



Article

Dynamics of Trust in Institutions, the Legitimacy of the Social Order, and Social Open Innovation

Nikolay I. Didenko ¹, Gulnara F. Romashkina ², Djamilia F. Skripnuk ^{1,*} and Sergei V. Kulik ³

¹ Institute of Industrial Management, Economics and Trade, Peter the Great St. Petersburg Polytechnic University, 195251 St. Petersburg, Russia; didenko.nikolay@mail.ru

² Financial and Economic Institute, University of Tyumen, 625003 Tyumen, Russia; gr136@mail.ru

³ Humanitarian Institute, Peter the Great St. Petersburg Polytechnic University, 195251 St. Petersburg, Russia; kulik54@mail.ru

* Correspondence: djamilyas@mail.ru; Tel.: +7-812-534-7271

Received: 7 September 2020; Accepted: 5 October 2020; Published: 12 October 2020



Abstract: This article analyses the dynamics of trust in institutions, which underpin the legitimacy of social order, on the basis of a study of the developed Arctic region during the period 2006–2018. The authors considered the principal theoretical concepts on which the study of trust, the well-being of citizens, the assessment of security and compliance with the fundamental rights and freedoms of citizens is to be based. It is assumed that the legitimacy of the social order consists in a state where people not only trust specific institutions, but also enjoy a sense of security from threats and the ability to exercise basic rights and freedoms in the presence of a competent authority to protect them in case of violations. The dynamics of the security of the inhabitants of the region, associated with an increase in the level of their well-being, are considered. The structure for retaining the legitimacy of the social order is demonstrated on the basis of a number of indices and model calculations. Configuration analysis was carried out to support the construction of multidimensional models. It was concluded that there has been a dramatic collapse in the social activity of the inhabitants of the Arctic region bordering on social apathy. It is shown that, during the period under study, trust in local authorities significantly declined, while the importance attributed to respecting private property rights increased. Trust in social institutions is shown to be significantly lower than trust in government institutions, contradicting the situation in developed countries. It is recommended that more attention be paid to the functioning of local and municipal authorities governing the Arctic region, who are much more aware of the needs of the inhabitants since they are connected by much denser social ties. The authors substantiate the need to introduce social innovation that allows to diversify communication channels between the government and the public, meet unsatisfied social needs that are not solved by existing institutions and contribute to building trust between different participants.

Keywords: Arctic region; institutions; trust; security; social innovation; development

1. Introduction

1.1. Why Investigate the Trust in Institutions that Underlies the Legitimacy of the Social Order?

When considering regional development programmes, it is necessary to have a general idea of the nature of the population living in the relevant territories. In this connection, it is important to know and understand what is important for people, whom they trust, what they feel and think. It is understood that even the best programmes and economic theories will not be able to yield results if they come into conflict with the dominant ideas in society or authorities and thus serve to increase

social fears and discontent. In such cases, people will begin to resist, exhibiting either the simplest (e.g., evasion and deception) or more complex (e.g., the formation of protest movements or alternative informal schemes) manifestations of opportunistic or evasive behaviour [1,2]. A positive situation is usually referred to in terms of legitimacy, i.e., the recognition of a social order conducive to the development of society [3].

1.2. The Theoretical Basis of the Research

The analytical constructions informing this work were based on the categories of trust, social capital and social innovation, material well-being and satisfaction with life. Among the many interpretations of the category of trust, approaches developed in the framework of rational choice theories (James Coleman [2,4]), systems theory (Niklas Luhmann [5,6]), structuration (Anthony Giddens [7,8]), social action (Martin Endress [9,10]); “culture of trust” (Piotr Sztompka [11–13]), “moral trust” (Eric Uslaner [14,15]) tend to predominate. In studying the category of social capital, the works of Francis Fukuyama [16], Pierre Bourdieu [3], and James Coleman [2,4] are important.

The following works are important in the study of the category of social innovation: dynamics of open innovation, Joseph Yun JinHyo [17,18]; models of social innovation, Anil Gupta [19]; social contract between science and society, Venni V. Krishna [20]; blockchain technology in the mechanism of consensus between government and society, MyungSan Jun [21]; creation and dissemination of knowledge in innovation networks, Andreas Pyka [22], Jose Ramon Saura [23]; the relationship between the culture of the organization and the values of society, Changhwan Shin [24]; pension reform of Korean civil servants in 2015 as a social innovation from the position of political and social consensus, Keunyoung Lee [25]; government innovations with a focus on Government 3.0 through the example of South Korea, EunHyung Park [26]; anti-corruption strategies in the formulation and implementation of public policies during the development of ICTs and e-government Kangwon Lee [27]; strategies of public institutions compliance improvement with the requirements of websites accessibility, Kyung-Ran Noh [28].

Material satisfaction was the primary contributory factor in the formation of a behavioural model that strengthens the social and economic order in poorly developed societies. Active efforts, values and education have contributed to a strengthening of the social and economic order based on trust and the formation of positive social capital in highly developed countries [4]. As the key element in the formation of social capital, trust affects economic development; this factor has been discussed in many papers [7]. Intercountry comparative studies have been carried out in which trusting relationships in various countries are discussed alongside their effect on economic development [29] and a consideration of the differences in institutional systems and modes of trust in them [30].

On the basis of WVS and EVS monitoring data, Ronald Inglehart et al. demonstrated that the economic development of societies and countries is associated with a transition from absolute norms and values towards a more rational, tolerant and confident axiological approach based on broad participation and increasingly generalised trust. It was concluded that the worldview of societies is closely related to the perception of security [31]. By increasing the levels of trust and protecting the rights of minorities, which gives people greater freedom to choose for their own life decisions, developed societies are becoming generally more open and tolerant.

Anil Gupta, Anamika Dey and Gurdeep Singh [19] substantiate the need for new models of social innovation that take into account entrepreneurial opportunities to transform society’s resources and skills. Unmet social needs that are not addressed by existing institutions can be addressed through social innovation. At the same time, the main objects and processes may include various channels of service to society—a social business, a profit based on social innovation, or an individual agent of social change. Every social enterprise/innovation/business should serve people in relatively inaccessible areas, engaged in seasonal sectors, living in remote areas. It should be understood that different cultures reflect different values, however, as noted by Changhwan Shin and Jungkyu Park [24], it is the

relationship between the culture of the organization and the values of society that can ensure high socio-economic indicators and development.

Venni V. Krishna [20] proposes to transform the social institute of science as a social innovation. Develop the ideals of open science and a social contract between science and society, especially in the post-COVID-19 stage, when economically affected economies of industrialized countries are more likely to create complex barriers to entry and access to their prestigious institutions.

MyungSan Jun [21] believes that blockchain technology contributes to the better implementation of social technologies that can replace existing social apparatuses, including bureaucracy.

Keunyoung Lee and Kwangho Jung [25] consider one of the forms of social innovation from the position of political and social consensus in society. The 2015 pension reform of Korean public officials is analysed as a social innovation. We propose a new participant in the process, a political broker who can coordinate the interests of various stakeholders. The advocacy coalition framework (ACF) model allows us to determine how significant reform is possible in terms of political and social consensus.

EunHyung Park and Jea-Wan Lee [26] use the example of the “Government 3.0” Initiative of the Park Geun-Hye Administration to show how the openness of information and participation of citizens allows for greater political support, public trust and as a result, social consensus in society. The “Government 3.0” initiative of the Park Geun-Hye Administration is a state innovation program that lays down the core values of openness, sharing, communication and cooperation: creating a transparent and communicative government, realizing the public’s right to access public information through the proactive disclosure of information, promoting the use of publicly available data in the private sector, and strengthening public–private partnerships [26].

In their study, Kangwon Lee, Sang Ok Choi, Jinha Kim and Mijin Jung [27] identified factors that contribute to reducing corruption by examining the relationship between e-government and government corruption through a cross-country analysis. The results show that the development of ICTs and e-government mediate and contribute to reducing government corruption and can provide greater public confidence. The present work is structured around the aforementioned ideas.

1.3. The Aim of the Study

The aim of the present work was to consider the dynamics of trusting relationships, respect for the fundamental rights, freedoms and the civic participation of residents of the Russian Arctic region. The analysis was carried out on the example of a developed Arctic region, namely the Yamalo-Nenets Autonomous District (YaNAO). This Russian Arctic region is located in the very centre of the Arctic zone, separating the Eastern and Western parts. The capital city of YaNAO, Salekhard, is intersected by the Arctic Circle.

During the immediate post-Soviet years, the economic development of the Russian Arctic region as a whole was becoming unsustainable due to the loss of human and social capital. However, the YaNAO forms one of the exceptions to these statistical trends [32]. This region, which is considered as developed by Russian standards, has high economic potential, but an undeveloped technological and innovation sphere [33]. The region is known as a repository of gas and oil, which has provided a high level of income for its inhabitants and the region as a whole. The presence of these natural resources has allowed regional authorities to develop social protection and support programmes. Residents of this region are highly dependent on resources, oil and gas transport companies and the state [34]. Arctic residents are accustomed to dealing with extreme natural and technical conditions, battling the natural elements, as well as coping with remoteness from the centre and feelings of abandonment. The industrial system of the region is reliant on gas production and transportation [35]. The question remains of how far the institutions developed under such conditions are capable of ensuring the sustainable functioning of the region in the future.

1.4. The Elaboration of the Theme

The elaboration of the theme is based on a comparison of classical and contemporary interpretations of trust. Émile Durkheim, Georg Simmel, Max Weber, Niklas Luhmann, Anthony Giddens and other prominent 20th century sociologists analysed the historical transition from the paradigm of personal trust to that of impersonal trust (generalised trust) as a result of the emergence of modern societies, showing how this transition took place under the conditions of industrial development [5–8]. Studies of the current stage of development continue to be carried out against a rich theoretical background using the empirical data of European and world monitoring values (EVS, WVS) [31]. Some conclusions from the authors' research on trust in Russia are presented in this article.

