency of family contact and the variables of being close to the family and living in the same house with the family in both dimensions. There is a positive relationship between the "several times a day" category of the frequency of talking to the family variable and the "yes" category of the living in the same house with the family variable, and between

the “not at all close” category of the being close to the family variable and the “never” category of the frequency of talking to the family variable. This suggests that people who live in the same house with their families have a high frequency of talking to them; however, people who do not have close relationships with their families tend not to communicate with them. It is evident that the variables of frequency of meeting with social circle, frequency of participation in social activities and the number of people with whom one has close relationships are also correlated with each other. The “never” category of the frequency of meeting with the social circle is negatively related to the “10 or more” category of the number of people with whom one has close relationships; and the “much less than most” category of the frequency of participation in social activities is negatively related to the “everyday” category of the frequency of meeting with the social circle. This relationship indicates that those who have no contact with family, relatives, neighbors, friends and other people around them have fewer people with whom they have close relationships, whereas those who meet socially with others everyday are more likely to participate in social activities compared to their peers.

According to the first dimension in Figure 1, the categories “never” and “less than once a month” of the variable of frequency of meeting with the social environment, the categories “much less than most” and “less than most” of the variable of frequency of participation in social activities and the category “1” of the variable of number of people with whom one has close relationships are positively related. Similarly, the “no” category of the variable of living in the same house with the family, the “not at all close”, “not very close” and “quite close” categories of the variable of being close to the family, and the “never”, "less often" and “once a month” categories of the variable of frequency of talking to the family are positively related to the first dimension. It is known that categories that are distant from the origin have a high impact on the formation of the dimension. It has been observed that the categories that contribute the most to the first dimension are the “never” category of the frequency of meeting with the social environment and the “much less than most” category of the frequency of participation in social activities.

According to the second dimension, a positive relationship was found between the “several times a day” and “once a day” categories of the frequency of talking to the family, the “extremely close” and "very close" categories of being close to the family, and the “yes” category of living in the same house with the family. There is also a positive relationship between the “10 or more”, “7-9” and “4-6” categories of the variable of the number of people with whom the respondent has close relationships and the “every day” and “once a week” categories of the variable of the frequency of meeting with the social environment. The categories with the highest effect for the second dimension are the "yes" category of living in the same house with the family and the “several times a day” category of the frequency of talking to the family.

Table 4. Correlations Between Variables According to Dimensions of Relational Goods (Component Loadings)

	Dimension	
	1	**2**
How many people with whom you can discuss intimate and personal matters	0.572	0.100
Take part in social activities compared to others of same age	0.976	0.087
How often socially meet with friends, relatives or colleagues	1.140	0.082
Parent lives in same household	-0.089	0.855
How close to parent	-0.129	0.559
Speak with parent in person, how often	-0.096	0.918

