Identification and analysis of risks of digitalization in the field of transport services

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Abstract. The article analyzes the current state of the transport service sector of the Russian Federation and shows that it occupies a dominant place in the structure of GDP, and more than half of the able-bodied population of the Russian Federation are employed in the transport service sector. Based on the analysis of the internal and external environment of the transport service enterprise, the influence of the digital transformation of business processes on the enterprise as a whole is investigated. Methods for identifying and analyzing risks are proposed, these methods are considered on the example of a transport service company. The identification process was carried out using the method of SWOT analysis, which showed that the strength of the enterprise is automation and high technology, and the main risk is the risk of revenue shortfall, which is associated with factors such as failures in the work of information technology, low efficiency of online marketing, failures in reservation system, imperfection of personnel selection and assessment information programs. The study showed that a transport service company is exposed to risks with a high probability and a significant amount of damage; such risks require preventive measures to eliminate them. The proposed methods for identifying and analyzing the risks of digital transformation will be useful to senior management of transport service enterprises.

1. Introduction

The service sector holds an honorable and predominant place in the structure of economic relations of developed countries. The share of the service sector in global GDP is growing annually: according to the World Bank, already in 2015, in high-income countries, the benefit of services accounted for 74% of GDP. In the countries of the Organization for Economic Co-operation and Development (OECD), more than two-thirds of the employed working population in 2017 worked in the service sector. For example, in New Zealand, Ireland, Canada and South Korea, more than 90% of the working population is employed in the service sector. According to the World Bank, the contribution of the service economy to the GDP of the Russian Federation is growing every year and in 2019 amounted to 62.3%, and the share of the population employed in the service sector amounted to 67.3% (see Figure 1) [1].

Indeed, digitalization is becoming a powerful driver for the development of the service economy; the use of information technologies in the service sector creates an additional impetus to its dynamics, which affects the improvement of the quality of life of the population.

Digitalization of processes and the business as a whole is now becoming increasingly popular. Digital transformation involves changing business processes through the introduction of information...
technology. Such changes make it possible to increase the level of service, make interaction with the client simpler and faster, and provide services more accessible and comfortable. Consequently, process productivity and customer satisfaction are enhanced [2].

Figure 1. Dynamics of the share of the population employed in the transport service sector.

However, the activities of any business entity are exposed to risks caused by changing factors of the internal and external environment. Each organization seeks to protect itself from the negative impact of risks. This necessitates risk management in the process of conducting entrepreneurial activities.

Therefore, the process of digital transformation due to the incompleteness and inaccuracy of the information entails the appearance of a risky event. The search for ways to smooth and accelerate the digital transformations of the service sector encourages us to explore the risks associated with the digitalization of business processes [3].

2. Digitalization of the transport service sector, its advantages and disadvantages

Digital transformation is a modern type of economy, characterized by the predominant role of information and knowledge as determining resources in the production of material products and services, as well as the active use of digital technologies for storing, processing and transmitting information [4]. However, there are a number of problems that impede the digital transformation of the service sector (see Figure 2).

The problems that impede digital transformation include the lack of awareness and enlightenment of service sector entities, which do not always clearly determine for themselves the effectiveness and significance of large financial investments in digital transformation processes.

Often, company employees themselves are not motivated to develop new technologies or optimize processes, since the digitalization of business processes entails a reduction in jobs, but at the same time, companies experience a lack of qualified personnel with the necessary competencies and knowledge in the field of information technology. In addition, companies have trouble in switching to electronic document management and the use of applications and gadgets, since the training of older employees causes significant difficulties [5].
When digitalizing processes, there is a risk of violating the confidentiality of both corporate information and client’s personal data. Therefore, information about projects, partners and financial transactions uploaded to external servers can fall into the hands of competitors and scammers. The implementation process itself requires large financial costs, but subsequent maintenance of automated processes will be a significant cost item for the company. The distrust of citizens (potential customers) in the digital environment carries the risk of lower demand [3].

Despite the difficulties associated with the introduction of digital technologies in the service sector, digital transformation gives the transport service sector a number of advantages (see Figure 3).