The analysis of the theories showed that the idea of trust among the classics is a fairly wide range. Adam Seligman [36], p. 28, has pointed out that the use of the term “trust” tends to be free and imprecise as it ranges from micro to macro levels, whether used by Durkheim to express basic ideas of solidarity or simple trust combined with ideas of iteration in interactions.

The metaphor of Niklas Luhmann [6] p. 20, of trust as a “Scharnier” (hinge) between diverse systems is widely known. The hinge of trust has the ability to reduce complexity, stabilise expectations and increase the possibilities of people's actions. Luhmann observed that trust is a universal tool, with the help of which decision-making processes take place within “controlled boundaries” and many sources of tension become surmountable. “Preferences” are considered to be the analogue of expectations in the economy. “Preferences” refer to an individual's propensities according to rational choice theory [30], pp. 86–94. According to this logic, the term trust implies the rationality of consent when two or more contracting parties are maximisers of utility [37], p. 88.

Anthony Giddens [7] applied the terminology of a structuring social context, distinguishing personal trust—including trust in celebrities, as well as trust in abstract systems (technical, social)—as a product of late modernism. Giddens observed a trend in modern institutions, pointing out that the importance of institutions is increasingly becoming consistent with “a belief in the correctness of principles that nobody understands” [7], p. 33. In this connection, the use of institutional categories for the analysis of other problems has led to the overcoming of interdisciplinary boundaries. For example, “climate change policy” is associated with the “Giddens Paradox” as applied to the risks of climate change. According to this paradox, risks that remain intangible, mediated and invisible in everyday life will tend not to be taken seriously by the majority [8], pp. 2–3, 7–9. Conversely, critical or active trust increases with more a careful study of knowledge requirements and critical analysis of expertise on the part of citizens. In describing the concept of “double structuration”, Giddens included not only the existence of rules involved in the production of social systems, but also the resources themselves [7], p. 68. It is in this context that the problem of recognising the existing social order is formulated. For example, experts signalling the dangers of climate change can be a mobilising force for people, governments, and international associations. Niklas Luhmann made an important distinction between the concepts of system trust (understood in empirical surveys as confidence) and personal trust; his criterion for distinguishing between trust and confidence depended on the “ability of an individual to distinguish between dangers and risks.”

Discussions continue concerning the applicability and limitations of the various theories of trust. Taking into account all the relativity and vagueness of this concept, we determined that the term “trust” will be limited to the institutional context in the present work. Moreover, we will examine the concept of institutional trust in more concrete detail, including in the context of regional institutions.

Due to it comprising an element of social capital, it is assumed that the level of trust is associated with socio-economic dynamics, since it is in just such a context that the basic concepts of social capital were originally identified that can be viewed from the perspective of social innovations. There are many different definitions of social capital, each correlated with one or another social order. Different approaches to its measurement arise from the contrasts in the respective understandings.

The first systematic modern analysis of social capital was carried out by Pierre Bourdieu. The French sociologist defined the concept in terms of the set of relevant or potential resources associated with

the presence of strong network connections, consisting of relations of mutual recognition and mutual obligations that have to some extent been institutionalised [3], p. 248. Bourdieu pointed out that the quality of social capital is determined by the constructive participation of individuals in social relationships providing access to scarce group resources. According to the American sociologist James Coleman, social capital comprises a public good produced by individuals in order to subsequently extract benefits and dividends. For the proper functioning of social capital, social norms, conditions for the exchange of information and resources, a social contract and a minimum level of trust are necessary prerequisites [4], p. 122. Various “negative aspects” of the theory of social capital were noted: a group’s cohesion makes it “closed” to newcomers; a group may prevent one of its members from achieving success; groups can isolate themselves and promote social inclusion. The concept of “trust radii”, developed by Francis Fukuyama [16], announced social capital as a prerequisite for creating social coalitions. The presence of trusting relationships not only with good close acquaintances and reliable friends, but also with society or people in general, leads to an expansion of trust radii. The form taken by such positive (open) social capital is referred to as “Putnam groups” [38]. In such groups, social norms, social ties—and trust—are prior to other values. Conversely, bonding social capital is based on a “specific ethic”. This means that an individual relates to in-group members and strangers according to different moral standards. Trust radii are in this case insufficient since only capable of supporting the formation of narrow interest groups. “Closed social capital” promotes the formation of its respective “exclusive groups”. So-called “Olson groups” are those that unite for the sake of advancing a collective good. Positive social capital (as defined by Robert Putnam), which includes not only the level of trust, but also compliance with social norms [38], was also recognised by Francis Fukuyama as “the shortest path to the prosperity of nations” [16].

Christian Bjørnskov considered trust as the basis of social polarisation—that is, the division of society into groups in accordance with social status and level of income [39]. In an influential article, The Danish economist proposed two categories of trust determinants: trust that includes individual radii of interests and trust that includes social polarisation. However, he warns that the interpretation of empirical data may not be obvious, since all these effects, such as income inequality, political participation and socio-economic opportunities, take different systematic forms in their respective countries. Contemporary thought continues to develop the concept of the radius of trust, for example, in the version of Toshio Yamagishi [40] or that of Anning Hu [41].

According to Martin Endress, the behaviour of individual actors, social norms and expectations are embedded in social institutions (social settings) and form the core of a functioning trust [9,10]. These norms are implemented in the basic social practices characteristic of a corporate or political system in a particular country [17,18,28].

Thus, depending on the tasks and concepts, a whole range of methodological approaches to assessing various types of trust was created—from trusting the world as a whole, to trusting oneself and other people [42]. One very popular approach is based on Henri Tejfel’s concept of social categorisation, as part of a general theory of social identity [43]. Paul van Langen argued that it is “adaptive to regulate a ‘healthy dose’ of generalised trust” [44], p. 75.

Social capital is considered as forming the basis of a liberal society and social innovation. The economic significance of social capital is that it reduces the costs of coordinating joint activities, replacing contracts, formal rules and bureaucratic procedures with relationships of trust, assimilated by professional standards and ethics of communication. These informal norms are transmitted by cultural traditions as well as by education [45,46]. Like other forms of capital, social capital only brings dividends if it is actively used. Social innovations arise to meet needs that are not met due to the inefficiency of markets, the state, and even civil society, or to expand, transform, and restructure existing ways to meet these needs [19].

The various social and economic systems can be assessed in terms of the cultural basis of trust and social capital [47], the behavioural characteristics of citizens in various political systems [48], the study of social distance to power [49], and attitudes towards institutions according to Geert

Hofstede [50,51]. The problem of formality and informality in developing countries was studied in a volume edited by Guha-Khasnobiset et al. Here, social trust is understood as “social capital outside the government”—unlike public institutions, which structure “social capital in government” [52]. This theme was developed in a volume edited by Diego Gambetta in which the importance of a conceptual separation of trust and reliability was asserted on the example of mechanisms leading to the formation of solidarity and trust in the Sicilian mafia [53]. In this case, agreeing with Stephen Knack and Paul Zak that trust should be viewed as an endogenous variable in multidimensional explanatory models [54], trust in institutions can emerge from reliable and fair policies that positively affect the economic development and well-being of citizens. The long-term observations of the Edelman Trust Barometer are well known; for example, in a published report in 2019 [55]. Empirical studies of these problems tend to draw upon world value survey (WVS) monitoring data [56].

This article includes indicators of the subjective well-being of people. As is well known, there are many dimensions of well-being, including economic, social and political. Increasingly, such approaches are used in empirical studies based on various multidimensional approaches. Thus, Francesco Burchi et al. used a multidimensional approach to analyse what opportunities the Italian Constitution presents in terms of human development [57].

The corpus of empirical research on ways to achieve the “prosperity of nations” has been enriched by approaches to the study of well-being as a result of opportunities for people [58]. For example, poverty, in this context, is considered the “deprivation of basic capabilities”—that is, deprivation of the liberty to achieve a minimum level of satisfaction of basic needs [59]. Economic opportunities that allow people to attain to a particular financial standing corresponding to their own notions concerning a prosperous life are often measured using the indicator “satisfaction with life in general”, for example, in WVS monitoring [56].

The concepts of well-being and happiness are fundamental to several disciplines, including economics [60], management [61] and psychology [62]. The primary indicator of well-being used in our work is the self-assessment of the feeling of satisfaction with life as recommended by Jean-Paul Fitoussi, Amartya Sen and Joseph Stiglitz [63]. In our multidimensional model, overall satisfaction with life was also used. For example, Berrin Erdogan et al. conducted a large-scale study confirming, on the basis of a meta-analysis, the connection of life satisfaction with almost all indicators pertaining to the economic situation of people, including their work, career and working conditions [61].

These constructs are widely used in studying well-being in the world. For example, a large-scale empirical study of life satisfaction in China carried out by Richard Easterlin et al. showed that, despite a four-fold increase in per-capita consumption between 1990 and 2010, there had been no fundamental improvement in subjective feelings of well-being [64]. As with other countries whose economies are in transition, including Russia, the burden of worsening life satisfaction in China falls primarily on the lowest socio-economic groups [65,66].

In addition, the multidimensional model used in the present article includes the construct of “respect for human rights”, which is also used in various empirical reviews. For example, Tania Burchardt and Polly Vizard used a multidimensional model to evaluate opportunities (resources) for equality and monitor respect for human rights in 21st century Great Britain [67]. This approach made it possible to create a distribution of fundamental freedoms and opportunities between individuals and groups in terms of their observance in England, Scotland and Wales.

2. Materials and Methods

2.1. Research Hypotheses

In the present work, it is assumed that the legitimacy of the institutional order consists in a state where people not only trust specific institutions, but also enjoy a sense of security from threats and the ability to exercise basic rights and freedoms in the presence of a competent authority to protect them in the case of violations. An increase in the level of trust has a positive effect on economic and other types

of activity carried out by individuals. If a region is dominated by positive social capital, people will be more active and achieve better material and social status, expressing greater satisfaction with life in general. Manifestations of violations of social order, such as a decline in confidence in the primary institutions, an increase in violations of human rights and freedoms, the emergence of insecurity, as well as obstacles to social and other types of activity, should be referred to as negative social capital. Negative social capital is seen as an obstacle to economic development.

