



Strategic recommendations for enhancing performance in educational organizations

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ABSTRACT

This study examines the performance of "My Horizons", a private K-11 school in Sevastopol that has been facing challenges in achieving satisfactory educational outcomes. The objective of this research is to propose anti-crisis strategic recommendations to improve the effectiveness of the organization. To achieve this goal, the authors have developed a compound methodology that combines qualitative and quantitative econometric methods as a theoretical framework for the study. The first stage of the study involves the formation of an analytical profile of the educational organization. This is accomplished through an analysis and forecast of the main performance indicators, leading to the identification of key features, main characteristics, "problem points," and competitive advantages of the school within the educational services market. In the second stage of the study, based on the results of the analysis and forecast, a set of anti-crisis strategies is formulated for the educational organization. These strategies are specifically designed to address the previously identified "problem points" according to the suggested methodology. By implementing these strategic alternatives, it is expected that the effectiveness of the troubled educational organization will be significantly improved. The findings of this study contribute to the body of knowledge on sustainable educational management practices in crises, explicitly focusing on the challenges private schools face. Educational organizations can utilize the proposed methodology to identify areas for improvement and develop effective strategies to overcome crises and enhance performance.

Keywords: strategic recommendations, performance, forecasting, strategy, educational organization

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INTRODUCTION

Presently, numerous families are confronted with the issue of their children feeling uncomfortable in the school environment, to the point where they express a desire to stay at home. This discomfort can arise from factors such as parental separation, misunderstanding, and aggression from classmates among younger students (Ferreira, 2018; Gentry & Bernard, 2014; Kamel, 2021; Morcillo, 2015). As the child grows older, they may become bored with the slow pace of new material introduction, while others may feel overwhelmed by the rapid presentation of material beyond their comprehension abilities. Due to unmet parental expectations, students of all ages may experience performance anxiety, and some may feel constrained by the rigid curriculum, which prevents them from pursuing their intellectual interests or expressing their opinions. Consequently, parents may seek alternative private school options to address these concerns (Cohen-Zada, 2009; Keeles, 2013).

In Sevastopol, there has been a notable increase in the number of private schools over the past decade. "My Horizons" is one such institution that seeks to tackle the problems through its current strategies. However, like many new private schools in the city, "My Horizons" demonstrates unsatisfactory educational outcomes and requires sustainable educational

management practices (Abanto & Neciosup, 2019; Adan & Reyes, 2019; Armas & Bardales, 2020).

This research aims to analyze and forecast the school's performance as well as propose suitable anti-crisis strategies based on a developed methodology.

A crucial preliminary step in this study is to provide an overview of the general characteristics and features of the "My Horizons" private school established in 2013. As of 2021, the tuition fee stands at USD 1,000 per year, accounting for approximately 41.6% of the average annual income of USD 2,400 for all wage earners in Sevastopol. Homeschooling through "My Horizons," including testing for official recognition of matriculation, costs USD 150 per year, representing about 16% of the average annual income. Therefore, private school education is financially inaccessible to all but the upper-income classes in the city.

Due to relatively low salaries for public school teachers, many are retired individuals who consider their teaching income supplementary, allowing them to attain an income close to the average. Consequently, public school teachers are generally older and have limited familiarity with digital skills, putting them at a technological disadvantage. In contrast, teachers at "My Horizons" receive fair compensation and have an average age in their twenties. They possess computer literacy skills and are well-versed in modern technology. Additionally, the student-to-teacher ratio at "My Horizons" is 3:1, whereas, in public schools, it is 12:1. The low student-to-teacher ratio at the private institution implies that more time and attention from better qualified and motivated teachers will lead to superior educational outcomes at "My Horizons."

Since 2017, "My Horizons" has fully transitioned to an electronic journal and implemented its web service, effectively managing the operational aspects of the educational process. Moreover, a range of web services and platforms are utilized, including Mirapolis, Mind.com, tutor.org, and Online Test Pad, some of which facilitate the administration and operation of comprehensive distance learning.

METHOD

The present study employs the authors' proposed methodology to develop a comprehensive set of anti-crisis strategies, consisting of three stages, Stage 1: Defining criteria and performance indicators for the educational organization: 1.1. Selection of experts, and 1.2. Development and scrutiny of criteria and indicators

In the initial phase of stage 1, external experts are carefully chosen based on their reputational and positional criteria. The positional criterion considers the formal status and positions of individuals, while the reputational criterion prioritizes their expertise and competence in the field. The selected experts encompass administrators and faculty members from Sevastopol State University, distinguished high school curriculum experts, high school administrators, and other educators.

Subsequently, the experts collaborate to establish criteria to evaluate educational outcomes. Performance indicators are identified, and standardized tests are devised to assess the effectiveness of attaining educational goals across both public and private educational institutions. Continual evaluation and adjustments are crucial to ensuring that the desired outcomes are consistently achieved and that the focus remains on teaching fundamental concepts rather than solely preparing for the assessments.

To further facilitate this process, well-established and widely recognized evaluation methods are utilized as a foundation for developing standardized tests. These encompass the methodology provided by the Federal Service for Supervision of Education and Science for assessing the quality of school education, the Program for International Student Assessment (PISA), the Trends in International Mathematics and Sciences Study (TIMSS), and the Progress in International Reading Literacy Study (PIRLS).

