



Innovative Business Models in the Context of Organizational Culture Transformation in the COVID-19 Pandemic

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Abstract

The purpose of this article was to establish the interrelations and mutual influence of organizational culture transformation, national culture, and innovative business models' formation under the COVID-19 pandemic. To achieve the study goal, a multi-stage comprehensive exploratory study based on primary information obtained by expert interviewing was implemented. The developed methodological approach was tested on the example of small and medium-sized enterprises in Russia and China. As a result of the conducted testing, the previously formulated hypotheses were fully proved. H1: the negative shock of the pandemic and the ensuing quarantine restrictions caused critical changes in the business environment, cancelling the relevance of previously effective business models. H2: the new business environment required enterprises to significantly transform their organizational culture. H3: under the conditions of shock changes in the business environment and forced transformation of organizational culture the main condition for the sustainable development of enterprises is innovative business models. H4: implementation of innovative business models depends on both the business environment and the influence of national culture. The main obstacles to the implementation of innovative business models in small and medium-sized enterprises were also identified. The developed methodological approach can be used in the real sector of the economy by state organizations and non-state funds in the development of programs to assist small and medium-sized businesses in the COVID-19 pandemic. In addition, the study results may be of interest to academic researchers, suggesting empirically determined stable relationships (hypotheses H1, H2, H3, H4) between the transformation of organizational culture, national culture, and innovative business models' formation to ensure sustainable development of enterprises under the COVID-19 pandemic and opening new promising directions for further research.

Keywords Cooperation · COVID-19 pandemic · Innovative business model · Integration · Licensing

Introduction

In March 2020, humanity faced a new challenge: the Coronavirus (COVID-19) pandemic that forced governments to introduce unprecedented protective measures, such as self-isolation, social distance, mass public masking, and additional hygiene requirements. Under the COVID-19 outbreak, these efforts have become a part of daily life. The COVID-19 pandemic, unlike previous endogenous economic crises, has not just hit the world economy, but introduced new rules and behavior patterns for the population which will remain unchanged after the crisis (Choi & Sethi, 2021). The enterprises involved in the manufacturing of physical products, especially labor-intensive industries, have been forced to optimize their business processes, minimize operations or temporarily close their business (Akhmetzhanov et al., 2019; Seetharaman, 2020). The COVID-19 pandemic has affected all sectors of the global economy. For many enterprises, the transition to a remote format of work was the only alternative to complete closure, which undoubtedly entailed the need to change the business models of enterprises and their organizational culture as a whole. Thus, the primary motivation for this study was the surge in social demand for innovative business models that consider peculiarities of doing business and changed behaviors as a result of the COVID-19 pandemic.

Literature Review

The relevance of changing business models in conditions of organizational culture transformation, caused by unprecedented challenges of the external environment, led to increased interest in the research topic in both a highly specialized and interdisciplinary aspects.

Theoretical Aspects and Systematization of Prior Knowledge

Much of the research is devoted to general theoretical issues, rethinking of the conceptual apparatus, as well as systematization of the experience of predecessors (literature reviews). The research conducted by Piccarozzi et al. (2021) examined growth opportunities and challenges faced by enterprises under the COVID-19 pandemic. The researchers recommend new scenarios of doing business including an increasing role of online commerce and workplace and business operations digitalization. The main challenges faced by businesses are disruptions in supply chains that reduced consumer demand and caused the closure of enterprises. The research conducted by Wit (2016) explores strategic management including an innovative business model which helps to understand the essence of the organizational development process (Kreutzer, 2017), functionality, and enterprise survival strategies.

Problems of Transformation

Much of the existing research is devoted to the problem of business transformation, primarily - organizational culture, in a turbulent economy and significant challenges of the external environment. The article by Pwc (2021) considers an organization's culture as a set of behavior patterns that influence business performance. The research highlights that the management culture is based on two key issues: employees' values and behavior patterns. They argue that change in organizational behavior patterns and values of employees is the most effective approach to initiate change in management culture. Therefore, new behavior patterns force employees to think outside the box resulting in new values and culture change. The transformation of organizational culture should be seen as a continuous process that cannot be ignored (Singaraju, 2021). Furthermore, organizational culture should meet the strategic goals of an enterprise and improve business operations (Dobrotina, 2021). In many ways, organizational strategy and culture encourage each other to continue the further development of an enterprise. A motivated and enthusiastic workplace goes beyond the set goals and provides an enterprise with disruptive innovations which help to anticipate and overcome transformational challenges. Thus, organizational culture is closely connected with organizational values, assumptions, behavior patterns, and attitudes. It can be considered a driven factor that makes an enterprise unique reflecting its leadership models and creating the conditions for further cultural transformations. New organizational culture reshapes organizational behavior engaging all employees in the change process during day-to-day work (Eaton et al., 2021).

Lankhorst (2016) considered that in the digital age, organizational culture change plays a key role because a company's architecture facilitates innovation development, flexibility, and scalability, learning by doing and experimentation. The organizational culture change means changing those behavior patterns that have a negative impact on the overall performance and are resistant to change and keeping unchanged those cultural aspects that have a positive impact on the enterprise management (Eaton et al., 2021; Lankhorst, 2016) argues that an enterprise should consider the key factors of the transformation process including but not limited to: leadership which implies the adoption of agile management to facilitate the assessment and implementation of new business models, sources of finance and organizational opportunities.

Innovative Business Models

In today's economy, the business models are characterized as a new business culture (Abreu, 2021) that provides business opportunities through corporate culture management and contributes to operational effectiveness and new relationships with consumers. The research conducted by Seetharaman (2020) uses the three-dimensional approach to analyze the innovative business models of an organization:

- 1) information intensity of a product and service (the degree of customer interest in the product selection and buying),
- 2) information intensity of the process and value chain (investments in information technology, which benefit the enterprise, for example, access to online sites),
- 3) the need for a product and service in the national economy under the COVID-19 pandemic.