First, digitalization leads to an increase in efficiency and an improvement in the quality of services and to a decrease in the operating cycle, and therefore the company becomes more competitive. Automation of both basic and servicing processes leads to a decrease in routine operations; therefore, employees have the opportunity to devote themselves to developing creative projects and solving problems. In addition, digitalization increases the speed of decision-making and the provision of services, and digital technology allows you to create high-quality infrastructure and reduce the number of intermediaries. Together, the digitalization of processes allows the company to increase its value [6].

The benefits of digitalization undoubtedly exceed the weight of the problems that enterprises face. In order for the business process of digital transformation to proceed comfortably and smoothly, it is necessary to identify and evaluate possible risky events, as well as apply preventive measures to them [7, 8]. For risk analysis, the internal reporting of the transport service enterprise.
3. Digitalization Risk Identification

The process of identifying risks can be carried out using various methods: brainstorming, interviewing experts, the method of nominee groups, as well as SWOT analysis. The essence of the SWOT analysis is to identify factors of the organization’s internal and external environment and divide them into 4 categories: strengths, weaknesses, opportunities and threats. The advantage of the method is the ability to assess the potential of the enterprise and its environment, as well as to assess the gap between the actual situation of the enterprise and its capabilities. This method is one of the most effective methods in strategic management.

At stage 1, the analysis of possible alternatives for the strategic development of the company begins with the formation of a table summarizing the strengths and weaknesses of the enterprise, as well as the threats and opportunities formed in the environment (see table 1) [9].

| Strengths                                                                 | Weaknesses                                                                                   |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| high quality services;                                                   | high advertising costs;                                                                      |
| manufacturability and automation of quests;                             | the appearance of unforeseen and difficult to eliminate breakdowns;                           |
| promotion of services on the Internet;                                   | lack of control of the official site;                                                        |
| online booking option;                                                   | poorly established interaction with a call center;                                            |
| use of call center services;                                             | low reliability of information of test methods of assessment and hiring;                     |
| the presence of a mobile version of the site;                           | the location is not in the center;                                                           |
| the use of computer programs for hiring and staff assessment;            | in the "off season" high costs are required to attract customers;                            |
| convenient work schedule.                                                |                                                                                               |

| Threats                                                                  | Capabilities                                                                 |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------|
| the threat of loss and shortfall in revenue;                             | expansion of services (creating new quests);                                 |
| the threat of the client’s failure to appear;                            | an opportunity to develop in new market segments (quests in virtual reality);|
| the threat of incorrect customer reservations;                          | the growing popularity of smart recreation;                                   |
| the threat of plagiarism of ideas by competitors;                        | increasing the interest of the audience by introducing new ideas (actors, animators, original technical developments); |
| the threat of Internet marketing being not effective;                    | the introduction of cashless payments.                                        |
| staff turnover.                                                          |                                                                               |

At stage 2, the combination and strength of interaction of all groups: strengths and weaknesses with threats and opportunities are assessed. Scores from 1 to 5 are set for evaluation; the stronger the connection, the higher the rating score. If the strong side allows you to achieve a certain opportunity, then they have a strong combination and their connection is estimated at 5 points, but if the opportunity does not allow you to get rid of the weakness of the enterprise, then they have a weak connection, which is estimated as 1 point. In order to visually display all possible combinations, a matrix is formed consisting of 4 blocks: power block - a combination of strengths and capabilities of companies is assessed, which make it possible to become even better; block of improvements - evaluated as opportunities allow to level out the shortcomings; protection block - evaluated as strengths to protect against environmental threats; warning block - it assesses which weaknesses are most dangerous, as they can develop into threats. Such an assessment of combinations allows you to identify the most strengths and weaknesses, as well as the most likely opportunities and threats. The evaluation matrix is presented in table 2 [9, 10].
Table 2. A combination of strengths and weaknesses with the opportunities and threats of the company.