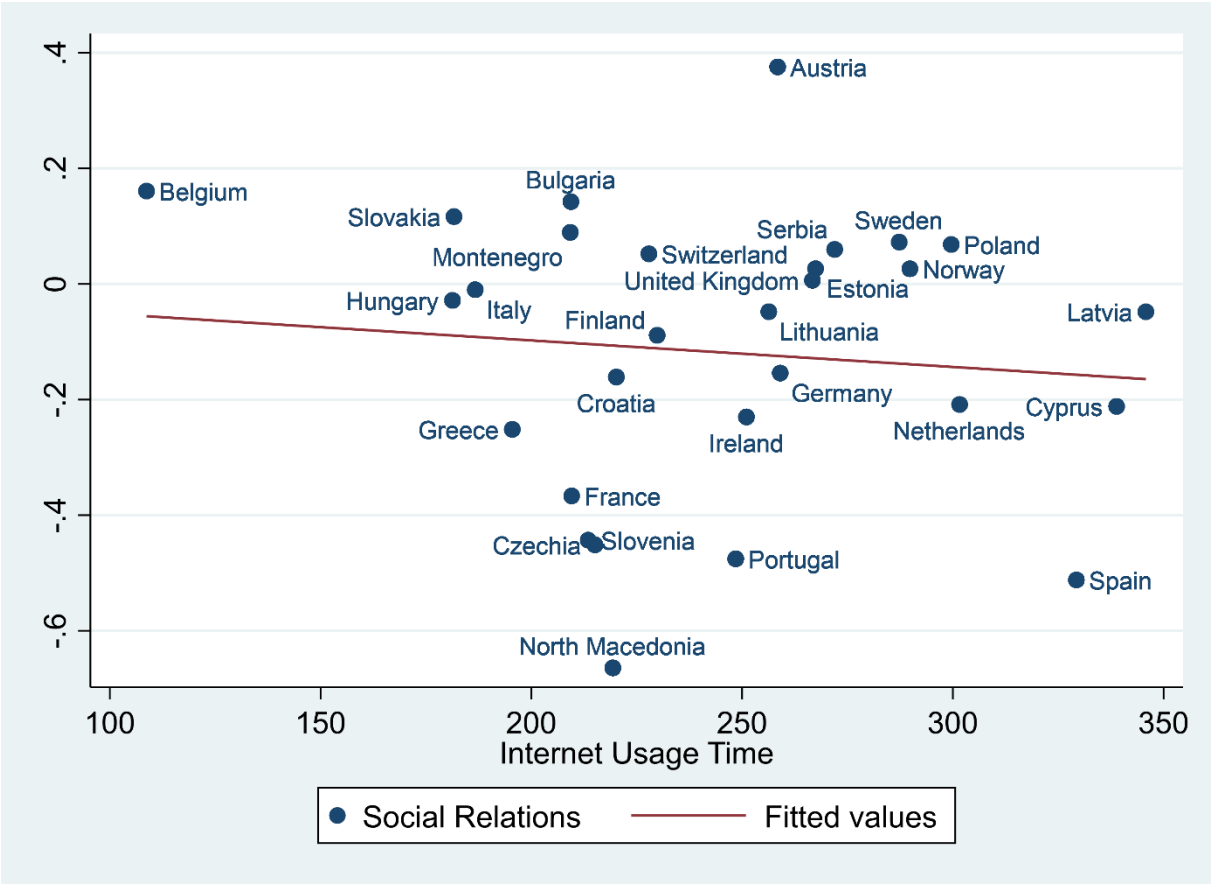
Table 4 presents the classification of the six variables according to the components of relational goods. Component loadings represent the correlations between the quantified variables and the principal components. The signs of the component loadings denote the close and positive or close and negative relationship of the variables with each component. (Saukani & Ismail, 2019, p. 642). Based on this, it appears that the variable with the highest load value in the first dimension is the frequency of meeting with the social environment with a load value of 1.140. This variable is followed by the frequency of participation in social activities with a load value of 0.976 and the number of people in close relationships with 0.572. These three variables constitute the dominant variables that have a high impact on determining the first dimension. Other variables contribute very little to the dimension. Therefore, the first dimension may be called “social relations.”

In the second dimension, the variable of frequency of talking to the family has the highest load value with 0.918. The variable of living in the same house with the family has the second highest load value with 0.855 and the variable of being close to the family has the third highest load value with 0.559. The loadings of the other variables seem to be quite low. Therefore, the variables that have the highest contribution in shaping the second dimension are the three variables related to family with the highest loadings. Therefore, the second dimension may be named as “family relations.”

5.3.2. Relational Goods and the Internet: European Countries

The relationship between relational goods and time spent on the internet by recording the score values of the dimensions obtained with CATPCA has been analyzed in the context of European countries with the help of the figure.

Figure 2. The Relationship between Social Relations and Internet Usage Time in European Countries