The research found that the digitalization of business processes met the needs of the new market ecosystem. Under the pandemic restrictions, the business must react accordingly to coming changes and implement digital tools into business operations. It will help to minimize physical contact and ensure a secure social environment, flexibility, and dynamic capabilities of an enterprise such as innovation, alternative digital products and services development, search for strategic solutions and partners. Thus, enterprises that adopted an innovative business model are more market-oriented, consumer-centered, and responsive to the new business ecosystem (Digital Reality, 2020), which creates a new socio-cultural environment and develops a management culture for further qualitative transformations (Bossert & Van der Wildt, 2021).

Digitalization (Digital Transformation) in the Context of Organizational Culture Change

The emergence of a very large part of innovative business models is closely related to digital transformation, which has led to considerable attention by contemporary researchers to various aspects of digital transformation.

Almeida et al. (2020) examined the impact of the COVID-19 pandemic on business systems and identified changes in three main areas: new employment relationships in the labor market and new social relations between employers and employees. Remote work modes forced employees to combine office responsibilities with household duties, which resulted in a decrease in average working and living space per each family member. Marketing and sales management have been affected by an increase in online commerce due to the closure of retail chains and the limited mobility of buyers. Technologies have been widely adopted by businesses and led to a transition from an old structure to a digital one including the Internet of Things, artificial intelligence, big data, and robotics development (Shestak et al., 2020).

According to the researchers, digital tools enhance business opportunities, help them to overcome the impact of the COVID-19 and accelerate companies' digital transformation (Ting et al., 2020). The scholars (Richter et al., 2017; Seliverstov et al., 2020) underline that business digitalization is based on an innovative architecture characterized by nine aspects: digital content sharing; physical goods sharing; customers (prosumers) who produce and consume value; open mindset; changed living conditions; urban environment; win-win situation; added value; and the trustworthy business model.

Startseva et al. (2021) analyzed the business operations of digital companies in People's Republic of China (China) and Russian Federation (Russia) and found

significant differences between them. The Chinese market growth is ensured by domestic demand and introduction of the advanced approaches in business such as digital payment platforms, secure payment systems, and promotion strategies that reshape the initial economy structure, the traditional model of economic growth and business operations. Startseva et al. (2021) argued that digital transformation creates opportunities for business and facilitates integration within the distribution channels regardless of the level of market development. However, the questions and problems of the impact of the COVID-19 pandemic on an enterprise's organizational culture transformation, including the implementation of innovative business models, have gained maximum popularity among modern researchers.

Impact of the COVID-19 on Organizational Culture Transformation Processes

In their research, Gregurec et al. (2021) explored business strategies that help to respond to the supply chain disruptions caused by the COVID-19 pandemic in Small and Medium-sized Enterprises (SMEs). The research identified three strategic approaches for enterprises to survive under the pandemic crisis. Enterprises should take into account the competitors' performance, a value proposition that differs from others and renew the existing business processes. Moreover, the scholars recommend focusing on business architecture, making use of the transformation driven by the economy, reshaping business models and making them more adaptive to changing environments, and introducing digitalization in organizations.

Choi and Sethi (2021) examined the innovative business measures to combat the COVID-19 in China. The researchers concluded that the quarantine restrictions led to new innovative operations in business using simple technologies such as WhatsApp technology for service delivery (catering, clothing, leisure) and education (delivery of knowledge to a student outside the traditional classroom, improving organizational issues in education). Moreover, the WhatsApp technology is seen as an alternative solution to traditional call centers which is used for communication purposes, ordering of products or services, and delivery during a company's working hours. One of the main benefits of WhatsApp is to keep physical stores open and avoid layoffs. WhatsApp provides consumers with an alternative way to get advice from real sellers, without visiting stores.

The scholars (Paters, 2020) suggested that the COVID-19 pandemic would foster online interactions in the near future. Under the quarantine restrictions, the new trends in business changed the practical (performance based on digital tools) and tactical strategies (customers relationships based on the internal aspects of corporate architecture and external influences) in the enterprise management aimed to fore-shadow economic uncertainty and possible risks (Liguori & Pittz, 2020).

While paying tribute to the merits of predecessors in the development of innovative business models, it should be noted that at the time of the study a single definition of business model has not been adopted, so this study will use the definition of Baizhanova and Kunanbaeva. According to their definition, a business model is a set of ways of doing business in a company (its structure, products, ways of delivery and service of goods, increase in market value), as well as basic

company strategy (Baizhanova & Kunanbaeva, 2019). A business ecosystem in this study should be understood as a network of interconnected business entities, vendors, suppliers, distributors, and other value chain participants who interact with each other in a complementary way within the key components of their business models (Venkatesh et al., 2019).

In addition, there are not enough studies of innovative business models in the midst of transforming organizational culture of enterprises under the COVID-19 pandemic. Thus, the relevance of this study is determined by the demand for effective innovative business models that ensure sustainable development of enterprises in the COVID-19 pandemic, and insufficient development of this issue by modern science.

The following hypotheses were formed. H1: The negative shock of the pandemic and the ensuing quarantine restrictions caused critical changes in the business environment, undoing the relevance of previously effective business models. H2: The new business environment has required enterprises to significantly transform organizational culture. H3: Under the conditions of shock changes in the business environment and forced transformation of organizational culture, the main condition for sustainable development of enterprises is innovative business models. H4: Implementation of innovative business models depends on both the business environment and the influence of national culture. The purpose of this article was to establish the relationships and mutual influences of organizational culture transformation, national culture, and innovative business models' formation under the influence of the COVID-19 pandemic.