|                      | Strengths                                                                 | Weaknesses                                                                 |
|----------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|
| **Total**            | high quality services promotion of services on the Internet possibility of online booking and use of call center services high tech and automated quests using computer programs for hiring and evaluating staff | using advertising costs the appearance of unforeseen and difficult to fix breakdowns lack of control over the health of the official site and poorly established interaction with the call center low reliability of information of test methods of an estimation and hiring |
| **Protection block** | 4 5 4 5 3 3 5 5 3                                                      | 37                                                                      |
| The threat of loss and shortfall in revenue | 1 2 5 2 3                                                                  | 22                                                                      |
| The threat of failure to appear and incorrect booking of the client | 3 2 4 5 5                                                                  | 31                                                                      |
| The threat of negative reviews | 1 5 1 2 1                                                                  | 18                                                                      |
| The threat of Internet marketing being not effective | 2 1 1 3 5                                                                  | 21                                                                      |
| Staff turnover       | 5 1 1 2 3                                                                  | 19                                                                      |
| **Warning block**    | 1 1 4 1 1                                                                  | 19                                                                      |
| Development of new quests | 1 4 1 3 2                                                                  | 21                                                                      |
| Development in new segments | 2 5 4 3 4                                                                  | 33                                                                      |
| Promotion of smart rest | 5 1 1 2 1                                                                  | 18                                                                      |
| Introduction of new technical developments | 1 5 1 1 1                                                                  | 19                                                                      |
| **Total**            | 26 25 21 29 27                                                           | 30 24 19                                                                 |

Stage 3 - the formation of the problem field of the enterprise, in which solutions are formulated for existing problems formed by one or another combination of strengths and weaknesses with the capabilities and threats of the company. The matrix is filled with numbers - problem numbers formulated based on a combination of row parameters and table columns. For each cell of this matrix, its own formulation of the problem is created, but then the wording that is close in content is
“compressed” into one general formulation, which is used to fill out the table. As a result of filling in the matrix “enterprise problem field”, a number of its cells will have the same problem number (see table 3) [10, 11].

**Table 3.** Problem field of the enterprise.

|                      | Strengths                                                                 | Weaknesses                                                                 |
|----------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|
|                      | high quality services, promotion of services on the Internet              | High advertising costs, The appearance of unforeseen and difficult to fix breakdowns, Lack of control over the health of the official site and poorly established interaction with the call center, Low reliability of information of test methods of an estimation and hiring |
|                      | Possibility of online booking and use of call center services             | High tech and automated quests, Using computer programs for hiring and evaluating staff, Low reliability of information of test methods of an estimation and hiring |
|                      | High tech and automated quests                                            | High tech and automated quests, Using computer programs for hiring and evaluating staff, Low reliability of information of test methods of an estimation and hiring |
|                      | Using computer programs for hiring and evaluating staff                   | High tech and automated quests, Using computer programs for hiring and evaluating staff, Low reliability of information of test methods of an estimation and hiring |
| **Protection block** | **Warning block**                                                         | **Protection block**                                                        |
| The threat of loss and shortfall in revenue 3 2 4 3 1                  | The threat of loss and shortfall in revenue 2 3 5 1                          |
| The threat of failure to appear and incorrect booking of the client 8 4 5 5 4                  | The threat of failure to appear and incorrect booking of the client 2 8 4 1                          |
| The threat of negative reviews 8 2 4 3 1                              | The threat of negative reviews 6 8 3 4 1                                     |
| The threat of Internet marketing being not effective 2 4 2 6 2          | The threat of Internet marketing being not effective 6 3 4 1                |
| Staff turnover 1 1 5 1 1                                              | Staff turnover 1 3 5 1                                                      |
| **Power block**                                                     | **Block of improvements**                                                   |
| Development of new quests 7 7 4 7 1                                   | Development of new quests 7 7 4 7 1                                         |
| Development in new segments                                           | Development in new segments 7 6 4 3 8                                        |
| Promotion of smart rest 7 2 4 3 1                                      | Promotion of smart rest 7 3 4 1                                             |
| Introduction of new technical developments 7 7 5 7 3                   | Introduction of new technical developments 7 7 5 7 3                         |
| **Protection block**                                                 | **Warning block**                                                           |
| Development of new quests 7 7 4 7 1                                   | Development of new quests 7 7 4 7 1                                         |
| Development in new segments                                           | Development in new segments 7 6 4 3 8                                        |
| Promotion of smart rest 7 2 4 3 1                                      | Promotion of smart rest 7 3 4 1                                             |
| Introduction of new technical developments 7 7 5 7 3                   | Introduction of new technical developments 7 7 5 7 3                         |

At stage 4, the company’s problems are ranked by importance; the “problem assessment” column is filled with the sum of the scores overlapped by the same problem. The last column of the table contains the rank of the problem, a rank of 1 is assigned to the problem with the maximum mark, such a problem is most acute for the company (see table 4) [10].
Table 4. The ranking of the problems of the company by importance.