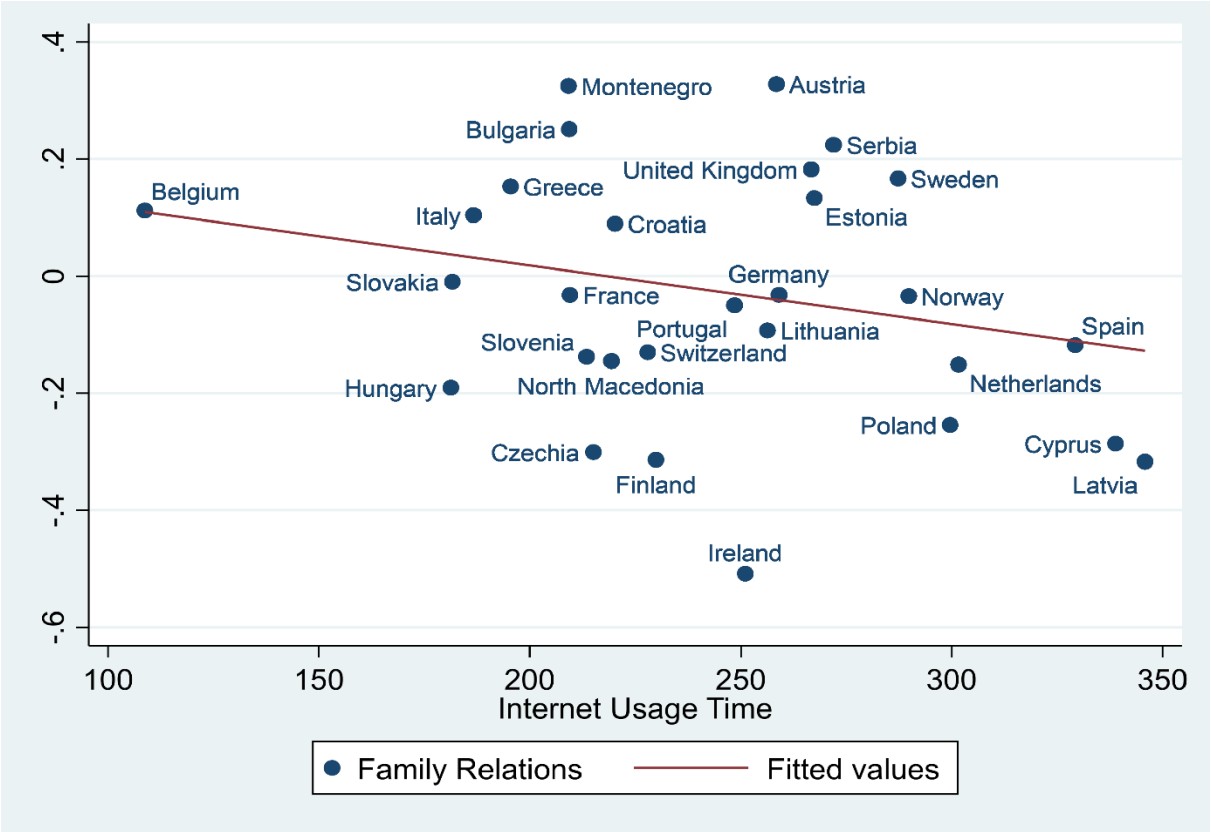


Note: OLS: Social Relations= 0.059[-1.22] – 0.00046[-23.86] Internet Usage Time. Observation = 57474, R-square= 0.0089 ve Prob >F =0.0000. Internet usage time is significant at the 0.01 level.

Figure 2 illustrates a negative correlation between time spent online and social relations in European countries. In general, social relations seem to be weaker in countries where internet usage time is high, and on the contrary, sharing, solidarity and interpersonal ties are stronger in countries where internet usage time is low. In Belgium, where the average daily internet usage time is considerably lower than in other countries in Europe, the frequency with which people meet socially appears to be higher and the network of social relations is wider. On the other hand, in Spain, where the average daily internet usage time is more than 300 minutes, the time spent in the social environment is low and communication is weak. Excess of 5 hours of internet usage time indicates that in Spain, more time is spent in front of online applications than planned. A striking result in the figure is that social relations are quite weak in North Macedonia. This result could mean that in North Macedonia, where people connect to the internet more frequently than in Greece, Italy, Hungary, Slovakia, Montenegro, people have a high opportunity cost for time spent socializing and value spending time individually more. Figure 2 illustrates that individuals in France, Czechia, Slovenia and Portugal do not spend enough time together socially, such as attending events, going on vacation, playing sports, chatting, etc. Compared to other European countries, the average duration of internet use in these countries stands at 3.5-4 hours. However, this duration is above the world average (2 hours 23 minutes). Based on these figures, one may say that the

internet has a negative impact on social relations in these countries. Another remarkable result is that despite the high average daily time spent on the internet in Austria, relationships between friends, family, neighbors and relatives are strong. The widespread use of the internet in Austria has not led to a decline in social relations. Overall, it may be concluded that the production/consumption level of relational goods decreases as the time spent in front of screens increases with the use of the internet in European countries.

Figure 3. The Relationship Between Family Relations and Internet Usage Time in European Countries



Note: OLS: Family Relations=0.218[69.07] – 0.001[-79.45] Internet Usage Time. Observation = 57474, R-square = 0.0564 ve Prob >F =0.0000. Internet usage time is significant at the 0.01 level.

Figure 3 demonstrates that family relations weaken as internet usage time increases in European countries. In Latvia, which has the highest daily internet usage time of approximately 350 minutes, communication within the family is very limited and the level of closeness, satisfaction and participation in relationships between family members is low. It may be stated that people in Latvia, who spend an average of 6 hours on the internet daily, spend a large part of their time on the internet outside of sleep and work. This situation, which is also characterized as addiction, may diminish the areas of common sharing between the family and reduce or completely destroy the quality of relationships. Similar to the relationship in Figure 2, ties between family members are strong in Belgium, where the daily time spent online is the lowest (1.5 hours on average). It is understood that individuals in this country prefer to spend time in the family environment rather than in the virtual world, do not have a life intertwined with