The research objectives include but not limited to the following:

- 1) study the modern scientific approach to understanding the category of business models,
- 2) develop a methodological study design, identify the main tools and sources of information,
- 3) develop a methodological approach to assessing the implementation of innovative business models in different markets,
- 4) test the study on the example of SMEs in Russia and China,
- 5) determine relationship between the transformation of organizational culture, national culture, and innovative business models' formation under the COVID-19 pandemic.

The national statutory regulations for each country were used to define small and medium-sized enterprises, as follows:

- (1) In Russia, small and medium-sized enterprises are defined by the Federal Law (FL) of July 24, 2007 No. 209-FZ "On the development of small and medium-sized businesses in the Russian Federation" according to three basic criteria: (1.1) composition of founders: the share of the state, foreign legal entities and foreign citizens, public and religious organizations or associations, charitable and other funds in the authorized (share) capital (unit trust) of legal entities shall

- not exceed 25% (except for assets of joint-stock investment funds and closed unit trusts); (1.2) annual revenue: up to 120 million rubles - microenterprises; up to 800 million rubles - small businesses, up to 2 billion rubles - medium-sized businesses; (1.3) the number of employees: up to 15 - microenterprises, 15–100 - small businesses, 101–250 - medium-sized businesses (State Duma, 2007);
- (2) In China, small and medium-sized enterprises are defined by two main criteria: (2.1) up to 20 employees for micro enterprises, 20–300 for small enterprises and 300–1000 for medium-sized enterprises; (2.2) annual output: up to 3 million RMB for micro enterprises, up to 20 million RMB for small enterprises, up to 400 million RMB for medium-sized enterprises (Standing Committee of the National People's Congress, 2017).

The research has the following structure. The second section describes the methodology including the analysis of the research design, materials, and database. Third section presents the main study results. Fourth section is about the discussion and comparison of the findings with previous studies. Fifth section provides research conclusions important for both academicians and practitioners. The section creates recommendations for business management and identifies what areas may be missing in the research.

Materials and Methods

The solution of these scientific problems was made possible during the implementation of a multi-stage comprehensive exploratory research endeavor involving two countries: Russia and China. The main study stages are presented in Fig. 1.

Conducting a comprehensive literature review allowed not only clarifying the definitions used, but also enriching the methodology and tools with the experience

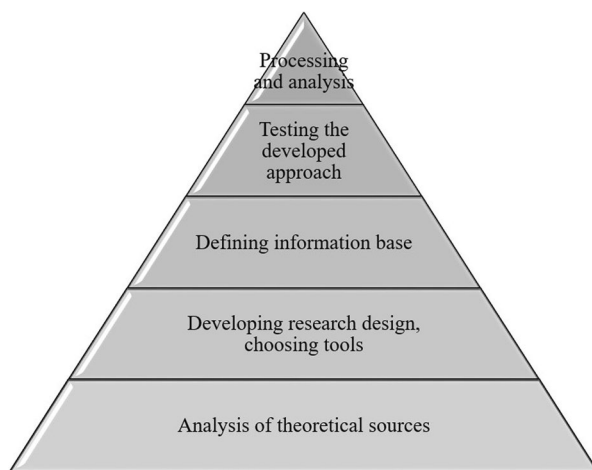


Fig. 1 The main study stages. *Source:* own development

of predecessors. The methodological study design was developed taking into account its main limitations. One of such limitations, which had a significant impact on the choice of methodology and the use of research tools, was the lack of reliable statistical information characterizing the dynamics of innovative business models. Given this limitation, it would be most appropriate to conduct a 'field' study phase to gather primary information. When selecting the instruments for the 'field' study stage, the limitations of the research budget, as well as the time constraints for conducting the study, significantly reduced the possibility of conducting multi-country quantitative research with a reliable sample. Given the study limitations, a partially structured expert interview method was chosen to gather information. At the same time, due to the study limitations caused by the continuation of the COVID-19 pandemic, expert interviews were conducted partially in a face-to-face format and partially using electronic means of communication (Viber, Skype, Telegram, etc.).

A roadmap for expert interviews was developed to conduct the study. When conducting expert interviews, there are two main ways of obtaining information: structured and unstructured expert interviews, with the main difference being in the structure of obtaining information. In an unstructured interview, the interview process takes the form of an almost free conversation. Individual topics and questions of an unstructured interview can be discussed in an arbitrary order, changing from expert to expert. An unstructured interview provides more in-depth information, especially nonverbal information, but requires not only more time compared to a structured interview, but also a much higher qualification of the interviewer and analysts. In structured and partially structured interviews, the main study stages are unified for all interviews, usually in the form of a roadmap, where each step means a certain interview topic, and the initiative to change the topic of the interview in this case belongs to the interviewer. Structured and partially structured interviews, as a rule, are less effective in terms of nonverbal information, but require less skill, and greatly facilitate the analysis and comparison of interviews, which is very important when using the developed methodology in the real economy. Thus, the roadmap step "Defining the Expert Profile" means, for example, the initial stage of the interview, the introduction of the interviewer and the expert, during which the basic parameters of the expert profile are established in the form of a free conversation. The step "Determining Awareness of Innovative Business Models" predetermines a conversation to determine the expert's awareness of innovative models, their opinion on the advantages and disadvantages of this or that model, etc. Schematically the expert interview roadmap is presented in Fig. 2.

The roadmap involves limited use of statistical analysis tools during interviews, including closed-ended, single-choice questions (in determining the respondent profile), as well as a 5-point Likert scale to obtain measurable and comparable information on certain questions of this study. The use of a 5-point Likert scale is due to the high level of understanding of the scale by a respondent, the ease of processing, as well as the unambiguity of interpretation of the information obtained (Vogel et al., 2020).