At the micro level within the school, two distinct factors are typically identified. These factors encompass:

The primary factors:

X1 – Number of teaching staff

- X2 – Number of students per personal computer
 - X3 – Number of personal computers
 - X4 – Average workload of a teacher at school
 - X5 – Coefficient of updating of pedagogical personnel
 - X6 – Percentage of turnover of the teaching staff of the school
 - X7 – Number of “good” and “excellent” attestations after nine years of study
 - X8 – Number of “good” and “excellent” attestations after eleven years of study
 - X9 – Number of students enrolled in Additional Educational Programs
 - X10 - Weighted average student score in the electronic diary
- The primary factors create conditions that result in the formation of secondary factors.

The secondary factors:

- Y1 – Average score of the state exam after eleven years of study
- Y2 – Average score on the state exam after nine years of study
- Y3 – Average result of the scheduled task exam for each class year
- Y4 – Average score of academic performance (9th grade)
- Y5 – Average score of academic performance (11th grade)
- Y6 – Percentage of graduates who enter university on a scholarship
- Y7 – Percentage of graduates who enter university without a scholarship

The secondary factors represent a typical measurement of the effectiveness of secondary educational organizations.

Stage 2: Analysis and projection of the effectiveness of the educational organization among the 20% of schools in the city with the lowest educational outcomes, 2.1. Collection of statistical data using the developed system of criteria and indicators: testing, interviews, questionnaires, and analysis of self-assessment reports. This sub-stage includes the following: a) Gathering baseline demographic information; b) - Collecting and conducting preliminary analysis of educational statistics; c) - Acquiring baseline information and conducting preliminary spatial data analysis related to urban development activities; d) - Correlating obtained data with information on the strategic lines of economic and socio-cultural development in the region; and e) Collecting statistical data provided by educational organizations, information from their official websites, and self-assessment reports. 2.2. sample data analysis using econometric methods: correlation-regression analysis, time series analysis, principal components method, and cluster analysis. In this part of the research process, correlation-regression analysis is the main tool used. It helps find functional relationships between the primary factors (such as key educational outcomes) and the secondary factors (such as other primary factors) (Gilstrap, 2020; Nunkoo, 2020; Tonidandel & Lebreton, 2011; Zhang & Worthington, 2018).

Time series analysis methods are employed to generate forecasts of the dynamics of the aforementioned factors and aggregated indicators (Espasa, 1994; Shakeel & Peterson, 2020; Zellner, 1994). The principal components method combines Individual performance indicators into generalized (integrated) ones. This makes it easier to compare schools and rank them based on certain criteria (Byrne & Hall, 1998; Jakaitiene, Zilinskas, & Stumbriene, 2018; Sidou & Borges, 2020). Cluster analysis aids in grouping similar sample objects (i.e., schools) to develop universal strategies for their advancement (Sukri, Hajiriah, Jannah, Andika, & Lukitasari, 2019). An essential component of this sub-stage entails a) Analysis of indicators of the demand for graduates and b) Analysis of indicators related to learning outcomes.

2.3 Identification of "problem points" and factors of insufficient school efficiency; definition of the school profile. During the analysis of an educational organization, certain "problem points" are identified. These specific issues arise in different domains and are attributed to the main factors contributing to decreased efficiency. Moreover, an analytical profile of the school is formulated, encompassing: a) General characteristics and features of the organization, such as the student body, pedagogical workload, staff turnover, the school's ranking in the state exam ratings for 11th grade, degree of digitalization, etc; b) Competitive advantages, including favorable geographical location, historical traditions, and other relevant factors; c) "Problem points" or bottlenecks within the operational processes that diminish the overall effectiveness of

the school. The derived conclusions serve as the foundation for subsequent quantitative and qualitative forecasting.

2.4 Forecasting the effectiveness of the "problem school", using constructed econometric models, scenario analysis, and the method of expert assessments. At this sub-stage, a forecast of individual indicators is made a) demand for graduates; b) indicators of learning outcomes, using the trend analysis method; that is, the main second-order factors (key educational outcomes) are predicted, including:

Y1 – the average score of the state exam after eleven years of study

Y2 – the average score of the state exam after nine years of study

Y3 – the average result of the scheduled task exam for each class year

Y4 – the average score of academic performance (9th grade)

Y5 – the average score of academic performance (11th grade)

The principal component method is employed to combine the individual indicators mentioned above, resulting in an aggregated school performance indicator. Trend analysis is utilized to predict the performance indicator, and the relationships between this aggregated indicator and the primary factors are also examined.

Furthermore, at this sub-stage, using tools from probability theory and statistics, the chances of a first-grade student progressing to high school and subsequently entering a university upon high school graduation are determined. Based on this evaluation, school rankings are compiled to assess the competitiveness of graduates.

Stage 3: Development and implementation of anti-crisis strategies for the educational organization: 3.1. Formulation of individual strategies: These strategies take into consideration the forecasts derived and the identified "problem points," utilizing foresight methods and incorporating insights from focus groups. 3.2. Formulation of common strategies for a cluster of similar schools: Individual strategies are summarized to determine universal strategies.