2.2. *The Specific Research Problems and Objectives*

The significant problems: study of trust, well-being of citizens, assessment of security and compliance with the fundamental rights and freedoms of citizens. The list of basic rights and freedoms comprises: security and protection of the individual, private property, equality before the law, labour, education and training, the privacy of personal correspondence, language and culture rights, religious freedom and freedom of conscience, freedom of speech and access to health care.

2.3. *Research Stages*

At the first stage, we analysed the dynamics of the main indicators that demonstrate the legitimacy of the social order in the developed Arctic region. For this, assessments by residents of the region of the importance and frequency of observance (violation) of fundamental rights and freedoms, as well as the frequency and success of the protection of violated rights were considered. The list comprised 12 rights in 2006, 2013, 2016 and 2018 for the year preceding the observation point. On this basis, as an average of all 12 particular indicators, the index of observance of fundamental rights and freedoms was calculated on a scale from 0 (all rights were violated) to 1 (no rights were violated). Then, the degree of exposure of citizens to various hazards was considered. A list containing 10 major hazards was compiled. The index of citizen protection was calculated as an average of 10 particular indicators on a scale from 0 (completely unprotected) to 1 (fully protected). It was shown that, while the dynamics of assessments in general indicate an increase in the level of well-being and security of citizens over 10 years of observation, there is also a number of negative trends. Then, we calculated the trust index as an average of 10 private indices of trust in each of the institutions reviewed on a scale from 0 (they are not trusted at all) to 1 (they are trusted completely) over time. The evaluation of the protest potential of the inhabitants of a developed Arctic region showed a decline. The most important, protectable and protected rights and freedoms of inhabitants of the region are highlighted. It is concluded that the primary means of supporting social order at the present time is respecting the right of citizens to defend private property, work, education, health, equality before the law, safety and personal protection.

At the second stage, multidimensional models were constructed, including the trust index, the rights protection index, protest potential, self-assessment of material condition, general life satisfaction, as well as basic socio-economic and demographic indicators. The conclusion was made that trust index and rights protection index are closely related. In addition, the trust index is consistently correlated with life satisfaction in general but it was weakly associated with the self-assessment of material status. Higher education leads to a decrease in attitudes of trust, creating preconditions for the destruction of social capital. Furthermore, it is concluded that there has been a dramatic collapse in the social activity of the inhabitants of the Arctic region bordering on social apathy.

2.4. *The Primary Data*

As a methodological and empirical basis for this article, we took the results of sociocultural monitoring conducted by the authors in the years 2006, 2009, 2011, 2013, 2016 and 2018 in the Tyumen region [68], pp. 67–74. In this project, the basic parameters of the social, cultural and economic development of the regions of Russia, including the Tyumen Region and the Yamalo-Nenets Autonomous District, were studied over the course of a decade [69], pp. 228–252. A description of the methodology, stages and principal results of monitoring can be found in [35,68]. The survey questions (14 in total) are given in Appendix A. The answers to the questions were analysed as a level (by % share

of positive answers to the question), or by the index on a scale from 0 to 1, calculated using a weighted average formula. The indices were used for the correlation and regression analysis. Multistage, routed samples of mass sociological polls represent the population of the region according to gender and age structure with the control of the attributes of education and type of settlement, taking into account territorial distribution. For each year of the survey, the sample comprised 1000 people aged 18 years and older.

2.5. The Primary Data Processing Methods

We used the % ratio and index methods along with the correlation and regression analysis of multidimensional data. The rating of the importance of respecting fundamental rights and freedoms was based on the respondents' answers to the question: "How important is strict compliance with the following rights and freedoms for you in our country?". Estimates of the importance of the rights and freedoms of citizens were given on a five-point scale. The list of basic rights and freedoms comprised the security and protection of the individual, private property, equality before the law, labour, education and training, privacy of personal correspondence, language and culture rights, religious freedom and freedom of conscience, freedom of speech and access to health care. The rating was used in conjunction with the assessment of compliance (violation), frequency and success of protection for each specific citizenship right. The index of respect for rights and freedoms was calculated as a weighted average on the scale: 0—no reported violations of rights and freedoms; 1—all respondents noted violations of rights and freedoms. All other questions used in the methodology are given in Appendix A.

The level of trust in regional institutions given in Figure 1a refers to the percentage of respondents who answered positively to Question 1 (To what extent do you trust or not trust regional authorities and organisations).

Protest potential given in Figure 1b is expressed in the percentage of respondents who answered positively to Question 2. "Are you ready to take part in protest actions (against the reduction of the level and quality of life, human rights and freedoms)?"

The index for the respect of rights and freedoms was calculated as the inverse of the violation index I_1 , translated into a scale from 0 (all rights were violated) to 1 (all rights were respected) (see Appendix A). The protection index was considered as a weighted average of the level of protection for all 10 hazards and threats (see Appendix A, Question 4, scaled from 0 (all completely unprotected) to 1 (all fully protected)).

Structural models were constructed in accordance with the surveys carried out in 2018 only. Spearman's rank correlation coefficients were calculated in order to determine the influence of the selected parameters. Then, simple stepwise linear regression models were constructed with the gradual elimination of insignificant predictors. The list of variables included in the models is given in Appendix A. The resulting regression models are listed in Appendix B. Table A1 can be found at the Appendix B. Target variables were successively selected from the following indicators: subjective evaluation of financial situation, security index, protest potential index, trust index. The remaining variables from the list given in Appendix A were considered as influential; the free term was taken as equal to 0; all variables were standardised on a scale from 0 to 1. Secondary variables were excluded in accordance with the results of the autocorrelation test.

3. Results

3.1. Respect for the Fundamental Rights and Freedoms of Citizens

This study investigated how the inhabitants of the Arctic region evaluated the observance of their essential rights and freedoms in 2006, 2013 and 2018 (Table A1). This table shows the importance rating in Column 1, while violability, protection intensity and protection success indices are shown in Columns 3–9, respectively. The most notable trends in public opinion over 12 years of monitoring are given as follows. Here, it is apparent that the thought of citizens is essentially structured according to

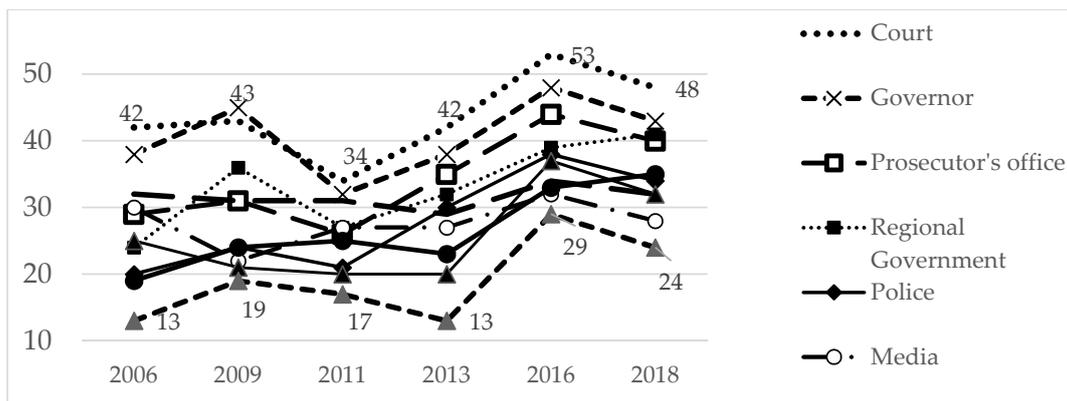
liberal and democratic traditions. The most important factors are private property, labour, education, health protection, equality before the law, as well as individual security and protection. In 2013, a crisis year for Russians, the violability of all basic rights and freedoms noticeably increased; however, the situation was subsequently perceived to have improved. The most frequently violated right, which is nevertheless often protected for citizens of the Arctic region, is the right to health protection. Across all the years of monitoring, 70–73% of citizens were dissatisfied with the health care system, evaluating that their right to health care as having been violated. In about 40% of cases, they tried to obtain remedies for their violated rights; however, such attempts were only successful in a third of cases. In addition, among those rights assessed by the inhabitants of the region as having been violated in 2018 were the right to equality before the law (42%) and the right to labour (40%). Private property rights, education and security are the most protected; these rights having been protected in 69%, 67% and 69% of cases, respectively; moreover, half of these attempts were successful (Table A1).

In the studied region, the violability of rights and freedoms decreased along with an increase in the frequency of attempts to protect such rights and freedoms; however, the success of these attempts has decreased. Since emigration, freedom of association, groups, unions, religious freedoms and the freedom of conscience are among the least important rights for citizens, the potential for increasing civil and political self-organisation in the region (as, indeed, throughout Russia) is low. The level of paternalism, which is traditionally associated with the Soviet era, is declining among Arctic residents. While citizens continue to expect guarantees of education, employment and health protection from the state, the most important right they noted was that pertaining to private property. In this context, the intensity of the protection of violated rights increased by nearly half over the decade under consideration.