The Likert scale scores for expert interviews are interpreted as follows: completely disagree – 1 point; rather disagree – 2 points; unsure – 3 points; rather agree – 4 points; completely agree – 5 points. Reference question RQ22 is presented as

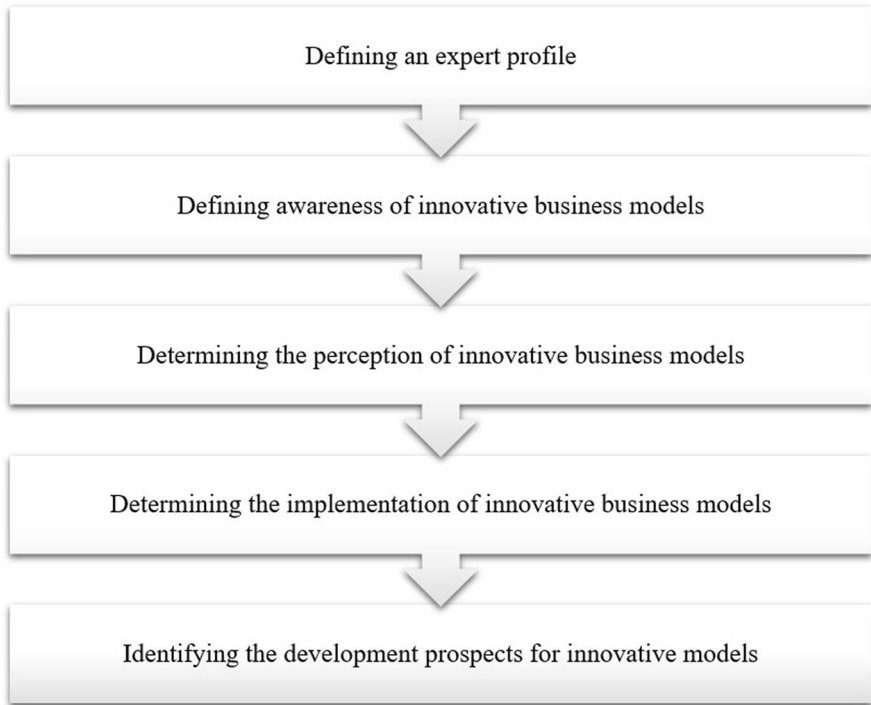


Fig. 2 Roadmap of expert interviews. *Source:* own development

a multiple-choice question. The interview roadmap was developed based on the experience of predecessors (Baizhanova & Kunanbaeva, 2019; Botelho et al., 2021; Venkatesh et al., 2019) in the issues of assessing the perception, implementation, and prospects for the development of innovative models, including to test the conclusions of predecessors regarding the popularity and prospects of certain models (questions RQ 10–13). The basic constructs of the expert interview roadmap are presented in Table 1.

Database

Russia and China were chosen for the pilot test. The criterion of scale was the main criterion for selecting countries for testing because the economies of China and Russia play an important role in the global economy, in terms of resources, production, and consumer market. The population of managers and/or owners of SMEs was used as the general population in the selection of experts, and SMEs were defined according to the regulatory and legal definition. Modern economic science recommends the analysis of 20 to 30 interviews when conducting expert interviews (Marshall et al., 2013). Taking into account the two-country approach, the maximum recommended sample size was chosen – 30 interviews, distributed

Table 1 The main constructs of the expert interview roadmap

Question code	Reference sheet question
RQ1	The COVID-19 pandemic has completely changed the business environment
RQ2	The methods we used to build our value chain suddenly became ineffective
RQ3	Our company had to switch to a remote working format to avoid closure and bankruptcy
RQ4	In order to ensure the efficiency of our company's operations under the COVID-19 pandemic, we had to significantly change our organizational culture.
RQ5	The switch to a remote working format was purely a forced measure for the period of quarantine restrictions. We have no plans to maintain this format once quarantine restrictions are completely lifted.
RQ6	To ensure the sustainable development of the enterprise in the context of the pandemic, we consider the possibilities/realize the benefits of integration
RQ7	To ensure the sustainable development of the enterprise under the conditions of the pandemic, we consider/realize the advantages of cooperation
RQ8	To ensure the sustainable development of the enterprise in the conditions of the pandemic, we consider/realize the advantages of licensing
RQ9	To ensure the sustainable development of the enterprise in a pandemic, we consider/realize the benefits of using mixed innovative business models
RQ10	Our company is using/preparing to use the advantages of prosuming
RQ11	Our company is using/preparing to take advantage of crowdfunding
RQ12	Our company is using/preparing to take advantage of blockchain
RQ13	Our company is using/preparing to use the advantages of trading platforms 4.0.
RQ14	We believe that the current situation is a temporary market reaction to an external irritant (COVID-19 pandemic), and we are not planning any serious changes in our business organization
RQ15	The implementation of innovative business models at our company is possible only in case of state support
RQ16	We are confident that the market will never be the same, and we plan to continue working in a new format after the quarantine restrictions are lifted
RQ17	Our company is experiencing technical problems in implementing innovative business models.
RQ18	Our company has organizational problems implementing innovative business models.
RQ19	Our company has financial problems in implementing innovative business models.
RQ20	Our enterprise has personnel problems in implementing innovative business models.

Source: own development

equally between China and Russia. Enterprises were selected at random from official registries of legal entities: Unified State Register of Legal Entities - for Russia (Russian Unified State Register of Legal Entities, 2022), State System of Open Information on Enterprise Creditworthiness - for China (National Enterprise Credit Information Publicity System, 2022). All heads of enterprises were informed about participation in the study, its goals and objectives, and confirmed their consent to participate in the research. Since the interviews were completely anonymous, written confirmation of consent to process personal data was not required. The industry structure of the enterprises whose managers participated in the expert interviews is shown in Fig. 3.