social media and have close family ties. In Montenegro and Bulgaria, where internet usage is average, most people have close relationships with their families and see and talk to family members frequently. Good family relations have also been observed in Austria, Serbia, Sweden, the United Kingdom and Estonia, where the internet is used more intensively than in these countries. It is observed that the average daily internet usage time of 4.5-5 hours in these countries does not negatively affect the time spent with the family and thus communication within the family. Among the countries where family ties are quite weak, Ireland stands out. In Ireland, people spend an average of 4 hours on the internet per day. The figure shows that this figure is higher than the European average. It may be said that in this country, the internet leads to a serious communication gap between family members, which in turn leads to family unrest. People in the Netherlands, Poland, Cyprus and Spain, where internet use is more intensive than in other European countries, do not maintain healthy family relations. In these countries, spending too much time in virtual environments decreases the communication between the individual and his/her family and distances him/her from his/her family. Broadly speaking, as shown in Figure 3, the increase in internet usage time in European countries leads to a decrease in time spent with the family and a weakening of family relations. Therefore, the production/consumption of relational goods in Europe is decreasing day by day.

The impact of internet use as well as socio-economic and socio-demographic variables on relational goods was also investigated. The scores of the dimensions obtained by applying the CATPCA method were transformed into categorical variables grouped into 5 ordinal options for this purpose. Both OLS and ordered logistic regression were used as estimation methods and the results are reported in Table 5.

Table 5. Regression Estimation Results

	Social Relations Dimension		**Family Relations Dimension**	
Variables	**Logit**	**OLS**	**Logit**	**OLS**
Age	-0.002***	-0.002***	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Female	-0.017	-0.013	-0.062***	-0.049***
	(0.021)	(0.016)	(0.021)	(0.017)
Employed	0.065**	0.051**	-0.028	-0.023
	(0.032)	(0.025)	(0.032)	(0.026)
Retired	0.172***	0.137***	-0.026	-0.021
	(0.047)	(0.037)	(0.047)	(0.038)
Housewife	0.127**	0.101**	-0.057	-0.046
	(0.052)	(0.041)	(0.053)	(0.042)
Years of education	-0.004	-0.003	-0.007**	-0.006**
	(0.003)	(0.002)	(0.003)	(0.003)

(Table 5 cont.)

Secondary school	0.354***	0.272***	0.063	0.053
	(0.073)	(0.058)	(0.071)	(0.056)
High school	0.368***	0.284**	0.100	0.083
	(0.068)	(0.054)	(0.066)	(0.052)
University	0.388***	0.300***	0.153**	0.125**
	(0.073)	(0.058)	(0.071)	(0.056)
Internet usage time	-0.000**	-0.000**	-0.000*	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Income	0.009**	0.007**	0.004	0.003
	(0.004)	(0.003)	(0.004)	(0.003)
Covid-19	0.029	0.023	-0.027	-0.022
	(0.023)	(0.019)	(0.023)	(0.019)
cut1	-1.101***		-1.410***	
	(0.085)		(0.083)	
cut2	-0.110		-0.465***	
	(0.085)		(0.083)	
cut3	0.712***		0.358***	
	(0.085)		(0.083)	
cut4	1.724***		1.339***	
	(0.085)		(0.083)	
Constant		2.768***		3.035***
		(0.067)		(0.065)
Observation	31,045	31,045	31,045	31,045
R-squared		0.002		0.001
Pseudo R-squared	0.000612		0.000245	
Prob > chi2	1.38e-08		0.0176	
Prob > F		3.29e-08		0.0161

Note: Level of significance: *** p<0.01, ** p<0.05, * p<0.1. Figures in brackets refer to standard errors.

In Table 5, we observe a negative relationship between age and social relations. This relationship indicates that when an individual gets older by one year, his/her relationships with social contacts deteriorate. The coefficient of the female variable for social ties is not significant. There is no significant difference between men and women in terms of establishing social ties. Regarding employment status, it is observed that employed, retired and housewives have good social ties. In comparison to the unemployed, these individuals have a higher frequency of social contacts with acquaintances. Those who have completed secondary school, high school and university education have stronger communication with their environment and therefore have better relationships than those who have graduated from primary school. Therefore, we can state that the higher the level of education, the better social relations the individual has with the people around him/her. According to the total net income of

the household, it is seen that those who are ranked one level higher have better social relations. It is understood that increasing income contributes to social relations. It is expected that the social networks of those who have undergone Covid-19 in the immediate or distant environment will weaken, but there are no significant differences with those who have not undergone Covid-19. As expected, internet usage time negatively affects social relations.