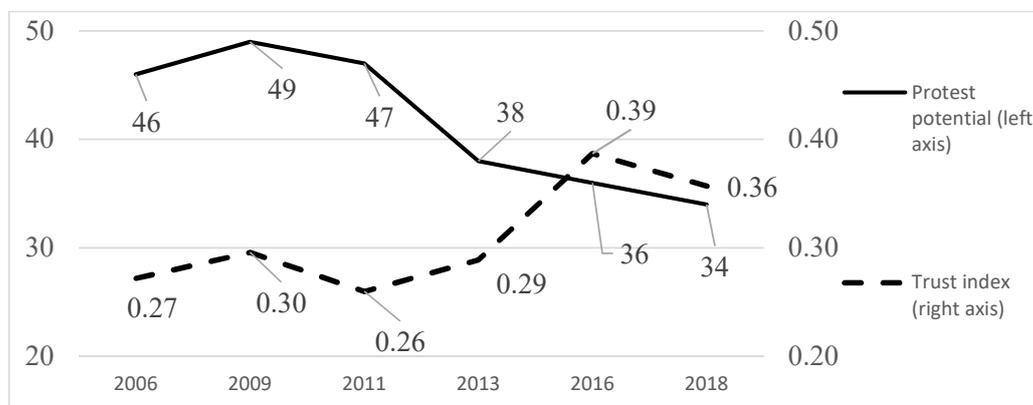
3.2. Trust in Institutions as Elements of Social Capital

In whom, then, do the residents of the Russian Arctic place their trust? First and foremost, they trust the institutions for the protection of individuals and the state: the courts (48%), the governor (43%) and the prosecutor's office (40%). Although the level of trust in representative and information institutions almost halved, the average level of trust has increased (expressed in % of the number of respondents in Figure 1a). Especially remarkable is the growth of trust in the police (from 20 to 34% during the period 2006–2018) and political parties (from 13 to 24% during the period 2006–2018). The only exception in the generally positive trend is the level of confidence in municipal government, which hovers at around 32%. The very low-level civil confidence in local authorities in Russia can be explained in terms of the severe lack of resources to meet the needs and requirements of the local communities they serve. Therefore, disappointment in these institutions has gradually accumulated in society; this is especially noticeable in the marginal northern regions.

Figure 1b also shows the protest potential (in % of the number of respondents, on the left axis) and the trust index (on a scale from 0 to 1, on the right axis). Up until 2011, the trust index and protest potential changed in parallel, signalling an ambivalence of answers to questions about trust in institutions. Since 2011, the trust index has increased, while the protest potential has decreased. As a result, the Pearson correlation coefficient calculated for the protest potential and trust index series (Figure 1b) for the period 2006–2018 is equal to -0.78 with $p < 0.05$. It can thus be concluded that, in the economically developed Russian Arctic region, the components of social capital have a pronounced positive trend. These data indicate an increase in the approval of the actions of the government and main public institutions for the protection of rights. The exception to this trend is noted at the municipal level of government. However, in general, more than half of surveyed citizens do not trust any institution.



(a)



(b)

Figure 1. The dynamics of the studied indicators, during the period 2006–2018: (a) dynamics of trust in institutions; and (b) protest potential, in % of the number of respondents.

3.3. Level of Exposure to Major Hazards

The dynamics of security also shows a positive trend (Table 1). Over 12 years of observation, the level of perceived security increased by 13%. Considering all security-related problems, residents of the Arctic region feel around 10% more secure. In terms of the areas in which they feel least protected, 38% of residents of the Russian Arctic region cited poverty. Crime (36%), arbitrary decisions by officials (34%), loneliness and abandonment (28%) were also cited as lacking protection by the respondents. Problems concerning oppression for religious beliefs and ethnicity are least relevant for residents of the Arctic region as well as for Russian citizens as a whole. Judging by the rating of problems and dangers, the Arctic region is, on average, more developmentally advanced than Russia as a whole. This finding fully corresponds to the results of inter-regional comparisons on the economic and industrial development of the regions of Russia [32,35,69].

Table 1. Dynamics of the level of vulnerability (in %) and index of security for residents of the Arctic region of the Russian Federation during the period 2006–2018 and Russia as a whole (for reference in 2016).

% Unprotected	Arctic Region				Russia
	2006	2013	2016	2018	2016
Types of hazards					
Poverty	53	48	39	38	58
Arbitrariness of officials	56	46	34	36	47
Crime	51	47	34	34	45
Environmental threats	49	42	23	30	50
Arbitrariness of law enforcement	44	39	26	26	39
Loneliness and feeling of abandonment	41	36	28	28	36
Persecution for political beliefs	18	29	15	15	20
Harassment due to age or gender	29	20	14	14	25
Infringement of rights due to ethnicity	14	18	9	8	12
Harassment for religious beliefs	12	18	10	8	12
Average (over 10 problems)	37	34	23	24	34
Security index	0.63	0.66	0.77	0.76	0.66

3.4. The Structure of the Components of Social Capital, Social Well-Being, Security as the Basis for the Recognition of Social Order

In order to determine the influence of the selected parameters, Spearman’s rank correlation coefficients were calculated. Table 2 shows a fragment of the correlation table. In general, a higher level of trust and a lower level of civic activism are expressed by more senior and less well educated citizens. A number of conclusions were drawn considering trust and the integration of individuals into social networks as components of social capital, along with components of human capital as personal characteristics of a person such as education, level of health and level of qualification. Higher education leads to a decrease in attitudes of trust, creating preconditions for the destruction of social capital. The level of income and social well-being are directly correlated with the level of trust in the institutions of power; however, these factors are much more strongly correlated to the level of security and respect for fundamental rights and freedoms. The considered indicators of trust, security and protest potential are practically unaffected or affected very little by employment status and social standing (Table 2). The most significant elements of social order for the Russian Arctic region at the present time are the level of protection of the population, respect for citizens’ private property rights, labour, education, health protection and equality before the law.

Then, we constructed stepwise models of simple linear regression with the gradual elimination of insignificant predictors; in each case, one dependent variable and many independent variables were used to identify the components of variability. The indices of the subjective evaluation of financial standing, protest potential, trust and security were consistently taken as a single target variable. The remaining variables from the list were considered as influential; the free term was taken as zero; all variables were standardised on a scale from 0 to 1. Secondary variables were excluded in accordance with the results of the autocorrelation test. If a multidimensional index was taken as a dependent variable from the set of independent variables, the components of the given index were excluded.

Table 2. Fragment of the table of correlation coefficients (Spearman’s rho) and the significance of the relationship of the main features of the indices.

Attributes and Indexes	Trust Index	<i>p</i>	Index of Security	<i>p</i>	Protest Potential	<i>p</i>
Trust index	1	-	0.546 **	0.000	-0.156 **	0.001
Index of security	0.546 **	0.000	1	-	-0.024	0.618
Protest potential	-0.156 **	0.001	-0.024	0.618	1	-
Educational level	-0.078	0.065	-0.086 *	0.035	0.110 *	0.014
Groups by age	0.068	0.104	-0.054	0.183	-0.011	0.814
Index of respect for rights and freedoms	0.321 *	0.037	0.467 **	0.000	-0.434 *	0.002
Life satisfaction index	0.236 **	0.000	0.303 **	0.000	0.062	0.173
Type of settlement	-0.175 **	0.000	-0.052	0.198	0.083	0.062
Financial standing	0.178 **	0.000	0.115 **	0.004	0.07	0.87
Subjective evaluation of health	0.115 **	0.007	0.133 **	0.001	0.044	0.335
Number of subordinates	0.009	0.829	-0.05	0.231	0.047	0.311
Sex	0.017	0.683	-0.023	0.567	-0.016	0.718
Size of enterprise	0.003	0.657	0.131 *	0.008	0.188 *	0.018
Type of employment	-0.156 *	0.014	0.003	0.618	-0.141 *	0.011

The significance (two-sided) is the probability of the *p* truth of the null hypothesis; ** correlation is significant at the level of 0.01; * correlation is significant at the level of 0.05.

Regression models are given in Appendix B. Model A reflects the effect on the subjective evaluation of financial standing (Table A2). The variability of the subjectively evaluated material standing is best explained by the variability of life satisfaction and security. All other predictors were excluded from the model as superfluous. That is, the higher the level of satisfaction with life and protection from the 10 major problems and dangers, the more likely an individual will be assigned to the highest group of the material well-being and the wealth pyramid.

The protest potential of the population increases with an increase in the level of education, satisfaction with life, self-assessments of the state of health and with a transition from rural to urban existence. Protest potential decreases with increasing levels of protection from the arbitrariness of officials and age (Table A3). The variability of the index of trust in the main institutions is best explained in terms of the variability of the index of security, being weakly positively related to self-assessments of financial position and weakly negatively related to the respondent’s educational level (Table A4).

The variability of the security index is best explained by the variability of the trust index and life satisfaction, as well as being slightly negatively correlated with the type of settlement (0—village, 1—city) (Table A5). Additional weak link models are not shown. A weak correlation is expressed in the fact that working at a small private enterprise slightly reduces the levels of life satisfaction, material and social status, at the same time as slightly increasing the protest potential (Table 2).

In the dynamics for 12 years of monitoring, the proportion of people who would like to have their own business decreased from 12 to 4%, indicating a decrease in motivation for entrepreneurial activity. Entrepreneurs have a lower level of trust in institutions, are weakly aware of their security and have a high protest potential. During the period covered by the study, the proportion of union members fell from 56 to 24%, while all other types of social associations received a combined membership of less than 5% of respondents. The last mentioned fact bears witness to a dramatic collapse in the social activity of the inhabitants of the Arctic region bordering on social apathy.

4. Discussion: Trust in Institutions and Social Open Innovation

Theoretically, the growth of social capital conduces to greater social independence, a desire to increase civic activity [4] and the ability to introduce social innovations.

A general ambivalence that prevailed up until 2011 was partially overcome. According to the averaged subjective evaluations of the inhabitants of the Arctic region, an increase in the level of confidence in the primary institutions was accompanied by an increase in the level of perceived protection. A decrease in the protest potential was in an inverse correlation with the general index of trust in institutions over the last three years of observations. However, the 36% of the population having protest potential were mainly representatives of more educated, affluent and youthful social groups.

An inverse correlation observed between the index of trust and the level of education of the individual indicates that the accumulation of human and social types of capital goes in opposite directions. Protest potential, which accrues in high-resource groups, is primarily associated with the need to respect the freedom of speech, the privacy of personal correspondence, security and protection of the individual and freedom of association (groups and unions). The formation of economic, innovative and other types of activity in high-resource groups is fully confirmed by the results of the study. However, the components of social and human capital are seen to be contradicting. During the observation period, the social activity of the inhabitants of the Russian Arctic region drastically decreased, which borders on social apathy and the inability to perceive and implement social innovations.