| №  | Problem Solving wording                                                                 | Problem assessment | Problem rank |
|----|----------------------------------------------------------------------------------------|--------------------|--------------|
| 1  | Implementing an effective personnel policy: recruitment and evaluation technologies in interview format using special testing programs | 41                 | 1            |
| 2  | Using SMM Services                                                                      | 25                 | 5            |
| 3  | Establishment of systemic monitoring of the information technology and quest equipment efficiency | 36                 | 2            |
| 4  | Performance monitoring of the official site                                             | 33                 | 4            |
| 5  | Providing complete and accurate information about the company’s services to the call center | 22                 | 6            |
| 6  | Using alternative methods of advertising, partnership                                    | 10                 | 8            |
| 7  | Brainstorming, competitor analysis                                                      | 34                 | 3            |
| 8  | Personnel training in force majeure circumstances                                       | 18                 | 7            |

In the digitalization era, the transition of companies to automated processes should be their strength; however, after conducting a detailed SWOT analysis, we see that new threats appear during the digital transformation. Based on the analysis, we formulate the main risk factors:

1 factor - the omission of a good employee due to the narrow focus of recruitment and evaluation information programs;
2 factor - the occurrence of unforeseen breakdowns of technical devices and malfunctions of information technologies in quests;
3 factor - errors in the operation of the call center and reservation system on the official website;
4 factor – decrease in profitability from using internet marketing.

Thus, the identification process is completed; the next step is to conduct a risk assessment both qualitatively and quantitatively [10].

4. Risk analysis

At stage 1, an assessment of risks is carried out in terms of their likelihood of occurrence. According to the degree of probability, risks are classified as expected, highly probable, risks with medium probability, unlikely and risks with low probability; it is necessary to assign a rank for each risk group (see table 5) [12].

Table 5. Classification of risks by probability of occurrence.

| Risk group                        | Risk rank, score | Explanation                                           |
|-----------------------------------|------------------|-------------------------------------------------------|
| Expected risks                    | 5                | The expected event to happen.                         |
| Highly probable risks             | 4                | Event may happen                                      |
| Risks with medium probability     | 3                | Evidence of risk exposure                              |
| Unlikely risks                    | 2                | A rare event, but there is a precedent                |
| Low probability risks             | 1                | Event may occur in exceptional cases                  |

Thus, based on expert estimates, the probability rank of the occurrence of each risk factor is determined.
Thus, 1 risk factor is considered to be expected, since it is determined that the recruitment and selection system is imperfect. Therefore, factors 2 and 3 are considered highly probable risks, since the company often encounters unforeseen breakdowns in quests and errors in the operation of the call center and booking system on the official website, and a decrease in the profitability from the use of Internet marketing is considered an unlikely risk.

The next step is to assess risk factors and rank them by degree of impact. There is a classification of risks by the amount of damage that they can create (see table 6). For each risk group, the possible amount of damage and the rank of risk relating to a particular group are determined [12].

| Damage (loss) | Possible amount of damage (in % of profit) | Risk rank |
|---------------|------------------------------------------|-----------|
| Significant   | От 25% до 30%                            | 5         |
| Large         | От 15% до 25%                            | 4         |
| Medium        | От 10% до 15%                            | 3         |
| Small         | От 5 до 10%                              | 2         |
| Inconsequential | От 0% до 5%                          | 1         |

Thus, based on expert assessments, the rank of the degree of each risk factor impact is determined.

According to the degree of impact, significant risks are considered the risk of unforeseen technical breakdowns in the quest and the risk of a decrease in profitability from the use of Internet marketing. A major risk is the loss of an employee due to the narrow focus of recruitment and evaluation information programs, and the average amount of damage can cause the risk of errors in the operation of the call center and reservation system on the official website.

Group risk factors with their ranks of probability and damage, (see table 7) [13].
When each risk is assigned a rank according to both criteria, a risk map is built, which clearly shows which risks pose a great threat to the company, and which risks the company should be tolerant of (see Figure 6) [9].

Factors with a degree from 1 to 9, moderate from 10 to 12 and critical from 15 to 25 are considered acceptable. Factors that fall into the red-yellow zone require measures to neutralize them.