The findings on family relations suggest that men have better relationships with their family members than women. Regarding the results for the age variable, it may be observed that the effect of one-year older age on family relations is not statistically significant. Similarly, no significant relationship has been found between income and family relations. It is also observed that there are no significant differences between the unemployed and the employed, retired and housewives in terms of family relations. In comparison to those who have graduated from primary school, only those who have completed university level education have better relations with their parents, spouse or children. Completion of secondary and high school education is not found to be statistically significant for strong family ties. The impact of Covid-19 on family relations is not observed to be statistically significantly different between those who have had the disease and those who have not. As in social relations, internet use has a negative impact on family relations.

6. CONCLUSION

Recently, a growing number of researchers have been studying the social concept called relational goods as a result of behavioral approaches in economics. Relational goods, which may also be defined as the benefits that people derive from their relationships with each other, are created by positive relationships established over time. However, the time and effort devoted to relationships nowadays has decreased considerably. Most people now spend most of their time on the internet. Especially in European countries, the internet is used regularly every day. According to Eurostat data, 86% of people between the ages of 16 and 74 use the internet every day in 2023. It is known that in Europe, where the internet is used intensively, there is a proliferation of people who isolate themselves from their social environment. This study empirically investigates this negative situation with the data of the 10th Round of the European Social Survey covering the period 2020-2022.

In this study, firstly, proxy variables were created instead of relational goods using categorical principal components analysis (CATPCA). The first variable transformed as a result of the quantification of the selected categorical variables has been coded as “social relations” and the second variable as “family relations.” Studies in the literature have either directly used the variables selected as indicators of relational goods in the analyses or reduced them to fewer components by subjecting them to principal component analysis. There are very few studies using CATPCA method (see Lopes & Calapez, 2011; Lopes & Calapez, 2012; Saukani & Ismail, 2019). In this study, new indicators for relational goods have been created by applying CATPCA method with an up-to-date data set.

In the study, the relationship between the internet use in Europe and the indicators of relational goods is analyzed with the help of figures. It is concluded that in the European countries where the average daily internet use time is quite low, people meet with each other more frequently and, consequently, have stronger social bonds. On the other hand, in countries where daily internet use exceeds 5 hours, the time spent with family, friends, relatives or close acquaintances is less and communication is limited. According to Bartolini (2019), nowadays, individuals prefer activities that they can do alone, such as using social media and watching television, instead of building social relationships with others. Such preferences of individuals depend on the quality of their relationships with each other. Particularly in the developed world, the increasing pursuit of individual success and interpersonal competition, along with materialism, wear down the shared values and social norms, leading individuals to spend time on the internet and thus to loneliness. Pugno (2009) emphasized that the materialistic tendencies which increase internet use cause individuals to have difficulty in establishing close relationships with their families, relatives, friends and other people around them, or the close relationships they establish are problematic and short-lived. According to Becchetti & Santoro (2007), individuals tend to purchase products with higher materialistic value in order to protect themselves from this process of isolation and increase the time they dedicate to work in order to meet their increased desire for consumption. Therefore, even though the income level is higher in the developed countries, the time devoted to the production/consumption of the relational goods decreases.

The findings obtained with the help of the figure show that in the European countries where living standards are higher, the Internet has a negative impact on both family relations and social relations as it causes communication gaps between individuals. It might be said that the internet has increased the number of people who are estranged from their families and social circles in Europe. In fact, during the Covid-19 period, the internet was expected to facilitate the communication of people who could not meet face to face and strengthen the bond between them. On the contrary, the results suggest that the increase in internet use during this period weakened the bonds between people. The study demonstrated that the production/consumption level of relational goods decreased as the time spent on the internet increased. According to Bruni (2016), since it is easy and quick to access, the internet replaces face-to-face communication in the real world and creates a virtual environment, virtual communication and virtual relationships. The researcher argued that the internet, which he also referred to as pseudo-relational goods, prevents individuals from communicating with others in real life and participating in social activities in societies with advanced communication technology. Pugno (2013) also demonstrated that the replacements of relational goods, which Scitovsky (1976) defined as comfort goods, have become increasingly widespread in rich countries due to technological developments and that people tend to consume such goods because they are offered at low costs. On the other hand, Stanca (2016) argued that such goods, which cut down the production/consumption of the relational goods and

are costly to access in terms of time and effort, create a kind of addiction over time, distancing people from social life and alienating them from real-life relationships.

The study also examines the impact of socio-economic and socio-demographic variables on relational goods. The regression analysis has revealed that the higher the income and education level of the individual, the better his/her relations with his/her social environment; however, the older he/she gets by one year, the worse his/her social relations become. No significant difference between men and women in terms of social relations has been found, whereas it has been observed that men have better intra-family relationships compared to women. It has been observed that compared to the unemployed, employed, retired and housewives have better social relations; however, there are no significant differences between them in terms of domestic relations. Given that Covid-19 is expected to shrink social networks, findings reveal that its effect on both family and social relations is not statistically significant.