Respondents trust institutions of protection and management (the courts, prosecutor's office, governor) much more than representative social institutions (trade unions, political parties and the media). A comparison of our results with those obtained in similar global studies [55–57] allowed us to conclude that the level of trust in institutions and the assessment of social well-being in the developed Arctic region are lower than the world average. Thus, according to the Edelman Trust Barometer [55], the average index of trust in institutions (business, government, NGOs, media) in Russia is 63%, whereas the comparable global figure is 75%. However, trust in NGOs and business is higher than trust in government and media.

It should be noted that regional institutions were taken into consideration in the present study. In the Russian Arctic region, trust in public institutions (sometimes referred to as horizontal trust) is much lower than trust in the Government and institutions of governance, control and protection (or vertical trust, as mentioned earlier, which is often referred to as "trust in government"). The conclusion "fears of loss of employment remain high" was fully confirmed. Moreover, these concerns are more pronounced in the Arctic region than across Russia as a whole. According to our data, more than a third of the inhabitants of the Arctic region consider themselves to be unprotected from a loss of employment and consequent poverty.

The variability in the level of trust is determined to the greatest degree by the level of security, material status, age and education (regression model C). However, trust is also highly correlated with protest potential, satisfaction with life, subjective assessments of health status, type of settlement and the index of respect for rights and freedoms (Table 2). Among the 10 basic rights and freedoms considered in the present study, the most significant social conditions that determine the credibility of the institutions of power in the region are the observance of the right to security and protection of the person and equality before the law.

The level of well-being, determined through satisfaction with life in general and the coefficient of security, are most significantly determinative of subjective assessments of financial position (Table A2). Trust in institutions, which accrues with an increase in the sense of security, material well-being and age, is negatively correlated with the level of education (Table A4). The variability of the security index, which is most reliably explained in terms of the trust index and life satisfaction, decreases when moving from a rural to an urban setting (Table A5). At the same time, taking into account that the average urban population is much better off and has a higher level of education than its rural equivalent, and the correlation with the type of settlement has a dual aspect. In turn, protest potential, which is primarily determined by the components of human capital (level of education, health, age and type of settlement), is also correlated with the overall satisfaction with life (Table A3). Thus, it can be assumed that the social and human capital of the inhabitants of the Russian Arctic region accumulates across

various social strata. While these social strata can be seen to overlap, the degree of their relationship remains to be determined in subsequent stages of the present study. It is suggested that the use of additional methods for the analysis of classifications will provide more specific explanations for the resulting contradictions.

All of the above characterises a region whose development is seen only in economic terms, being remote from the centre, but continuing to experience significant dependence on it. On the example of the Arctic region, whose residents feel particularly vulnerable to changes in the macroeconomic situation, Francis Fukuyama's hypothesis is confirmed that the economic development of any regions is dependent on an increase in trusting relationships. Here, trust should not be seen only in first-person terms, but an increase in trust in all major "personified institutions" is also necessary. In more remote areas, the sensitivity of social expectations is significantly higher. At the same time, residents of remote regions are reliant not so much on their own strength, and not even on the resilience of their inner circle, but rather on power "in the centre". Some moderate optimism is inspired by the finding that residents of the Arctic attempt to protect their violated rights in 70% of cases, with two thirds of these attempts being successful. It is presented that the necessary growth of trust relations is possible, as noted above, through the introduction of social innovations that allow the diversification of communication channels between different actors, meet unmet social needs and contribute to building trust between different participants. For Arctic residents, various models of social innovation, such as social business with the inclusion of an individual agent of social change [19], can become such social innovation that can ensure the growth of trust in all major "personalized institutions", from the position of political and social consensus in society, a new participant in the process can be a political broker who can ensure the coordination of the interests of various stakeholders [25]; the formation of a social contract between science and society [20], developing the ideals of open science [17]; the introduction of social technologies, such as blockchain technology [21], which can replace existing social apparatuses, including bureaucracy; the development of e-government [27] with a mandatory requirement for the availability of websites [28] to promote open innovation.

The goal of social open innovation is to make people's lives better. Social open innovation is technology and concrete solutions that are especially needed for the Arctic society. Social innovations include new social systems, education systems, health care, public communications systems that use innovative approaches and technologies. An analysis of the attitude of the inhabitants of the Arctic region to the authorities showed that the Russian government needs to closely monitor the evolution of the needs of the inhabitants of the Arctic region and provide them with services based on social innovation and encourage business in this. In Arctic conditions, technology and concrete solutions will help improve public health services. The situation is that life expectancy in the Arctic region is lower compared to other regions, and various diseases appear more often. This situation can be influenced using Industry IV technologies—big data, cluster analysis, internet of things. It is required to collect data about each person, conduct an analysis, identify the reasons, and determine the order of further actions. This is how technology helps recognize a problem and solve it quickly.

We find other similar examples in the paper of Jinhyo Joseph Yun [70], both in the conditions of absolute poverty and the lack of infrastructure in Africa, the Burro founders strive to create both market and social value. Jinhyo Joseph Yun [70] also showed that the business model will, first of all, be developed based on the connection and combination of technologies with the social market. Diego Corrales-Garay, Eva-María Mora-Valentín and Marta Ortiz-de-Urbina-Criado [71] emphasize the importance of encouraging collaboration between different agents in the open data ecosystem to develop and improve services.

When considering open innovation, it is important to understand the role of culture in the dynamics of open innovation. According to JinHyoo J.Y., Xiaofei Z., KwangHo J. and Tan Y. [17] culture, in its various forms, has always been a critical driver of innovation. Sergio Evangelist Silva, Ana Venâncio, Joaquim Ramos Silva, Carlos Alberto Gonçalves [72] take into account the differences between the two countries in a comparative analysis of open innovation in science parks. They study

and evaluate how science parks promote open innovation and the role played by public policies in this process. To perform this analysis, they introduce an initial framework based on three dimensions: the launching of science parks, the role of science parks in promoting open innovation, and the role of science parks as public policy vectors for promoting open innovation. Instead of considering country culture, Xia E., Zhang M., Zhu H. [73] introduce the concept of open innovation culture. Internal system integration, the diversification of innovation income growth, and open innovation culture are the three key factors in the process of the network operation. Culture's relationship with Environmental Adaptation and Specific Problem Solving has existed for many centuries. Schmidt P. [74] proves this by analysing the technology of the transformation of materials.

An important issue is the analysis of the structure and mechanism of modern capital economic dynamics and the place of open innovation in modern capital economic dynamics. JinHyo J.Y., DongKyu W., KyungBae [18] addresses this issue by assuming that the modern economy consists of three sub-economies, such as market open innovation by SMEs and start-ups, closed open innovation by big business, and social open innovation. When analysing social open innovation as a sub-economy, many scientific problems arise that are being investigated, including that of the modern economy as a whole. Let us name some of them. We find new ways of entrepreneurship development in Pinto H., Nogueira C., Carozza C., D'Emery R. [75]. These authors propose to form a research and innovation strategy on the principles of "smart specialization". The novelty of smart specialization strategies adopts a "process of entrepreneurial discovery", that is, the opening of a new sector or activity arising from existing localized capacities and market demands.

Charlotta Sirén, Vinit Parida, Johan Frishammar, Joakim Wincent [76] note that time is a crucial yet scarce resource in innovation management. However, the way in which entrepreneurial enterprises allocate temporal resources in innovation remains largely unexplored. The authors propose a conceptualization of innovation polychronicity, which is defined as the extent to which a firm's innovation culture promotes simultaneous engagement in multiple innovation activities. In the article by Xhimi Hysa, Mario Calabrese [77] presents a study that attempts to understand if the innovation "belongs" more to the capitalist or to the entrepreneur, and if there is any difference between the capitalist and the entrepreneur in terms of commitment, risk, and expectations. The capitalist is financially committed by offering the capital, expecting as a return the financial interest rate, and assuming a financial risk. Our opinion is that it would be good to establish such a rule for determining the financial interest rate: the entrepreneur refers to the capitalist, and the labour intensity of the capitalist's job to the labour intensity of the entrepreneur's job.

The answer to the question of how social open innovation succeeds can be found in publications. Jinhyo Joseph Yun, Abiodun A. Egbetoku, Xiaofei Zhao [78] presented a complete description of the processes of achieving success in a social open innovation using the examples of two case studies. Through the in-depth study of case studies, we can not only understand the success paths of these social open innovations, but also develop strategies for new cases of social open innovation. The generalisation of that stated in the article leads us to the conclusion that an economy based on social principles should take into account non-formal production volumes, but the impact of production on health, ecology, education and quality of life in general.

The article by Jinhyo Joseph Yun, KyungBae Park, ChoongJae Im, ChangHwan Shin, Xiaofei Zhao [79] confirms that social enterprises can be successful over time. The authors developed and applied a social open innovation dynamic model to ten Korean social enterprises and identified the success factors for social open innovation as well as the specific dynamics underlying it. We conclude from the example of ten Korean social enterprises that a new economy based on social principles is emerging.

We find a description of the interaction between companies in the context of open innovation in Sara Holmes, Palie Smart [80] and we see the value of an open innovation approach in solving social problems. This example shows how the practice of open innovation in voluntary interorganizational collaboration leads to synergies.

When considering innovation, particular attention is paid to the use of the quadruple helix concept. This concept extends the popular triple helix paradigm by pointing out the fact that along with science, industry and the state, society plays a key role in the innovation process, which is often the end user of innovation. The quadruple helix concept is described by Carayannis E., Grigoroudis E. [81] and micro- and macro-dynamics of open innovation with a quadruple-helix model by Yun, J.J.; Liu, Z. [82].

The quadruple helix concept visualizes the collective interaction and exchange of knowledge in the country within the following four subsystems: education system (human capital); economic system (economic capital); political system (political and legal capital); and civil society (social and information capital). The article [82] discusses how sustainability can be achieved through open innovation in the Industry IV, propose a conceptual framework to understand open innovation micro- and macro-dynamics with a quadruple-helix model for social, environmental, economic, cultural, policy, and knowledge sustainability.