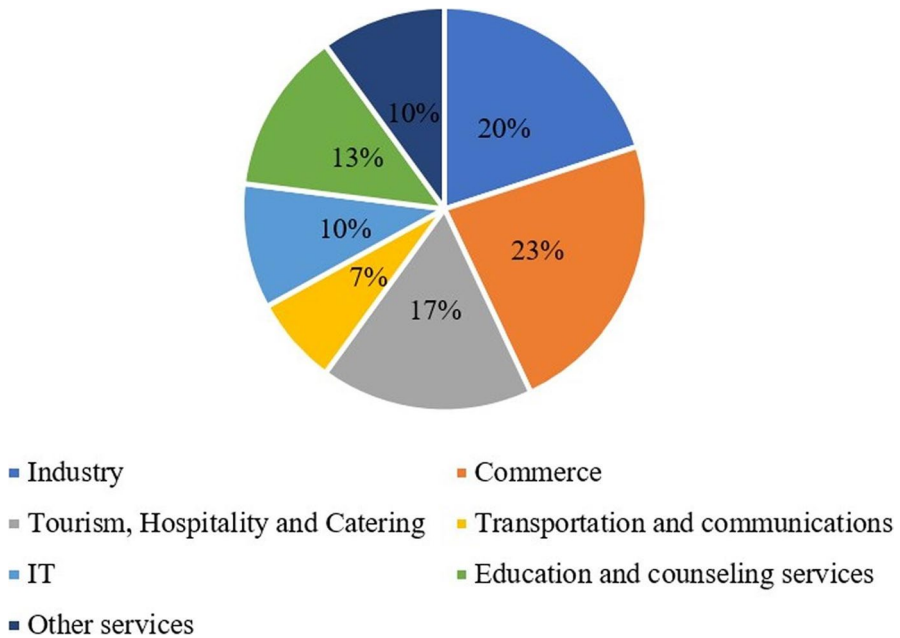


Fig. 3 Sectoral structure of enterprises, %. *Source:* own development

An examination of the acceptability and normality of the sample is presented in Table 2.

Thus, the mean value of each item is in the range from 2.67 to 4.67, the standard deviation does not exceed 0.99, which indicates the acceptability and normality of all items for analysis. The item-total correlation values in the range from 0 to 0.19 give grounds to characterize the correlation as low and the obtained data as undesirable for further use, but the study results of all values are greater than 0.19, which indicates the normality of the sample. The item-total correlation values in the range between 0.2 and 0.39 characterize the correlation as sufficient and testify to the advisability of using the obtained data for further analysis. In the range from 0.2 to 0.39 are the values of item-total correlation for RQ1, RQ2, RQ3, RQ4, RQ5, RQ6, RQ9, RQ10, RQ13, RQ14, RQ15, RQ16, RQ17, RQ18, RQ19, RQ20. Therefore, the data obtained can be used for further analysis. The item-total correlation values in the range above 0.4 indicate a very good correlation and minimal risk of information distortion. The item-total correlation values for RQ7, RQ8, RQ11, RQ12 are above 0.4, indicating high reliability of the sample.

Methods

Normality and reliability of the sample in the analysis of quantitative indicators (Likert scale results) were assessed using the mean and standard deviation, as well as item-total correlation.

Table 2 Main indicators of normality and acceptability assessment

Question	Mean	Standard deviation	Item-total correlation
RQ1	4.67	0.55	0.25
RQ2	4.20	0.89	0.29
RQ3	3.37	0.96	0.22
RQ4	3.13	0.78	0.34
RQ5	3.37	0.96	0.22
RQ6	2.83	0.91	0.28
RQ7	3.17	0.99	0.42
RQ8	3.00	0.98	0.45
RQ9	3.00	0.91	0.31
RQ10	2.77	0.82	0.25
RQ11	2.67	0.92	0.50
RQ12	3.17	0.91	0.49
RQ13	3.73	0.98	0.34
RQ14	2.93	0.98	0.25
RQ15	3.43	0.86	0.24
RQ16	2.93	0.94	0.35
RQ17	3.20	0.71	0.26
RQ18	3.03	0.85	0.28
RQ19	3.20	0.89	0.20
RQ20	3.20	0.85	0.31

Source: own development

The mean value of μ was calculated by formula 1:

$$\mu = \frac{1}{n} \sum_{i=1}^n x_i, \quad (1)$$

x value of the analyzed parameter;
 n number of values in the time series.

Standard deviation (root mean square) σ is calculated by formula 2:

$$\sigma = \sqrt{\frac{1}{n} \sum_{i=1}^n (x_i - \mu)^2}, \quad (2)$$

x value of the analyzed parameter;

n number of values in the time series;
 μ mean value.

Coefficient of variation c_v is calculated by formula 3:

$$c_v = \frac{\sigma}{\mu}, \quad (3)$$

σ standard deviation;
 μ mean value.

Pearson correlation coefficient to determine the normality and acceptability of item-total correlation questions was calculated by formula 4 using a Microsoft Excel spreadsheet processor.

$$r_{xy} = \frac{\sum_{i=1}^m (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^m (x_i - \bar{x})^2 \sum_{i=1}^m (y_i - \bar{y})^2}} = \frac{cov(x, y)}{\sqrt{s_x^2 s_y^2}} \quad (4)$$

In addition, at various study stages, the method of encryption, the method of graphical representation of data, as well as a set of methods for the analysis of verbal and nonverbal information directly during the interview were used.