In general, this study suggests that as the duration of internet use increases in European countries, both intra-family relations and communication in social life are weakened, thus accelerating the downward trend of the relational goods. In the literature, there are also studies reporting that factors such as television viewing, internet use, materialistic tendencies, and being in a high income group, which lead to the weakening of interpersonal social ties, reduce the level of production/consumption of the relational goods (see, for example, Bruni & Stanca, 2008; Bünger, 2010; Becchetti et al, 2011; Colombo & Stanca, 2014; Rasciute et al. 2017; Schmiedeberg & Schröder, 2017; Sarracino & Piekałkiewicz, 2021; Becchetti et al. 2024 in the literature review section). In these studies, only "social relations" were used as an indicator for the relational goods. Contrary to the literature, in this study, a new proxy indicator called "family relations" was created instead of the relational goods by applying the CATPCA method with an up-to-date data set. In this way, the effect of extensive internet use on the relationship between family members was empirically explored.

On the basis of the research findings, recommendations may be made to policy makers to prevent the negative effects of the internet on relationships within the family and in social life. In this regard, resources may be provided to institutions and organizations such as non-governmental organizations, universities, and parent-teacher associations to inform the society about the harmful aspects of the internet. Trainings may be organized for families on internet risks in order to keep the communication between family members strong. Specialists on this subject might be employed in schools to protect children from internet addiction from an early age. Moreover, efforts may be made to develop psychosocial support programs to help internet addicts overcome psychological problems. Family counseling programs may also be introduced to increase awareness of the factors that trigger internet addiction in families.

The study offers substantial findings that time spent online is a determinant of interpersonal relationships in Europe and that intensive internet use triggers loneliness. It also sheds light on the indicators of relational goods in Europe and the determinants of these indicators as well as the internet. Therefore, this study may serve as a guide for researchers working on relational goods. However, long-term effects and the direction of causality are not clear since cross-sectional data are used. No inference may be drawn from the findings that people with weak social ties will spend more time online. The use of panel data may provide a more reliable measure of causality. Furthermore, the European Social Survey dataset does not contain information on the purpose for which respondents use the internet. For this reason, the study has been unable to find out how the use of the internet for communication, learning or entertainment affects the bonding between people. These limitations may be helpful in identifying research topics for future studies.

This research does not need the approval of Ethics Committee.

The study has been crafted in adherence to the principles of research and publication ethics.

The author declares that there exists no financial conflict of interest involving any institution, organization, or individual(s) associated with the article.

The entire work was carried out by its only, stated author.

REFERENCES

Albuquerque, P. C., & Fontainha, E. (2023). Social exclusion in later life, evidence from the european social survey. In N. Burnay, J. Ogg, C. Krekula, & P. Vendramin (Eds.), *Older workers and labour market exclusion processes* (pp. 191- 209). Springer International Publishing.

Antoci, A., Sacco, P. L., & Vanin, P. (2007). Social capital accumulation and the evolution of social participation. *The Journal of Socio-Economics*, *36*(1), 128-143. https://doi.org/10.1016/j.socec.2005.11.011

Barbosa Neves, B., Fonseca, J. R., Amaro, F., & Pasqualotti, A. (2018). Social capital and Internet use in an age-comparative perspective with a focus on later life. *PloS One*, *13*(2), 1-27. https://doi.org/10.1371/journal.pone.0192119

Bartolini, S. (2019). Unhappiness as an engine of economic growth. In M. Rojas (Ed.), *The economics of happiness how the easterlin paradox transformed our understanding of well-being and progress* (pp. 271- 301). Springer International Publishing.

Bauernschuster, S., Falck, O., & Woessmann, L. (2014). Surfing alone? The internet and social capital: Evidence from an unforeseeable technological mistake. *Journal of Public Economics*, *117*, 73-89. http://dx.doi.org/10.1016/j.jpubeco.2014.05.007

Becchetti, L, & Santoro, M. (2007). The income–unhappiness paradox: a relational goods/baumol disease explanation. In L. Bruni, & P. L. Porta (Eds.), *Handbook on the economics of happiness* (pp. 239-262). Edward Elgar Publishing.

Becchetti, L., & Pelloni, A. (2013). What are we learning from the life satisfaction literature?. *International Review of Economics*, *60*, 113-155. https://doi.org/10.1007/s12232-013-0177-1

Becchetti, L., Bobbio, E., Prizia, F., & Semplici, L. (2022). Going deeper into the S of ESG: a relational approach to the definition of social responsibility. *Sustainability*, *14*(15), 9668. https://doi.org/10.3390/su14159668

Becchetti, L., Bruni, L., & Zamagni, S. (2019). *The microeconomics of wellbeing and sustainability: recasting the economic process*. Academic Press.