Thus, the study of the problem of trust in the institutions of power, carried out with the data of the Arctic region and the analysis of open social innovations, leads us to the following conclusions:

1. The old economic model is changing in the Arctic conditions of life, classical economic theory with its famous “invisible hand of the market” in the Arctic conditions has little to do with reality, open social innovations are becoming more and more widely available and contribute to solving various problems.
2. For the Arctic society, it is necessary to form new, innovative systems of education, health care, systems of public communications, using innovative approaches and technologies. Open social innovation can meet the social needs that are not met by existing institutions, especially in harsh climatic conditions, and ultimately, can build trust between different actors.

5. Conclusions

5.1. The Most Important Aspects of the Study

The results of the study show that in order to support the growth of medium-sized businesses, accompanied by increasing social and economic activity in the studied region, an increase in trusting relationships is necessary. In addition, it must be borne in mind that guarantees for the protection of the rights of private property, employment, education and health care are especially important for Arctic residents. Among the most violated rights for citizens are health protection, equality before the law and employment. In recent years, a discourse of “fighting local corruption” has intensified in Russian media, helping to form an opinion that all problems will be solved by the intervention of the “centre”. Solutions to problems in business are too often referred to the prosecutor’s office; at present, many small and medium-sized entrepreneurs have lost their businesses for reasons that are not socially transparent. These practices create a certain beneficial effect due to the formation of a positive image of the central government. However, at the same time, they negatively impact the basis for the development of small and medium-sized businesses, for innovation and social activity; moreover, they fail to contribute towards a perception that private property rights and equality before the law are being preserved. In this connection it is very important that attention be paid to the functioning of local and municipal authorities governing the Arctic region, which, since connected by much more dense social ties, are much more aware of the needs of the inhabitants.

It is extremely important to ensure the growth of trust in institutions and the legitimacy of social order in the developed Arctic region through the formation and development of social innovation based on the theory of mutual and responsible open innovation systems that can ensure technological adaptability, institutional and/or market adaptability, and build trust between different participants.

5.2. The Limitations of the Study

The analysis of the dynamics of trusting relations, respect for fundamental rights and freedoms and civil participation of the inhabitants of the Russian Arctic region is carried out on the example of the developed Arctic region—the Yamalo-Nenets Autonomous Okrug (YNAO).

The technique of longitudinal research was used, which involves the sequential multiple registration of certain indicators at strictly set intervals in order to determine the dynamics of their change. Such research has some limitations that panel research does not have.

The survey samples are representative for the region as a whole but are not representative of specific social groups. We cannot judge the changes in the opinions of specific people, but we have information only about the average values of the indicators for the whole region.

In addition, this study did not consider such issues as the willingness to participate in innovative activities, including the level of readiness to participate in innovative social activities. As well, the growth of trusting relationships may include such a component as “socially expected responses.” We do not know how much we can trust positive responses from respondents.

5.3. Directions for the Future Research

The authors see the further development of research in the following directions: a) revealing the specific readiness of actors for social and technological innovations; b) identifying the social base of change; c) it is interesting to identify the mechanism of the relationship between feelings of security and trust in specific social institutions. It would be possible to build multidimensional regression models that describe not only structural relationships, but also the dynamics of the process; d) the processes of the digitalization of society and economy significantly change the configuration of social relations. Thus, in a digital society, the role of personified institutions can decrease, and the role of network relations can increase. It is necessary to investigate what place in this configuration the need to protect basic freedoms and human rights occupies.

It seems important to note the following. A number of enterprises were returning to state ownership during the analysed period in Russia. The processes of nationalization were especially significant in the extractive industries, which occupy the bulk of the economy of the Russian Arctic. This circumstance caused a decrease in the share of private property, primarily in the economically active part of society, revealed significant violations of the right to work (40%), and the right to health care (71%) (Appendix B, Table A1). It is necessary to correct the regression models with the selection of economically different strata of society for such conditions. It is necessary to significantly increase the sample for this purpose. It is necessary to add plots to the analysis that more specifically reveal the needs of society in observing various freedoms (life, economic activity, equality, family) and social rights, which make it possible to more fully assess the ability to perceive and implement social and technological innovations.

Author Contributions: Conceptualization, N.I.D. and D.F.S.; methodology, G.F.R.; software, G.F.R. and S.V.K.; formal analysis, N.I.D., D.F.S. and G.F.R.; investigation, N.I.D., G.F.R., D.F.S. and S.V.K.; resources, G.F.R., D.F.S. and S.V.K.; data curation, N.I.D. and G.F.R.; writing—original, G.F.R.; writing—review and editing, N.I.D. and D.F.S.; visualization, S.V.K.; supervision, N.I.D.; project administration, N.I.D. and S.V.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Russian Foundation for Basic Research (RFBR), project number 19-29-07131, “Modelling and measurement of human capital and its forms in the context of economy digitalization: resources, flows, institutions”.

Acknowledgments: The paper is based on research carried out with the financial support of the grant of the Russian Foundation for Basic Research (RFBR), project number 19-29-07131.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

1. An evaluation of trust in regional institutions was carried out according to the following survey questions. *Please state to what extent you trust or distrust regional authorities and organisations? Question variants: court, governor, trade unions, prosecutor's office, police, regional government, regional offices of political parties, parliament (Regional Duma), media (print, radio, television, municipal government).* Scale of answers: I fully trust (1); perhaps I trust mostly; hard to say for sure; I don't really trust; I don't trust at all (0). The trust index was calculated as the weighted average of all 11 trust variants, reduced to a scale from 0 (do not trust at all) to 1 (trust completely).
2. Protest potential. *"Are you ready to take part in protest actions (against a reduction in the level and quality of life, human rights and freedoms)?"* Scale of answers: ready (1); perhaps ready; probably not ready; not ready (0). The index was calculated as a weighted average on a scale of 0 to 1.
3. Level of observance of rights and freedoms. *"Did you encounter violations of the following rights and freedoms; what did you do in such cases and with what result?"*. The list of rights and freedoms is given in the first column of Table A1. Answer choices: *did not encounter a violation of rights; did not try to defend; more often it was possible to defend the violated rights; more often it was not possible to defend the violated rights; never managed to defend the rights.* The question was analysed by indices I1, I2 and I3. Violability (I1) consists in the frequency of violation of rights and freedoms, calculated as the percentage of those who experienced violations of rights and freedoms from all respondents. The intensity of protection (I2) is the percentage of those who tried to defend their violated rights and freedoms out of those who experienced violations. Protection success (I3) expresses the percentage of those who were more likely to succeed in defending violated rights and freedoms out of those who tried to defend them.
4. The level of security (insecurity) was determined by the percentage of positive (negative) answers to the question: *"How much do you personally feel protected from various dangers?"*, which proposed a list of 10 dangerous problems (crime, poverty, threats to the environment, arbitrariness of officials, arbitrariness of law enforcement agencies, feelings of loneliness and abandonment, persecution for political convictions, oppression due to age or gender, oppression for religious convictions, infringement due to ethnicity. Possible answers were: 1—fully protected; 0.75—rather protected; 0.5—I don't know; 0.25—rather unprotected; 0—completely unprotected. The index of protection was calculated as an average of protection indices on a scale from 0 (completely unprotected) to 1 (fully protected).
5. Sex of the respondent. 0—male; 1—female.
6. Age groups (full years). 0—18–24, 0.2—25–34; 0.4—35–44; 0.6—45–54; 0.8—55–64; 1—>64.
7. Education, five-membered ordinal scale. From 0 (no education or just primary) to 1 (higher education).
8. Type of settlement, five-member ordinal scale: 0—village, rural settlement; 0.25—urban-type settlement; 0.5—small town; 0.75—average city; 1—major city.
9. Subjective evaluation of health status: *"How do you assess the state of your health?"* 0—disabled; 0.25—chronic disease; 0.5—often sick; 0.75—sometimes sick; 1—normal health, not complaining.
10. Social status: *"Do you have subordinates in your main employment?"* Response scale: 0—No, I do not; 0.25—less than 5 people; 0.5—5–10 people; 0.75—11–50 people; 1—more than 50 people.
11. Financial situation: *"Which of the following statements best describes your financial situation (that of your family)?"* The response scale is: 0—there is not enough money for everyday expenses; 0.2—daily expenses take the whole salary; 0.4—everyday spending is enough, but buying clothes is difficult; 0.6—mostly enough, but for the purchase of expensive items it is necessary to borrow; 0.8—enough for almost everything, but it is difficult to purchase an apartment or a summer house; 1—practically nothing is unaffordable.
12. Life satisfaction: *"How satisfied are you with your life overall?"* 0—not at all satisfied; 0.25—not very satisfied; 0.5—hard to say for sure; 0.75—rather satisfied; 1—fully satisfied.

- 13. Type of employment: 0—employee; 1—self-employed.
- 14. The size of the enterprise at your main place of work: 0—microenterprise; 0.25—small enterprise; 0.5—medium-sized enterprise; 0.75—large enterprise; 1—international corporation.

Appendix B

Table A1. Dynamics of the assessments of violation, intensity and success in the protection of the fundamental rights and freedoms of a citizen (% of the number of respondents).

Rank	Rights and Freedoms	Violability (I1)			Intensity of Protection (I2)			Protection Success (I3)		
		2006	2013	2018	2006	2013	2018	2006	2013	2018
1	Private property	34	42	28	48	41	69	60	75	56
2	Labour	40	44	40	50	42	66	56	60	54
3	Education	29	37	19	44	42	67	63	73	55
4	Health protection	72	72	71	32	42	41	29	31	29
5	Equality before the law	43	50	42	51	45	65	42	48	51
6	Security and personal protection	41	47	23	54	48	69	55	70	56
7	Privacy of personal correspondence	27	37	19	40	33	63	62	60	47
8	Rights to one’s own language and culture	24	39	17	34	25	64	57	60	48
9	Freedom of speech	35	41	21	52	45	69	56	60	51
10	Religious freedom and freedom of conscience	24	38	18	30	27	66	52	65	49
11	Freedom of association to form groups and unions	26	41	17	34	22	60	54	54	50
12	Emigration	28	43	16	8	9	68	40	43	46
	Average value	35	44	28	40	35	64	52	58	49

Table A2. Regression model A. Dependent variable: financial standing.