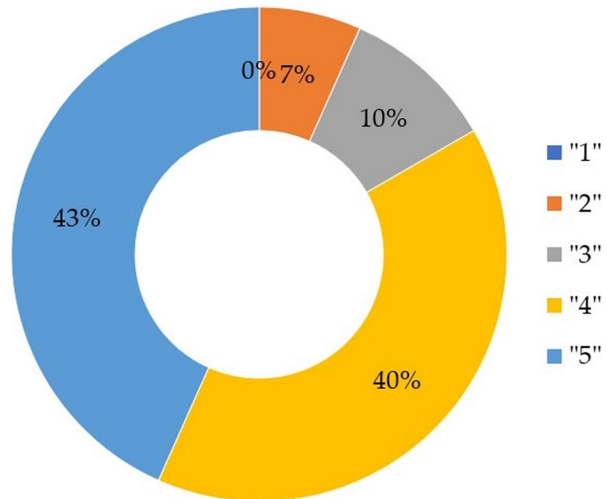
Results

The results of the conducted interviews show that the experts are almost unanimous in stating that the COVID-19 pandemic has completely changed the business environment. 70% of the experts said they strongly agreed, 27% agreed rather than disagreed, 3% of the experts were uncertain; none of the experts expressed any form of disagreement. During the interviews, there was a fairly high level of emotional reaction to this question, with a significant portion of experts noting that the greatest damage was caused by the suddenness of the changes (“like thunder from a clear sky”, “like snow in July”). The reaction of experts to the claim of a sudden loss of effectiveness of previously used value chain creation methods is presented in Fig. 4.

The vast majority of experts agree that the COVID-19 pandemic has caused a devastating blow to the value chain techniques previously used, with 43% of experts responding in strong agreement, 40% agreeing rather than disagreeing with this statement, and 10% having difficulty answering. Only 7% of experts rather disagree with this statement, with no expert disagreeing strongly. Structurally, experts’ reactions to the statement about the forced organizational culture changes are presented in Fig. 5.

A significant proportion of experts (43%) acknowledged the forced nature of changes in the organizational structure, with only 13% expressing strong agreement.

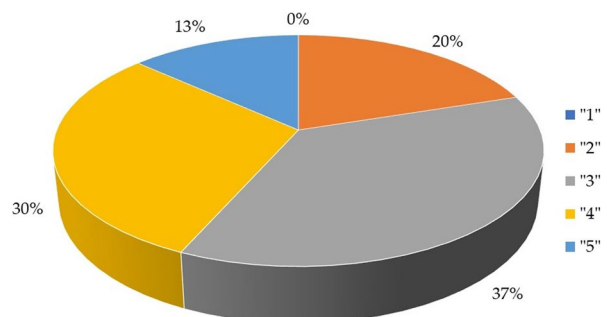
Fig. 4 Experts' reactions to the statement about the sudden loss of effectiveness of previously used value chain creation methods. *Source:* own development



Not a single expert expressed strong disagreement, but 37% of experts found it difficult to answer. In particular, during interviews, the experts referred to difficulties in determining the significance of changes in the organizational culture, which indicates that additional research on this issue is advisable.

At the same time, none of the experts expressed a confident refusal to return to the previously used methods of work after the abolition of quarantine restrictions, although almost 1/3 of the experts (30%) rather agree than disagree with this statement. While 13% of the experts are definitely ready to return to the old methods and business models; 20% of the experts are more ready than not. Bivariate distribution shows significant differences in the opinions of Chinese and Russian experts: for example, only Russian experts expressed confident agreement with the return to the old methods, while no Chinese experts confirmed their intention to return to traditional business models, and five Chinese experts and only one Russian expert disagreed with this statement. Especially significant are the differences in the study of the main directions of developing innovative business models (Fig. 6).

Fig. 5 Experts' reactions to the statement about the forced organizational culture changes. *Source:* own development



While the structure of responses seems to be quite harmonious at first glance, the bivariate distribution by country shows significant differences in the opinions of experts from China and Russia regarding the prospects of innovative business models. The bivariate distribution (by country) of mixed business models' assessments is shown in Fig. 7.

When assessing the prospects of using mixed business models, 9 experts from China and only one from Russia positively assessed the prospects for using these models, while 11 Russian experts and only one Chinese expert - negatively. At the same time, the number of experts who could offer no opinion is the same for China and Russia - three experts each. The results of experts' evaluation of the main methods for implementing the advantages of innovative business models are presented in Fig. 8.

At the same time, the bivariate distribution (by country) also confirms significant differences in the opinions of Chinese and Russian experts. Chinese experts constructively and positively perceive the most common methods of implementing innovative business models' benefits. 10% of experts are sure that introduction of innovative business models at the enterprise is possible only in case of state support, more than 1/3 (37%) of experts rather agree than disagree with the necessity of state support of innovative business models introduction, 40% are undecided with the answer, and only 13% rather disagree than agree. When interviewed, the experts, who expressed uncertain disagreement, reported that "the development of an enterprise is the concern of its manager, not the state. And demanding another 'help' ('help' was expressed sarcastically) to increase the efficiency of one's company is pure consumerism.", "I will not refuse state assistance, especially in the development of technological infrastructure, training and consultations, but it is by no means a prerequisite." The main problems of SMEs in the study of innovative business models are presented in Fig. 9.

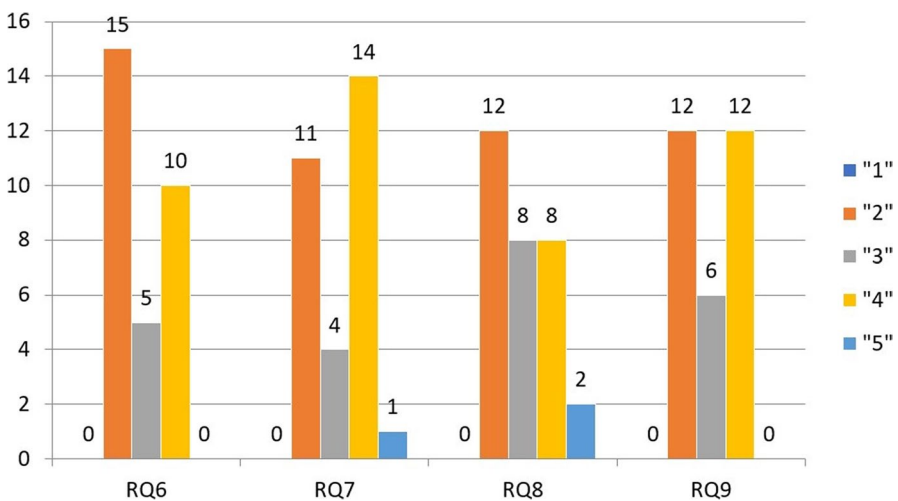


Fig. 6 The main directions of developing innovative business models. *Source:* own development