Becchetti, L., Cermelli, M., & De Rosa, D. (2024). Three times more than money: generativity, relational goods and life satisfaction. *International Review of Economics*, 1-32. https://doi.org/10.1007/s12232-024-00472-9

Becchetti, L., Trovato, G., & Londono Bedoya, D. A. (2011). Income, relational goods and happiness. *Applied Economics*, *43*(3), 273-290. https://doi.org/10.1080/00036840802570439

Bruni, L. (2012). The ambivalence of the good life: happiness, economics, technology, and relational goods. In: P. Brey, A. Briggle, & E. Spence (Eds.), *The good life in a technological age* (pp. 109-130). Routledge.

Bruni, L. (2016). Public happiness and relational goods: that crucial link that economics and policy often forget. In S. Bartolini, E. Bilancini, L. Bruni, & P.L. Porta (Eds.), *Policies for happiness (*pp. 263-282). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198758730.003.00

Bruni, L., & Stanca, L. (2008). Watching alone: Relational goods, television and happiness. *Journal of Economic Behavior & Organization*, *65*(3-4), 506-528. https://doi.org/10.1016/j.jebo.2005.12.005

Bruni, L., Rosa, D. D., & Ferri, G. (2019). Cooperatives and happiness. cross-country evidence on the role of relational capital. *Applied Economics*, *51*(30), 3325-3343.

Bünger, B. (2010). The demand for relational goods: Empirical evidence from the European Social Survey. *International Review of Economics*, *57*, 177-198. https://doi.org/10.1007/s12232-010-0094-5

Carlsen, H. B., Toubøl, J., & Brincker, B. (2021). On solidarity and volunteering during the COVID-19 crisis in Denmark: The impact of social networks and social media groups on the distribution of support. *European Societies*, *23*(1), 122-140. https://doi.org/10.1080/14616696.2020.1818270

Chung, K. H., Shim, D. C., & Park, H. H. (2024). Revisiting theory of social capital: Can the internet make a difference?. *Technological Forecasting and Social Change*, *202*, 1-13. https://doi.org/10.1016/j.techfore.2024.123282

Colombo, E., & Stanca, L. (2014). Measuring the monetary value of social relations: A hedonic approach. *Journal of Behavioral and Experimental Economics*, *50*, 77-87. https://doi.org/10.1016/j.socec.2014.03.001

Colombo, E., Rotondi, V., & Stanca, L. (2018). Macroeconomic conditions and well-being: Do social interactions matter?. *Applied Economics*, *50*(28), 3029-3038. https://doi.org/10.1080/00036846.2017.1414935

Demir, Y., Keskin, S., & Çavuşoğlu, Ş. (2021). Doğrusal olmayan temel bileşenler analizinin tanıtımı ve uygulanabilirliği. *Kahramanmaraş Sütçü İmam Üniversitesi Tarım ve Doğa Dergisi*, *24*(2), 442-450. https://doi.org/10.18016/ksutarimdoga.vi.770817

Donati, P. (2014). Relational goods and their subjects: The ferment of a new civil society and civil democracy. *Recerca. Revista de Pensament i Anàlisi*, (14), 19-46.

Gui, B. (1987). Eléments pour une définition d'économie communautaire. *Notes et Documents*, *19*(20), 32-42.

Gui, B. (2005). From transactions to encounters: The joint generation of relational goods and conventional values. In B. Gui, & R. Sugden (Eds.), *Economics and social interaction: accounting for interpersonal relations* (pp. 23-51). Cambridge University Press.

Gui, B. (2013). Relational goods. In L. Bruni, & S. Zamagni (Eds.), *Handbook on the economics of reciprocity and social enterprise* (pp. 295-305). Edward Elgar Publishing.