Indicator	Value
R-squared	0.991
Durbin–Watson	1.738
F	3458.87
Sig.	0.000
Predictors	B
Life satisfaction index	0.465
Security index	0.429

Table A3. Regression model B. Dependent variable: protest potential.

Indicator	Value
R-squared	0.597
Durbin–Watson	1.86
F	167.1
Sig.	0.000
Predictors	B
Educational level	0.046
Life satisfaction index	0.189
Subjective evaluation of health	0.062
Level of protection from the arbitrariness of officials	−0.059
Groups by age	−0.034
Type of settlement	0.055

Table A4. Regression model C. Dependent variable: trust index.

Indicator	Value
R-squared	0.914
Durbin–Watson	1.774
F	1194.7
Sig.	0.000
Predictors	B
Index of security	0.677
Financial standing	0.122
Groups by age	0.026
Education level	−0.012

Table A5. Regression model D. Dependent variable: security index.

Indicator	Value
R-squared	0.917
Durbin–Watson	1.909
F	1671.4
Sig.	0.000
Predictors	B
Trust index	0.641
Life satisfaction index	0.226
Type of settlement	−0.027

References

1. Schütz, A. *The Phenomenology of the Social World*; Northwestern University Press: Evanston, IL, USA, 1974; p. 255.
2. Coleman, J. *Foundations of Social Theory*; Belknap Press of Harvard University Press: Cambridge, MA, USA, 1990; Volume xvi, p. 993.

3. Bourdieu, P. The forms of capital. In *Handbook of Theory and Research for the Sociology of Education*; Richardson, J.G., Ed.; Greenwood Publishing Group: New York, NY, USA, 1986; pp. 241–258.
4. Coleman, J.S. Social capital in the creation of human capital. *Am. J. Sociol.* **1988**, *94*, 95–120. [[CrossRef](#)]
5. Luhmann, N. *Trust and Power—Two Works by Niklas Luhmann*; John Wiley & Sons Ltd.: Toronto, ON, Canada, 1979; p. 228.
6. Luhmann, N. Vertrauen. Ein Mechanismus der Reduktion sozialer Komplexität. München. In *Die Originalausgabe Erschien 1968 Im F*; Enke Verlag: Stuttgart, Germany, 2014; 5 Auflage; p. 128.
7. Giddens, A. *The Consequences of Modernity*; Stanford University Press: Stanford, CA, USA, 1990; p. 186.
8. Giddens, A. *The Politics of Climate Change*; Polity Press Reprinted: Cambridge, UK, 2009; p. 265.
9. Endreß, M. *Vertrauen*; Transcript: Bielefeld, Germany, 2002.
10. Endreß, M. Eingrenzung des Menschlichen: Zur Transformation menschlichen Weltbezuges durch Gewalt. In *Gewalt: Entwicklungen, Strukturen, Analyseprobleme*; von Hrsg, W., Heitmeyer, H.-G., Söffler, A.M., Eds.; Suhrkamp: Frankfurt, Germany, 2004; pp. 174–201.
11. Sztompka, P. *Kapital Społeczno; Teoria Przestrzeni Międzyludzkiej*; Wydawnictwo Znak: Krakow, Poland, 2016; p. 350.
12. Sztompka, P. *Trust: A Sociological Theory*; Cambridge University Press: New York, NY, USA, 1999; Volume xii, p. 214.
13. Sztompka, P. Trust, distrust and two paradoxes of democracy. *Eur. J. Soc. Theory* **1998**, *1*, 19–32. [[CrossRef](#)]
14. Uslaner, E. *Corruption, Inequality, and the Rule of Law*; Cambridge University Press: Cambridge, UK, 2008; Volume xiii, p. 345.
15. Uslaner, E. *The Moral Foundations of Trust*; Cambridge University Press: New York, NY, USA, 2002; p. 312.
16. Fukuyama, F. *Trust: The Social Virtues and The Creation of Prosperity*; Free Press: New York, NY, USA, 1995; p. 457.
17. JinHyo, J.Y.; Xiaofei, Z.; KwangHo, J.; Tan, Y. The Culture for Open Innovation Dynamics. *Sustainability* **2020**, *12*, 5076.
18. JinHyo, J.Y.; DongKyu, W.; KyungBae, P. Entrepreneurial cyclical dynamics of open innovation. *J. Evol. Econ.* **2018**, *28*, 1151–1174.
19. Gupta, A.; Dey, A.; Singh, G. Connecting corporations and communities: Towards a theory of social inclusive open innovation. *J. Open Innov. Technol. Mark. Complex.* **2019**, *5*, 96. [[CrossRef](#)]
20. Krishna, V.V. Open Science and Its Enemies: Challenges for a Sustainable Science–Society Social Contract. *J. Open Innov. Technol. Mark. Complex.* **2020**, *6*, 61. [[CrossRef](#)]
21. Jun, M.S. Blockchain government—A next form of infrastructure for the twenty-first century. *J. Open Innov. Technol. Mark. Complex.* **2017**, *3*, 17. [[CrossRef](#)]
22. Pyka, A.; Mueller, M.; Kudic, M. Regional Innovation Systems in Policy Laboratories. *J. Open Innov. Technol. Mark. Complex.* **2018**, *4*, 44.
23. Saura, J.R.; Debasa, F.; Reyes-Menendez, A. Does User Generated Content Characterize Millennials' Generation Behavior? Discussing the Relation between SNS and Open Innovation. *J. Open Innov. Technol. Mark. Complex.* **2019**, *5*, 96. [[CrossRef](#)]
24. Shin, C.; Park, J. Classifying Social Enterprises with Organizational Culture, Network and Socioeconomic Performance: Latent Profile Analysis Approach. *J. Open Innov. Technol. Mark. Complex.* **2019**, *5*, 17. [[CrossRef](#)]
25. Lee, K.; Jung, K. Exploring institutional reform of Korean civil service pension: Advocacy coalition framework, policy knowledge and social innovation. *J. Open Innov. Technol. Mark. Complex.* **2018**, *4*, 14. [[CrossRef](#)]
26. Park, E.H.; Lee, J.-W. A study on policy literacy and public attitudes toward government innovation focusing on Government 3.0 in South Korea. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 23. [[CrossRef](#)]
27. Lee, K.; Choi, S.O.; Kim, J.; Jung, M. A Study on the Factors Affecting Decrease in the Government Corruption and Mediating Effects of the Development of ICT and E-Government—A Cross-Country Analysis. *J. Open Innov. Technol. Mark. Complex.* **2018**, *4*, 41. [[CrossRef](#)]
28. Noh, K.-R.; Jeong, E.-S.; You, Y.-B.; Moon, S.-J.; Kang, M.-B. A study on the current status and strategies for improvement of web accessibility compliance of public institutions. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 4. [[CrossRef](#)]
29. Sasaki, M.; Marsh, R.; Leiden, B. Trust: Comparative Perspectives. *Comp. Sociol.* **2012**, 381. [[CrossRef](#)]
30. Morgan, G.; Campbell, J.; Crouch, C.; Pedersen, K.; Whitley, R. *The Oxford Handbook of Comparative Institutional Analysis*; Oxford University Press: New York, NY, USA, 2010; p. 728.