In this sub-stage, because of the analysis, personalized strategies are developed to address identified problems specific to the school, and overarching strategies are summarized. Additionally, packages of projects are proposed as implementations of these strategies.

FINDING AND DISCUSSION

Finding

The study was conducted following the proposed methodology and consisted of two steps. The first step involved analyzing and forecasting the performance indicators, with a specific focus on the demand for graduates.

Analysis of indicators of the demand for graduates

The competitiveness of graduates is considered a key measure of the educational organization's effectiveness, thus serving as a fundamental starting point for analysis. When examining the student body of "My Horizons" school, it is evident that the number of graduates in the 11th grade has shown a weak positive trend from 2017 to 2021, as depicted in Figure 1. Conversely, the number of graduates in the 9th grade exhibited a moderately negative trend during the same period. Notably, the difference in the number of graduates between the 9th and 11th grades decreased from 20 individuals in 2017 to 0 individuals in 2021, indicating a changing trend.

The observed combined trend can be attributed to the increased proportion of students who progress from the 9th grade to the 10th grade within the same school. This percentage has risen from 22% in 2017 to 33% in 2021. However, it has remained steady at 33% in the past two years.

In 2020, approximately 67% of 9th-grade graduates proceeded to vocational schools, with no transitions reported to other types of schools. This can be attributed to their relatively low scores on the general state exam after the 9th grade and/or the specific task-based exams.

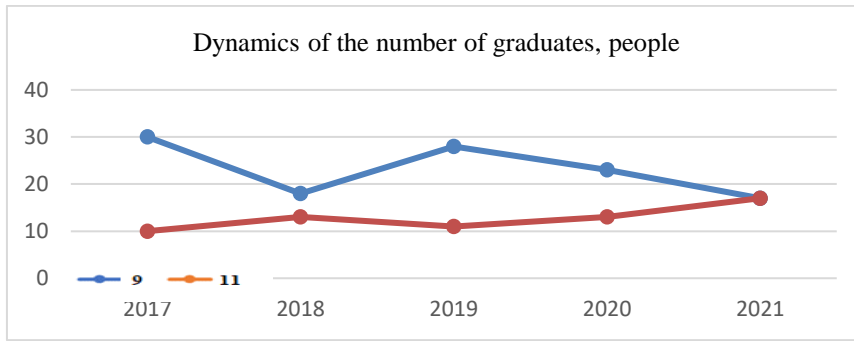


Figure 1. Dynamics of the Number of Graduates, 2017-2021

Figure 2 illustrates that since 2019, the number of graduates entering vocational schools after the 9th grade has exceeded the number of graduates progressing to high schools.

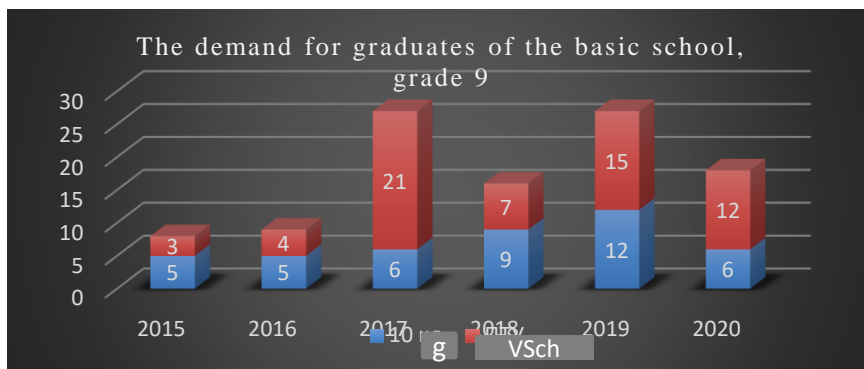


Figure 2. The Interrelation of the 9th Grade Graduates Who Entered the Vocational School and Moved to High School

As a result, over half of 9th-grade graduates over the past five years have chosen vocational education, while the remaining students have continued their education in the "My Horizons" high school program. The proportion of graduates choosing the high school program has gradually increased. Based on the findings above, we can identify the first "problem point" of the organization: "There is a decline in the number of basic school students (grades 5-9), with a significant portion enrolling in vocational education due to low academic performance and lack of competitiveness."

Regarding the graduates of the high school program at "My Horizons," it is noteworthy that in 2019, 67% of the graduates were accepted into local universities within the region. Out of the remaining 33%, some were not accepted into any universities, while others pursued higher education opportunities elsewhere. Additionally, in 2019, 33% of the graduating class received scholarships. However, in 2020, the overall acceptance rate into universities increased to 80%, but only 20% of the students were granted scholarships. Therefore, over the past three years, there has been a decrease in the number of "My Horizons" graduates receiving scholarships at the universities they choose to attend, while the proportion of students enrolled in regional universities has shown an upward trend since 2019.

As a result, it can be inferred that the competitiveness of high school graduates from "My Horizons" has declined for those admitted to universities. Thus, the second problem point can be stated as follows: "There is a decrease in the competitiveness of high school graduates from 'My Horizons.'"