Kharisma, B. (2022). Surfing alone? The Internet and social capital: Evidence from Indonesia. *Journal of Economic Structures*, *11*(1), 8. https://doi.org/10.1186/s40008-022-00267-7

Kwilinski, A., Vyshnevskyi, O., & Dzwigol, H. (2020). Digitalization of the EU economies and people at risk of poverty or social exclusion. *Journal of Risk and Financial Management*, *13*(7), 142. https://doi.org/10.3390/jrfm13070142

Linting, M., Meulman, J. J., Groenen, P. J., & van der Koojj, A. J. (2007). Nonlinear principal components analysis: Introduction and application. *Psychological Methods*, *12*(3), 336. https://doi.org/10.1037/1082-989X.12.3.336

Lopes, H., & Calapez, T. (2011). Exploring the sources and benefits of cooperation: The role and challenges of relational and moral goods. *International Journal of Social Economics*, *38*(7), 607-627. https://doi.org/10.1108/03068291111139249

Lopes, H., & Calapez, T. (2012). The relational dimension of identity—Theoretical and empirical exploration. *Review of Social Economy*, *70*(1), 81-107. https://doi.org/10.1080/00346764.2011.592279

Mesch, G. S. (2006). Family relations and the Internet: Exploring a family boundaries approach. *The Journal of Family Communication*, *6*(2), 119-138. https://doi.org/10.1207/s15327698jfc0602_2

Meulman, J. J., Van der Kooij, A. J., & Heiser, W. J. (2004). Principal components analysis with nonlinear optimal scaling transformations for ordinal and nominal data. In D. Kaplan (Eds.), *The Sage handbook of quantitative methodology for the social sciences* (pp. 49-70). Sage Publications.

Pugno, M. (2009). The Easterlin paradox and the decline of social capital: An integrated explanation. *The Journal of Socio-Economics*, *38*(4), 590-600. https://doi.org/10.1016/j.socec.2009.03.012

Pugno, M. (2013). Scitovsky and the income-happiness paradox. *The Journal of Socio-Economics*, *43*, 1-10. http://dx.doi.org/10.1016/j.socec.2012.11.016

Pugno, M. (2022). *Well-being and growth in advanced economies: the need to prioritise human development*. Routledge. https://doi.org/10.4324/9781003241676

Putnam, R. D. (2000). *Bowling Alone: The Collapse and Revival of American Community*. Simon and Schuster.

Rasciute, S., Downward, P., & Greene, W. H. (2017). Do relational goods raise well-being? An econometric analysis. *Eastern Economic Journal*, *43*, 563-579. https://doi.org/10.1057/eej.2015.46

Robison, L. J., Malone, T., Oliver, J. O., Bali, V., & Winder, R. E. (2020). Social capital, relational goods, and terms and level of exchange. *Modern Economy*, *11*(07), 1288-1306. https://doi.org/10.4236/me.2020.117092

Sabatini, F. (2009). Social capital as social networks: A new framework for measurement and an empirical analysis of its determinants and consequences. *The Journal of Socio-Economics*, *38*(3), 429-442. https://doi.org/10.1016/j.socec.2008.06.001

Sabatini, F., & Sarracino, F. (2019). Online social networks and trust. *Social Indicators Research*, *142*, 229-260. https://doi.org/10.1007/s11205-018-1887-2

Sarracino, F. (2012). Money, sociability and happiness: Are developed countries doomed to social erosion and unhappiness? Time-series analysis of social capital and subjective well-being in Western Europe, Australia, Canada and Japan. *Social Indicators Research*, *109*(2), https://doi.org/135-188. 10.1007/s11205-011-9898-2

Sarracino, F., & Piekałkiewicz, M. (2021). The role of income and social capital for Europeans' well-being during the 2008 economic crisis. *Journal of Happiness Studies*, *22*(4), 1583-1610. https://doi.org/10.1007/s10902-020-00285-x

Saukani, N., & Ismail, N. A. (2019). Identifying the components of social capital by categorical principal component analysis (CATPCA). *Social Indicators Research*, *141*, 631-655. https://doi.org/10.1007/s11205-018-1842-2

Schmiedeberg, C., & Schröder, J. (2017). Leisure activities and life satisfaction: An analysis with German panel data. *Applied Research in Quality of Life*, *12*, 137-151. https://doi.org/10.1007/s11482-016-9458-7

Scitovsky, T. (1976). *The joyless economy: An inquiry into human satisfaction and consumer dissatisfaction*. Oxford University Press.

Stanca, L. (2009). With or without you? Measuring the quality of relational life throughout the world. *The Journal of Socio-economics*, *38*(5), 834-842. https://doi.org/10.1016/j.socec.2009.03.004

Stanca, L. (2016). Happiness, relational goods and hedonic methodology. In L. Bruni, & P. L. Porta (Eds.), *Handbook of research methods and applications in happiness and quality of life* (pp. 483-498). Edward Elgar.

Sugden, R. (2005). Fellow-Feeling. In B. Gui, & R. Sugden (Eds.), *Economics and social interaction: accounting for interpersonal relations* (pp. 23-51). Cambridge University Press.

Uhlaner, C. J. (1989). "Relational goods" and participation: Incorporating sociability into a theory of rational action. *Public Choice*, *62*(3), 253-285.