31. Ronald, F.I. *Cultural Evolution: People's Motivations are Changing and Reshaping the World Hardback*; University of Michigan: Ann Arbor, MI, USA, 2018; p. 288.
32. Romashkina, G.F.; Didenko, N.I.; Skripnuk, D.F. Socioeconomic modernization of Russia and its Arctic regions. *Stud. Russ. Econ. Dev* **2017**, *28*, 22–30. [[CrossRef](#)]
33. Didenko, N.I.; Skripnuk, D.F.; Kikkas, K.N.; Sevashkin, V.; Romashkin, G.; Kulik, S.V. Innovative and technological potential of the region and its impact on the social sector development. In *International Conference on Information Networking*; IEEE Computer Society Press: Washington, DC, USA, 2018; pp. 611–615.
34. Rudenko, D.; Didenko, N.; Skripnuk, D. Environmental security issues in the Russian Arctic. 15th International Multidisciplinary scientific Geoconference (SGEM 2015). In *Ecology, Economics, Education and Legislation*; Conference Proceedings: Albena, Bulgaria, 2015; Book 5; Volume III, pp. 267–274.
35. Андрианова, Е.В.; Давыденко, В.А.; Данилова, Е.П.; Мальцева, Н.В.; Печеркина, И.Ф.; Ромашкина, Г.Ф.; Тарасова, А.Н.; Ушакова, Ю.В.; Худякова, М.В.; Чеблаков, А.Л.; et al. *Новая индустриализация: возможности, ограничения и противоречия социокультурного пространства*; Издательство Тюменской областной Думы: Тюмень, Российская Федерация, 2018; 224 с.
36. Seligman, A. *The Problem of Trust*; Princeton University Press: Princeton, NJ, USA, 1997; p. 231.
37. Hardin, R. *Trust*; Polity: Cambridge, UK, 2006; p. 214.
38. Putnam, R. *Bowling Alone: The Collapse and Revival of American Community*. Robert, D. Putnam; Simon & Schuster: New York, NY, USA, 2000; p. 542.
39. Bjørnskov, C. Social trust and fractionalization: A possible reinterpretation. *Eur. Sociol. Rev.* **2008**, *4*, 271–283. [[CrossRef](#)]
40. Yamagishi, T. *Trust: The Evolutionary Game of Mind and Society*; Springer: Tokyo, Japan, 2011; p. 177.
41. Hu, A. Radius of trust: Gradient-based conceptualization and measurement. *Soc. Sci. Res.* **2017**, *68*, 147–162. [[CrossRef](#)]
42. Lewicki, R.J.; Stevenson, M.; Bunker, B.B. *The Three Components of Interpersonal Trust: Instrument Development and Differences Across Relationships*; Working Paper; College of Business, The Ohio State University: Columbus, OH, USA, 1997.
43. Tajfel, H.; Turner, J.C.; Austin, W.G.; Worchel, S. The social identity theory of intergroup behavior. In *Psychology of Intergroup Relations*, 2nd ed.; Nelson-Hall: Chicago, IL, USA, 1986; pp. 7–24.
44. Van Lange Paul, A.M. Generalized Trust: Four Lessons from Genetics and Culture. *Curr. Directions Psychol. Sci.* **2015**, *24*, 71–76. [[CrossRef](#)]
45. Buchan, N.; Croson, R. The boundaries of trust: Own and others' actions in the US and China. *J. Econ. Behav. Organ.* **2004**, *55*, 485–504. [[CrossRef](#)]
46. Jan, D.; Newton, K. Who Trusts: The Origins of Social Trust in Seven Nations. *Eur. Soc.* **2003**, *5*, 93–137.
47. Graham, D.; Gillespie, N.; Chao, G.T.; Saunders, M.; Skinner, D.; Graham, D.; Gillespie, N.; Lewicki, R. Unraveling the Complexities of Trust and Culture. In *Organizational Trust: A Cultural Perspective*; Cambridge University Press: Cambridge, UK, 2020; pp. 3–41.
48. Gheorghiu Mirona, A.; Vignoles, L.V.; Smith, P.B. Beyond the United States and Japan: Testing Yamagishi's Emancipation Theory of Trust across 31 Nations. *Soc. Psychol. Q.* **2009**, *72*, 365–383. [[CrossRef](#)]
49. Hoffman, E.; McCabe, K.; Smith, V.L. Social distance and other-regarding behavior in dictator games. *Am. Econ. Rev.* **1996**, *84*, 653–660.
50. Hofstede, G. *Culture's Consequences: International Differences in Work-Related Values*; Sage: Newbury Park, CA, USA, 1980.
51. Hofstede, G. *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations*; Sage: Thousand Oaks, CA, USA, 2001.
52. Guha-Khasnobis, B.; Kanbur, R.; Ostrom, E. *Linking the Formal and Informal Economy: Concepts and Policies*; Oxford University Press: Oxford UK, 2006; p. 90.
53. Gambetta, D. Can we trust in trust. In *Trust: Making and Breaking Cooperative Relations*; University of Oxford: Oxford UK, 2000; Chapter 10, pp. 213–237.
54. Knack, S.; Zak, P.J. Building trust: Public policy, interpersonal trust, and economic development. *Supreme Court Econ. Rev.* **2002**, *10*, 91–107. [[CrossRef](#)]

55. Edelman Trust Barometer. Global Report. Online Survey in 27 Markets. 2019. Available online: https://www.edelman.com/sites/g/files/aatuss191/files/2019--02/2019_Edelman_Trust_Barometer_Global_Report.pdf?utm_source=website&utm_medium=global_report&utm_campaign=downloads. (accessed on 20 March 2019).
56. Inglehart, R.; Basanez, M.; Diez-Medrano, J.; Halman, L.; Luijkx, R. *World Values Surveys and European Values Surveys, 1981–1984, 1990–1993, 1995–1997*; Inter-University Consortium for Political and Social Research (ICPSR) Press: Ann Arbor, MI, USA, 2000; p. 200.
57. Burchi, F.; De Muro, P.; Kollar, E. Constructing Well-Being and Poverty Dimensions on Political Grounds. *Soc. Indic. Res.* **2018**, *137*, 441–462. [[CrossRef](#)] [[PubMed](#)]
58. Sen, A.K. Capabilities, lists, and public reason: Continuing the conversation. *Fem. Econ.* **2004**, *10*, 77–80. [[CrossRef](#)]
59. Sen, A. Human rights and capabilities. *J. Hum. Dev.* **2005**, *6*, 151–166. [[CrossRef](#)]
60. MacKerron, G. Happiness economics from 35,000 feet. *J. Econ. Surv.* **2012**, *26*, 705–735. [[CrossRef](#)]
61. Erdogan, B.; Bauer, T.N.; Truxillo, D.M.; Mansfield, L.R. Whistle while you work: A review of the life satisfaction literature. *J. Manag.* **2012**, *38*, 1038–1083. [[CrossRef](#)]
62. Diener, E. Subjective well-being: The science of happiness and a proposal for a national index. *Am. Psychol.* **2000**, *55*, 34–43. [[CrossRef](#)]
63. Fitoussi, J.P.; Sen, A.; Stiglitz, J. Report by the Commission on the Measurement of Economic Performance and Social Progress. The Commission on the Measurement of Economic Performance and Social Progress. 2009. Available online: www.stiglitz-sen-fitoussi.fr (accessed on 15 March 2019).
64. Easterlin, R.A.; Morgan, R.; Switek, M.; Wang, F. China’s life satisfaction, 1990–2010. *Proc. Natl. Acad. Sci. USA* **2012**, *109*, 9775–9780. [[CrossRef](#)] [[PubMed](#)]
65. Appleton, S.; Song, L. Life satisfaction in urban China: Components and determinants. *World Dev.* **2008**, *36*, 2325–2340. [[CrossRef](#)]
66. Cheng, Z.; Wang, H.; Smyth, R. Happiness and job satisfaction in urban China: A comparative study of two generations of migrants and urban locals. *Urban Stud.* **2014**, *51*, 2160–2184. [[CrossRef](#)]
67. Burchardt, T.; Vizard, P. Operationalizing the capability approach as a basis for equality and human rights monitoring in twenty-first-century Britain. *J. Hum. Dev. Capab.* **2011**, *12*, 91–119. [[CrossRef](#)]
68. Липин, Н.И. Атлас модернизации России и ее регионов: социоэкономические и социокультурные тенденции и проблемы; Издательство «Весь Мир»: Москва, Российская Федерация, 2016; p. 360.
69. Ромашкина, Г.Ф.; Давыденко, В.А. Социокультурная динамика—портрет Тюменской области; Издательство Тюменского государственного университета: Тюмень, Российская Федерация, 2015; p. 358.
70. Yun, J.J. Social Entrepreneur Open Innovation-Based Business Model Developing Circle. In *Business Model Design Compass; Management for Professionals*; Springer: Singapore, 2017.
71. Corrales-Garay, D.; Mora-Valentín, E.-M.; Ortiz-de-Urbina-Criado, M. Entrepreneurship Through Open Data: An Opportunity for Sustainable Development. *Sustainability* **2020**, *12*, 5148. [[CrossRef](#)]
72. Silva, S.E.; Venâncio, A.; Silva, J.R.; Gonçalves, C.A. Open innovation in science parks: The role of public policies. *Technol. Forecast. Soc. Chang.* **2020**, *151*, 119844. [[CrossRef](#)]
73. Xia, E.; Zhang, M.; Zhu, H. The Operation Mechanism of Open Innovation Community Network: A System Dynamics Model. In *The 19th International Conference on Industrial Engineering and Engineering Management*; Qi, E., Shen, J., Dou, R., Eds.; Springer: Heidelberg/Berlin, Germany, 2013.
74. Schmidt, P. Culture, Environmental Adaptation or Specific Problem Solving? On Convergence and Innovation Dynamics Related to Techniques Used for Stone Heat Treatment. In *Culture History and Convergent Evolution, Vertebrate Paleobiology and Paleoanthropology*; Groucutt, H., Ed.; Springer: Cham, Switzerland, 2020.
75. Pinto, H.; Nogueira, C.; Carrozza, C.; D’Emery, R. Smart Specialisation and the Entrepreneurial Discovery: A New Approach to Design Structural Change. In *New Paths of Entrepreneurship Development. Studies on Entrepreneurship, Structural Change and Industrial Dynamics*; Cagica Carvalho, L., Rego, C., Lucas, M., Sánchez-Hernández, M., Backx Noronha Viana, A., Eds.; Springer: Cham, Switzerland, 2019.
76. Sirén, C.; Parida, V.; Frishammar, J.; Wincent, J. Time and time-based organizing of innovation: Influence of temporality on entrepreneurial firms’ performance. *J. Bus. Res.* **2020**, *112*, 23–32. [[CrossRef](#)]
77. Hysa, X.; Calabrese, M. Innovation: A Financial Asset of the Capitalist or an “Intellectual Property” of the Entrepreneur. *Proc. Econ. Financ.* **2015**, *26*, 688–694. [[CrossRef](#)]

78. Yun, J.J.; Egbetoku, A.A.; Zhao, X. How Does a Social Open Innovation Succeed? Learning from Burro Battery and Grassroots Innovation Festival of India. *Sci. Technol. Soc.* **2019**, *24*, 122–143. [[CrossRef](#)]
79. Yun, J.J.; Park, K.B.; Im, C.J.; Shin, C.H.; Zhao, X. Dynamics of Social Enterprises—Shift from Social Innovation to Open Innovation. *Sci. Technol. Soc.* **2017**, *22*, 425–439. [[CrossRef](#)]
80. Holmes, S.; Smart, P. Exploring open innovation practice in firm-nonprofit engagements: A corporate social responsibility perspective. Special Issue: Open R&D and Open Innovation. *R&D Manag.* **2009**, *39*, 394–409.
81. Carayannis, E.; Grigoroudis, E. Quadruple Innovation Helix and Smart Specialization: Knowledge Production and National Competitiveness. *Foresight STI Gov.* **2016**, *10*, 31–42. [[CrossRef](#)]
82. Yun, J.J.; Liu, Z. Micro and Macro-Dynamics of Open Innovation with a Quadruple-Helix Model. *Sustainability* **2019**, *11*, 3301. [[CrossRef](#)]



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).