It is worth noting that since 2017, there has been a trend of high school graduates entering vocational schools, which may be attributed to obtaining poor results on standard state exams that are insufficient for university admission. None of the graduates from "My Horizons" have entered directly into employment since 2017. Instead, they have either pursued university education, either through scholarships or private funding, or have enrolled in vocational schools.

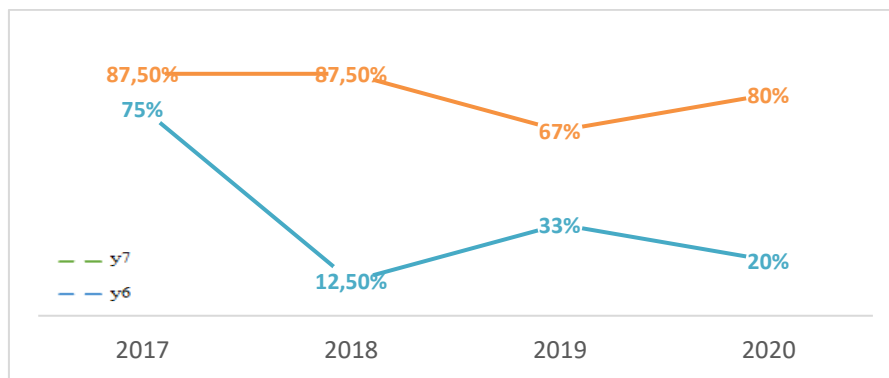


Figure 3. Dynamics of Admissions to the University, 2017-2021

Further elaboration of the first two identified problem points requires an assessment of the effectiveness of the educational activities of "My Horizons" in the context of key subjects and overall performance.

Analysis of indicators of knowledge quality

Figure 4 presents the dynamics of four performance indicators in mathematics, including the average academic score, results from the scheduled task exam, state exam after nine years of study, and state exam after 11 years of study.

Among these indicators, the average score of academic performance shows the highest values, reaching 4.1 in both 2020 and 2021. On the other hand, the lowest scores are found in the state exam after 11th grade, ranging from 1.3 in 2017 to 2.25 in 2021 on a five-point scale. This indicates a significant discrepancy between internal and external assessments of students' knowledge of mathematics, suggesting an overly subjective internal assessment.

Moreover, there is a noticeable disparity between the scores of the state exam after nine years of education (ranging from 3.5 to 3.8) and the state exam after 11th grade. This "gap" in grades suggests a weaker level of preparation in mathematics during the 10th and 11th grades compared to the earlier years of elementary and middle school. The average score of the state exam after 11th grade has not surpassed 3 points over the past five years, while the state exam after nine years of education has maintained an average score of approximately 3.5.

Additionally, over the past five years, the average scores of the state exam after nine years of education and the scheduled task exam have been closely aligned, indicating the reliability of external knowledge assessments in basic school (grades 5-9). These scores have consistently averaged around 3.5 points. However, a score of 3.5 out of 5.0 would equate to a "C" grade in alphanumeric grading systems, indicating a relatively low level of mathematical training in the elementary and middle school years of "My Horizons" compared to other schools. Furthermore, test results 2 and 3 in the high school years point to a further decline in instruction quality and subsequent student knowledge and understanding.

A similar analysis is conducted for the performance indicators in the foreign language, a key subject, as depicted in Figure 5. Overall, lower scores are observed in the state exam after 11th grade, while higher scores are recorded for internal assessments of academic performance. Although the disparity in values is smaller, the internal evaluation can still be considered subjective. In the foreign language, there is also a significant difference between the average scores of the state exam after nine years of education and the same exam after 11th grade, indicating an inadequate level of training in the high school program at "My Horizons." The average score of the state exam after 11th grade has not exceeded 3.35 points over the past five years, while the state exam after nine years of education has maintained an average score of around 3.8.