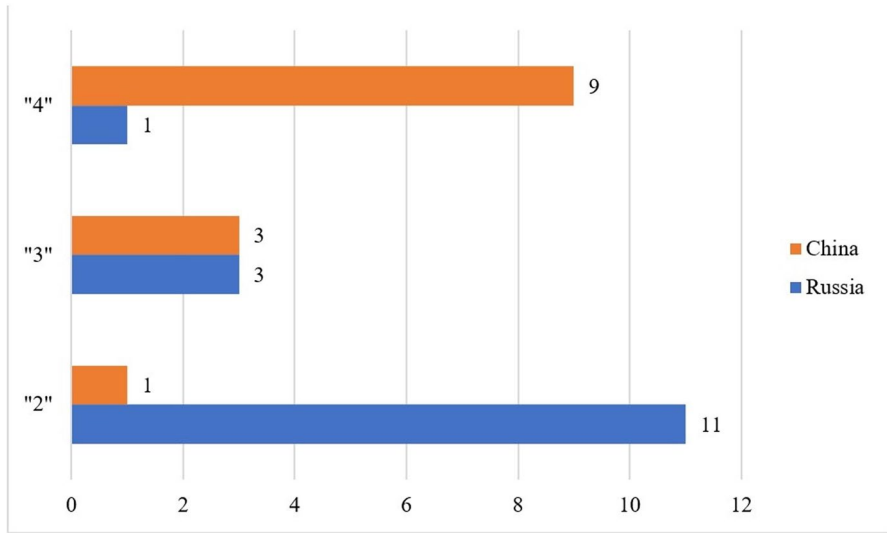


Fig. 7 Bivariate distribution (by country) of experts' assessment of mixed business models. *Source:* own development

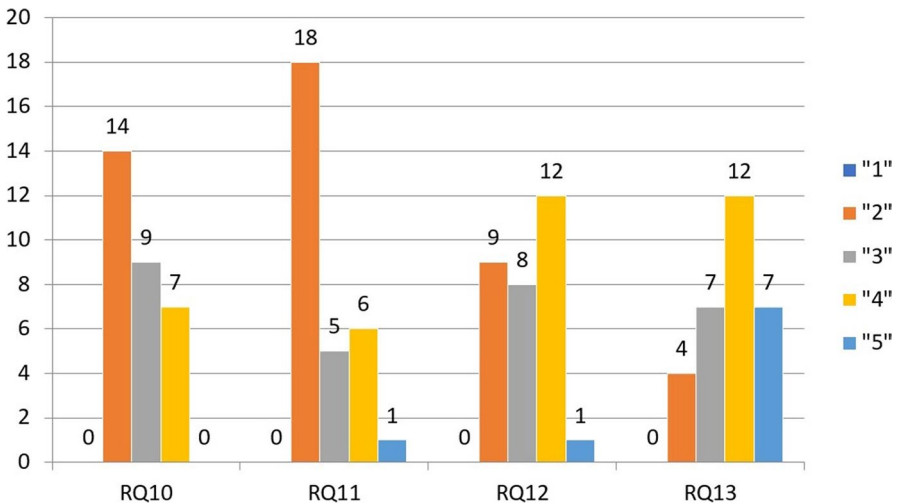


Fig. 8 Expert assessment of the main methods of realizing innovative business models' benefits. *Source:* own development

Thus, the formulated hypotheses were proved. Expert opinions confirmed the assumption that the negative shock of the pandemic and the ensuing quarantine restrictions caused critical changes in the business environment, cancelling the relevance of previously effective business models (H1), while the new business environment required significant transformation of the organizational culture of enterprises (H2). In

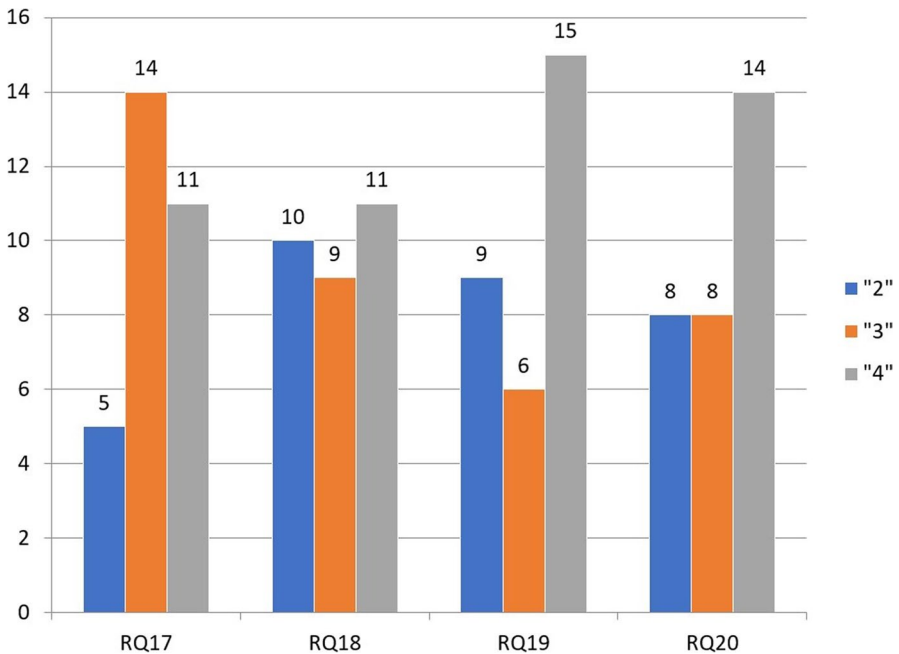


Fig. 9 The main problems of SMEs in the implementation of innovative business models. *Source:* own development

addition, the study results confirmed the assumption that the main condition for sustainable development of enterprises is innovative business models under the conditions of shock changes in the business environment and forced transformation of organizational culture (H3). The results of bivariate distribution established significant conceptual differences in the opinions of Russian and Chinese experts, which gives the right to assert significant differences in the perception and implementation of innovative business models at the country level (H4). At the same time, the nature of their differences, the main factors that form these differences are beyond the scope of this study and may become promising directions for further research on innovative business models. The main study limitations were (1) the lack of reliable statistical information describing the dynamics of innovative business models; (2) research budget limitations; (3) research time constraints; (4) quarantine restrictions related to the COVID-19 pandemic.