Based on the risk map, we see that such risk factors as the loss of an employee due to the narrow focus of information assessment and hiring programs, as well as the occurrence of unforeseen breakdowns of technical devices and malfunctions of information technologies in quests fell into the red zone. The following risk factors fell into the yellow zone: lack of control over the working capacity of the official site and support for the call-center, not the effectiveness of Internet marketing. Application of elimination measures to these risk factors will allow avoiding or reducing the level of exposure to the threats discussed earlier [14].

Staff turnover for the company is an acute problem, earlier interviews with new employees were carried out orally in a dialogue format, and subsequently, processes such as hiring and evaluating staff underwent a digital transformation. Now, these processes are implemented using special programs based on KPI testing. However, the introduction of these technologies has not eliminated the problem of staff turnover. When using only information technologies for the selection and evaluation of personnel, there is a risk of missing a good candidate, since there is no human factor. An interview in a testing format can scare the candidate and does not take into account the personal characteristics of the candidate, which can be identified in the dialogue process. Therefore, it is necessary to conduct interviews and assess the work of personnel, combining the use of special programs and personal contact [15].

### Figure 5. Graphical display of the degree of risk factors impact.

### Table 7. Grouping of risk factors.

| №  | Name of risk factor                                                                 | Probability rank | Impact rank |
|----|-------------------------------------------------------------------------------------|------------------|-------------|
| 1  | Omission of a good employee due to the narrow focus of recruitment and evaluation information programs | 5                | 4           |
| 2  | The occurrence of unforeseen breakdowns of technical devices and malfunctions of information technology in quests | 4                | 5           |
| 3  | Errors in the operation of the call center and reservation system on the official website; | 4                | 3           |
| 4  | Reduced Internet marketing profitability                                               | 2                | 5           |
Figure 6. Map of digitalization risks.

Now, all quests in the company have undergone a digital transformation, all processes are automated, administrators perform only a controlling function. However, the risk of such digitalization is unforeseen disruptions in the operation of IT - technologies and programs, and the lack of prompt elimination of them leads to loss of revenue. Therefore, it is very important to monitor equipment and technologies and prevent them from breaking down, and there should always be a specialist on the site who can fix the malfunction and set up the quest, which in turn will allow the company to maintain the planned revenue [16].

Another problem of digitalization, which has fallen into the red zone of risk, is the use of call-center and online booking services. Previously, it was possible to book a service only by contacting the administrator, now, thanks to the possibility of independent booking and choosing a quest at the request of the client, the booking process is simplified and accelerated. The call center, in turn, clarifies and confirms the reservation, or if the client changes his mind, he releases the booking time that another client can choose. However, call center errors are very common. Due to insufficient information, lack of control over the official website’s performance, the client’s reservation may contain critical errors: booking time, type of service, etc. It is necessary to establish work with a call-center, monitor their work and provide the most accurate information about the services. In addition, the IT department should check the site’s performance and make it convenient and understandable for the client.

The company uses Internet marketing to advertise and promote its services, but it does so intuitively. Currently, SMM (social media marketing) is becoming increasingly popular, and therefore, competition is growing, it is becoming more complex and expensive. For marketing to be effective, the revenue from customers coming from online advertising must exceed its costs. Currently, advertising costs are growing, but the number of customers is not increasing. The company’s management needs to contact a specialist in this field to establish competent processes of Internet marketing.

5. Conclusion
The article considers the problem of digital transformation of transport service enterprises and identifies its main problems and advantages. The main problems of digitalization of the transport service sector are violation of confidentiality of corporate and personal data, job cuts, and high costs of
introducing digital transformations into business processes. The main advantages of digitalization are increasing competitiveness, increasing the speed of service delivery, reducing routine operations, etc. The article discusses methods for identifying and analyzing risks caused by the digitalization of the business processes of a transport service enterprise. An identification technique based on a SWOT analysis is proposed, with the help of which the strengths and weaknesses of the enterprise, its capabilities and threats are formulated, and their combination is analyzed. Based on this technique, the problem field of the enterprise and the main risk factors were formulated. Subsequently, their probability of occurrence and degree of exposure were assessed. The result of the study is to compile a risk map, which allows determining which risks are the most dangerous for the enterprise and which are acceptable.

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