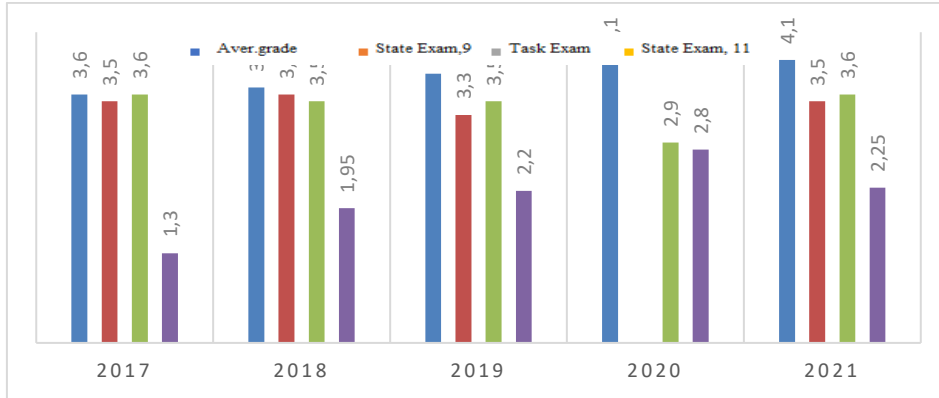


Figure 4. Dynamics of Performance Indicators in Mathematics, 2017-2021

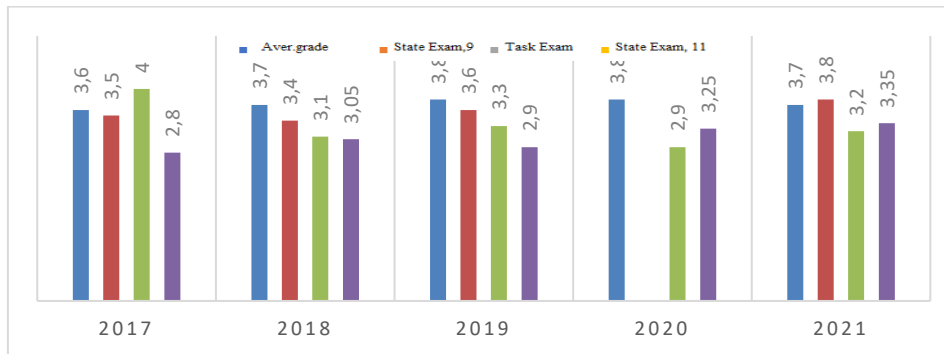


Figure 5. Dynamics of Performance Indicators in the Foreign Language, 2017-2021

Based on the analysis, the third problem point can be identified as follows: "The level of training in the main subjects, particularly mathematics, is inadequate. Internal assessments tend to be excessively subjective, both at the elementary (grades 5-9) and high school (grades 10-11) levels. Furthermore, the knowledge quality of high school students is significantly lower compared to the previous level."

To summarize the analysis, we will consider one of the main indicators of overall school effectiveness, which is the average score of the State Exam after 11th grade, evaluated across all subjects on a 100-point scale (y1_AverEGE).

Upon examining the rankings of the top 500 schools in the country based on the results of the State Exam after 11th grade, it is evident that Physics and Mathematics Lyceum No. 31 has consistently held the top position nationwide since 2018.

To provide a visual representation, a bar chart (Figure 6) will be utilized to compare "My Horizons" schools with both national and regional leaders in terms of the "average score of the State Exam after 11 years of education" indicator, spanning from 2018 to the present.

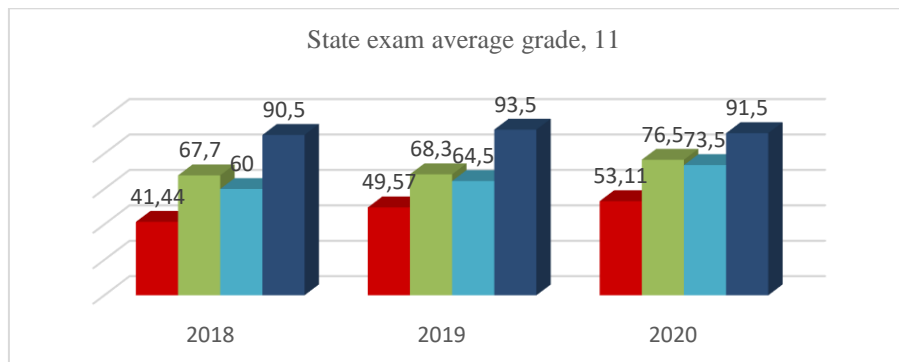


Figure 6. Comparative Analysis of the School "My Horizons" and National and Regional Leaders in Terms of the Average Score of the State Exam After 11 Years of Education

Lyceum No. 31 consistently achieved the highest score among all schools in the country, with scores of 90.5 in 2018, 93.5 in 2019, and 91.5 in 2020. In 2020, Secondary School No. 3 emerged as the leader in Sevastopol, ranking 232nd in the national rankings for the State Exam after 11 years of education with a score of 76.5. In 2018 and 2019, Sevastopol Gymnasium No. 1 held the top position in Sevastopol. Secondary School No. 58 also performed well, ranking 495th in the national rankings with a score of 73.5 in 2020. Unfortunately, the private school "My Horizons" did not make it onto the list of the top 500 schools in the country.

Moving on to the forecast of knowledge quality indicators, in 2020, "My Horizons" school had a 38.39-point (42%) gap compared to the national leader and a 23.39-point (31%) gap compared to the city leader. Given the existing trends, it would take approximately 6 years (by 2027) to bridge the gap with the city leader and 11 years (by 2032) to catch up with the national leader. However, it is essential to recognize that long-term trends are challenging to predict accurately, as external events beyond control can alter the mathematical model. Therefore, the administration of "My Horizons" should be aware that closing the gap in education quality with the country and regional leaders is unlikely, even in the medium term.

Based on this conclusion, the fourth problem point can be identified: "Closing the gap in education quality between 'My Horizons' school and the national and regional leaders is unlikely, even in the medium term."

To support this point, we will substantiate it during the process of forecasting the effectiveness of the educational activities of the organization. We will start by modeling the time series trend of the generalized indicator y_1 , which represents the average score of the State Exam after 11 years of education. This will be done using the open-source software Gretl.

Figure 7 displays the results of modeling the linear trend of the time series y_1 , representing the average score of the State Exam after 11 years of education at "My Horizons" school, along with the forecast generated by this model.