Discussion

The analysis showed that in the COVID-19 pandemic, the traditional model became ineffective, and unemployment increased. Only businesses that implemented digital tools, architectural thinking and information technology were able to cope with the challenges (Tripathi, 2021). A study by Sethi (2021) confirmed the results of the current study. The researcher argued that key cultural traits

should include internal management system policies, digitalization, team spirit, and employee health and safety.

Innovative solutions, introduced on the organizational level, helped enterprises to process, store and report financial information, as well as react to emergencies (Una et al., 2020). Burgos and Ivanov (2021) showed that the purchasing power and government interventions under the COVID-19 pandemic have been adapted to a new environment including changes in online sales channels, digital twins in supply chains, end-to-end transparency and transformation of the organizational culture. Richter et al. (2017) underlined that business based on digital technologies and a culture of innovation can be seen as a future-oriented one. Similar to the current research, Sneader and Singhal (2021) discussed the main trends that define socio-economic life and how this model affects the global economy, business and society. The researchers found that leisure travel recovers from the recession. Moreover, the research admits that there is an increasing monetization of ideas, an increase in entrepreneur activity, acceleration of Industry 4.0 through production automation and innovative management.

From the societal point of view, enterprises invest much more in public health. Moreover, companies experience financial problems after the pandemic. Bettiol et al. (2021) concluded that quarantine restrictions have influenced business digitalization and encouraged all market stakeholders to use digital tools to promote hygiene and physical safety in everyday life.

The researchers identified two main aspects that companies should focus on to cope with the crisis: (1) introduce a customer-centric strategy; (2) build all business processes based on the sharing economy. The research conducted by Bettiol et al. (2021) came to the same conclusions on agile innovation management for the sharing economy and a value proposition to customers. The research analyzes the innovative activities and business imperatives arising from the COVID-19 pandemic and their impact. Despite the positive trends in China and Russia (Garcia-Herrero & Xu, 2019) and the adoption of the centralized management model, there are significant differences in the business innovation activity in supply and demand. At the same time, Hoang et al. (2021) found that e-commerce helps to increase sales and ensure stable market operations under social distancing and other quarantine restrictions.

The scholars suggest that political leaders should encourage companies to introduce technology and foster an innovation culture to achieve flexibility. Shumakov (2021) underlined that enterprises with corporate culture align to the business strategy and overcome the challenges of the pandemic at a minimal cost. The research recommends transforming the management culture in the following ways: monitor the current state, introduce changes, and demonstrate new behavior patterns that support the innovative business models (Gribanov, 2019).

Conclusion

The study developed a methodological approach to assess the implementation of innovative business models in the context of transforming organizational structures in the COVID-19 pandemic. Testing the proposed approach on the example

of SMEs in Russia and China allowed fully confirming the formulated hypotheses. The study was conducted using qualitative methods of analysis, which is due to the imperfection of the statistical information system, which limits the ability to analyze statistical data. The expert interviews fully confirmed hypothesis H1 that the negative shock of the pandemic and subsequent quarantine restrictions caused critical changes in the business environment and abolished the relevance of previously used business models. The study results also confirmed that the new business environment requires a significant transformation of enterprises' organizational culture (hypothesis H2). At the same time, this issue suggests the possibility of further in-depth research, as part of the experts perceive this transformation as temporary, related exclusively to the impact of the pandemic, which requires additional clarification. The study results also proved hypothesis 3 (H3), according to which innovative business models become the main condition for the sustainable development of enterprises under the conditions of shock changes in the business environment and forced transformation of organizational culture. In addition, the bivariate distribution of the interview results revealed significant differences in the opinions of Russian and Chinese experts, which confirms hypothesis 4 (H4) about the relationship between the introduction of innovative business models, national business environment, and the influence of national culture. Assessing the impact of individual factors on the implementation of innovative business models at the national level is beyond the scope of this study but is a very promising area for future research.

The study assessed the main barriers to implementing innovative business models by SMEs to achieve sustainable development during the COVID-19 pandemic. This assessment can be useful in the development of SME assistance programs by governmental and non-governmental agencies at national and regional levels. The proposed assessment approach is easily scalable and adaptable to the specific conditions of individual regions or industries due to the chosen research format and does not require additional expensive software. In addition, the use of benchmark questions with quantitative assessment when conducting interviews makes it possible to use this approach for monitoring, which will make it possible to assess the effectiveness of programs to promote SMEs. The study may also be of interest to academic researchers as it suggests empirically determined relationships (hypotheses H1, H2, H3, H4) between organizational culture transformation, national culture, and the formation of innovative business models to ensure sustainable development of enterprises under the COVID-19 pandemic.

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Data Availability Data will be available on request.

Declarations

Informed Consent The research did not include any human and / or animal participants, so the informed consent was not required.

Ethical Approval The authors declare that the work is written with due consideration of ethical standards. The study was conducted in accordance with the ethical principles approved by the Ethics Committee of Mingachevir State University.

Conflict of Interest The authors declare no conflict of interest.

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