Figure 7. Results of The Assessment of The Dynamics of Indicator 1:

The Average Score of The State Exam of The Private School "My Horizons"

The resulting trend model (formula 1) is deemed adequate based on Fisher's F-criterion, and the parameters are considered significant at a 5% significance level according to Student's t-

criterion. Therefore, the trend model can be employed for analyzing and predicting the dynamics of the average score of the state exam after 11th grade at "My Horizons" school.

$$y_{1t} = 38,83 + 3,49 \cdot t \dots\dots\dots (1)$$

t- year

y1 - the time series values.

The average score of "My Horizons" in the State Exam has shown an increase from 45.38 points in 2017 to 57 points in 2021, which reflects a 25.6% growth over the past five years. The actual data for this period indicates a weak positive trend for the analyzed indicator, which is best represented by a linear trend model. By utilizing this model for forecasting (Formula 1), the following results are obtained: a projected score of 77.23 points in 2027 and 94.68 points in 2032. If the current long-term trend continues, the school is expected to surpass the average score of the state exam for the city leader in 2027 and the national leader in 2032. However, it is important to note that these projections rely on the assumption of static scores for the leaders.

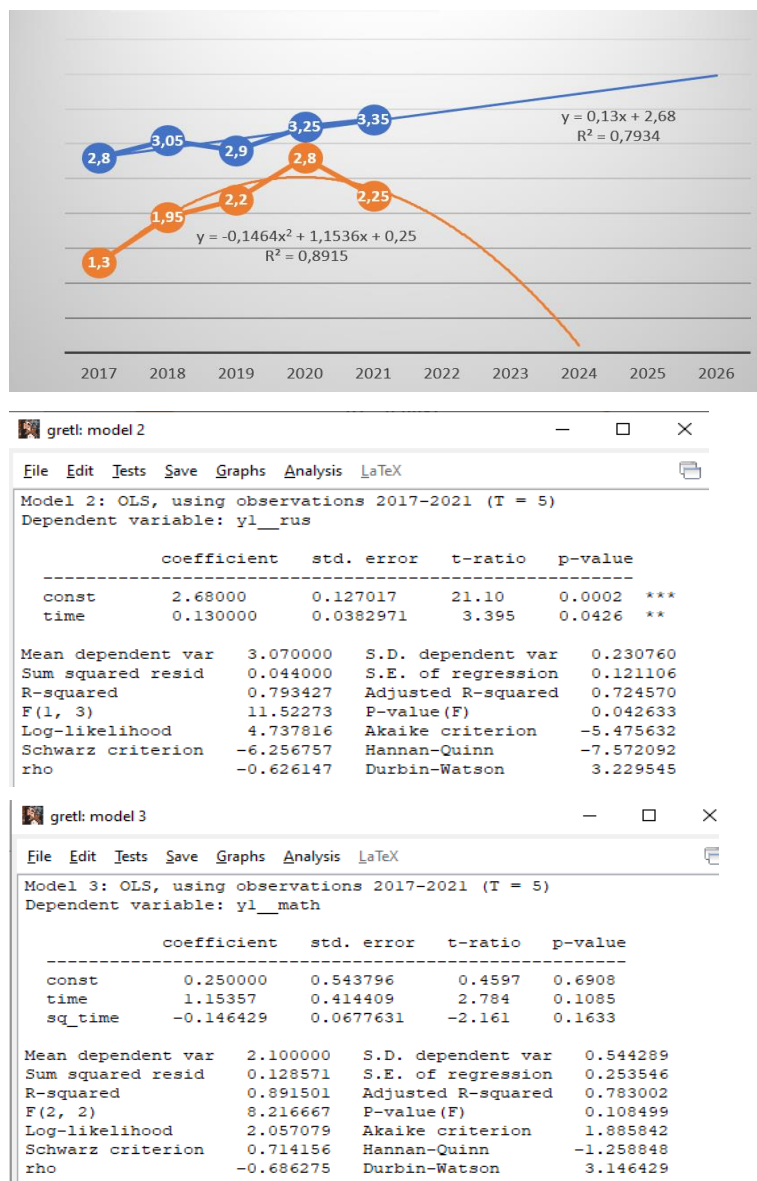


Figure 8 - Dynamics of The Average Score in a Foreign Language and Mathematics of The Private School "My Horizons"

Furthermore, let us shift our focus from forecasting the overall average score of the State Exam to the average scores in key subjects, specifically foreign language and mathematics. As depicted in Figure 8, the scores in mathematics are considerably lower compared to those in the foreign language. Additionally, the patterns of trends vary between the two subjects. The actual data for the foreign language is best approximated by a linear trend, while a second-order polynomial trend fits the data for mathematics. The time series trend for the average score of the State Exam in the foreign language (u1rus) exhibits a weak upward trajectory, while in mathematics (u1math), it displays an inflection point and transitions to a declining trend after 2020.

In terms of the average score of the State Exam in the Foreign Language for 2021 (3.35 or 67 points), this is deemed sufficient for obtaining a certificate and university admission. In the 100-point grading system, the minimum score required for graduation is 24, while the minimum score for university entry is 36 points. Consequently, the average score during the observed period corresponds to a "good" assessment, which is the minimum requirement for graduation. As for mathematics, the average score of the State Exam generally reflects a "satisfactory" assessment throughout the periods, except for 2020, when it reached the level of "good." However, these scores are still sufficient for university admission. In 2020, "My Horizons" students attained a score of 2.25 or 45 points on a 100-point scale, which exceeds the minimum score of 27 required for university entry in 2021.

The resulting trend model of the average score of the State Exam in the Foreign Language (formula 2) is adequate (according to Fisher's F-criterion), and the parameters are significant (according to the student's t-criterion) at a significance level of 5%. Therefore, the trend model can be used to analyze and predict the dynamics of this indicator.

$$y_{1rus_t} = 2,68 + 0,13 \cdot t \dots\dots\dots (2)$$

t- year,
 y_{1rus} is the time series value.

Using the model (2), we get a forecast value for this indicator in 2022 of 3.46 and 2023 of 3.59. The resulting trend model of the average score of the State Exam in mathematics (formula 3) can be used to analyze and predict the dynamics of this indicator.

$$y_{1math_t} = -0,15 \cdot t^2 + 1,15 \cdot t + 0,25 \dots\dots\dots (3)$$

t- year,
 y_{1math} – is the time series value.

Using model (3), we get a forecast value of this indicator in 2022 equal of 1.9 and in 2023 of 1.15.

Identification of quantitative factors as indicators of the effectiveness of the educational process

Let's determine the quantitative factors that determine the value of the average score of the State Exam in mathematics ($y_{1_EGEmath}$). To do this, at the first stage, we will build a correlation matrix (Figure 9), using the indicators: the average score of academic performance in mathematics ($y_{4_gradeMath}$), " the result of the state exam after 9th grade ($y_{2_OGEmath}$), and the results of the scheduled task exams ($y_{3_VPRmath}$).

Upon analyzing the correlation matrix, it is evident that there is a strong positive relationship (correlation coefficient of 0.9) between the variables $y_{1_EGEmath}$ (average score of the State Exam in mathematics after the 11th grade) and $y_{4_gradeMath}$ (average grade in mathematics). Conversely, a strong negative correlation (-0.8) is observed between $y_{1_EGEmath}$ and $y_{3_VPRmath}$ (the average result of the scheduled task exam in mathematics). Additionally, a weak negative correlation (-0.3) exists between $y_{1_EGEmath}$ and $y_{2_OGEmath}$ (average score of the State Exam after the 9th grade in mathematics).

Based on these findings, it can be concluded that there is no significant relationship between the average score of the State Exam and the state exam after the 9th grade in mathematics. Therefore, improving grades in the state exam after the 9th grade will not result in changes in the

dynamics of the state exam after the 11th grade, primarily due to a change in the student composition.

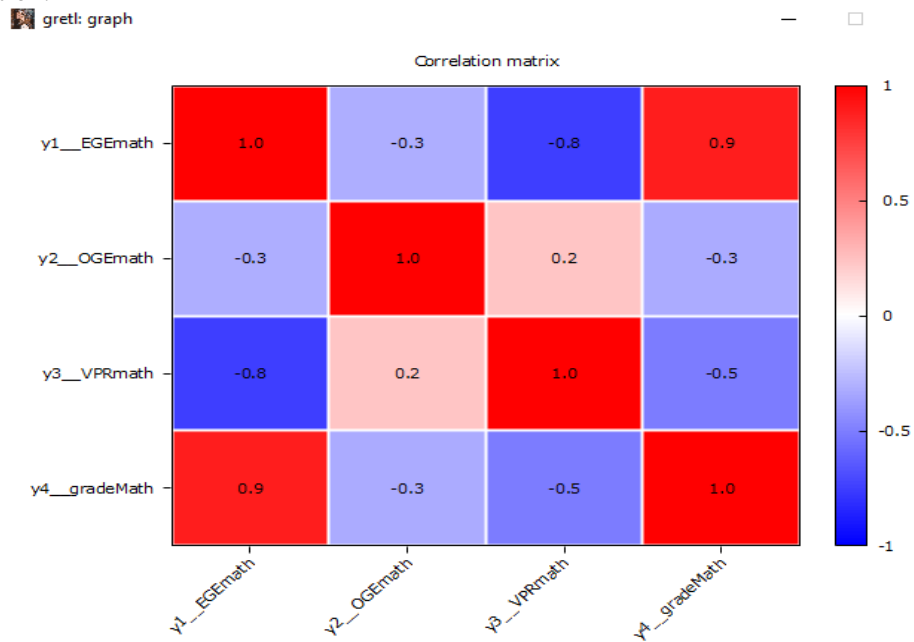


Figure 9. Correlation Matrix, Subject – "Mathematics"

Specifically, only 33% of students in the 9th grade progress to the 10th grade within the same school (based on data from 2020 and 2021). Additionally, over the past five years, the average score of the state exam after the 9th grade in mathematics has consistently exceeded the value of this indicator for the state exam after the 11th grade.

Regarding the scheduled task exam in mathematics, there is a strong negative correlation with the average score of the State Exam after the 11th grade. However, the value of the scheduled task exam in mathematics does not significantly influence the average score of the State Exam after the 11th grade in this subject.

Based on the correlation matrix, it can be inferred that there is a strong positive relationship between the average score of the State Exam after the 11th grade in mathematics ($y1_EGEmath$) and the average score of academic performance in this subject ($x4_gradeMath$). To further understand the nature of this dependence, regression analysis was carried out using Gretl software, leading to the formulation of the following regression model (formula 4):

$$y1_EgeMath = -6.1 + 2,12 \cdot x4_gradeMath + u \dots\dots\dots (4)$$

$x4_gradeMath$ – average score of academic performance in mathematics,

$y1_EgeMath$ – average score of the State Exam after the 11th grade in mathematics,

u – random error.

The resulting model is adequate (according to Fisher's F-criterion), and the parameters are significant (according to Student's t-criterion) at a significance level of 5%. The average score of academic performance in mathematics has a strong direct impact on the average score of the State Exam after the 11th year in this subject, namely, with an increase of "1," the $x4_gradeMath$ indicator $y1_EgeMath$ increases by 2.12, other things being equal.

We will conduct similar calculations in the subject "Foreign language", namely, we identify the quantitative factors that determine the value of the average score of the State Exam after the 11th grade in the foreign language ($y1_EGErus$). The correlation matrix shows that the variables $y1_EGErus$ (average score on the Russian State Exam after 11th grade) and $y2_OGErus$ (average score on the Russian State Exam after 9th grade) are strongly related (correlation coefficient of 0.7). Conversely, a strong negative correlation (-0.7) exists between $y1_EGErus$ and $y3_VPRrus$ (the average result of the scheduled task exam in the Russian language). Additionally, there is a

slightly positive correlation (correlation coefficient of 0.4) between y1_EGerus and y4_gradeRus (average grade in the Russian language).

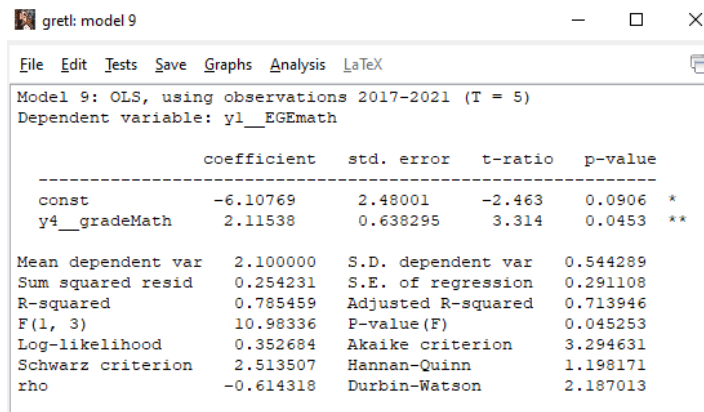


Figure 10. Results of Modeling by Regression Analysis in Gretl Software

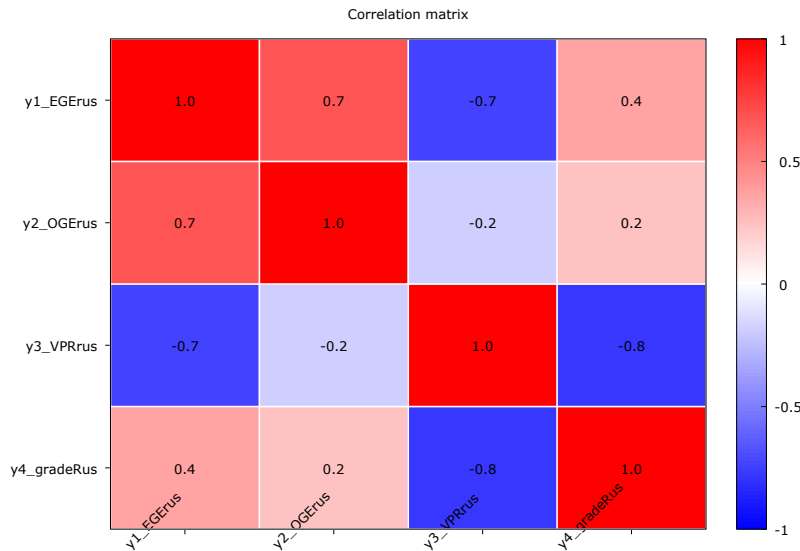


Figure 11. Correlation Matrix, Subject "Foreign Language"

Despite the presence of correlations between these indicators, the regression models that reflect the influence of other indicators on y1_EGerus do not provide accurate functional relationships. Thus, the dependency models obtained during modeling are of poor quality.

Based on the above analysis, the following critical point of the organization is identified: "The quality of knowledge of students in basic school (grades 5-9) does not determine the average score of the State Exam in the Russian language in high school (grades 10-11) due to significant changes in the student composition after the 9th grade. Consequently, there is no significant relationship between the average score of the State Exam after the 9th grade and the State Exam after the 11th grade as objective external measures."

Next, we will evaluate the quantitative factors and relationships between the performance indicators that characterize the overall educational process of the organization. In the first stage, we will determine the impact of the digitalization of the school on the quality of students' knowledge, expressing it in a system of independent equations, model 5.

$$\begin{cases} z_{grade} = 2,62 + 0,17 \cdot x_{pc} - 0,005 \cdot x_{pc}^2 + u, \dots\dots\dots (5) \\ z_{grade} = 3,73 + 0,009 \cdot x_{eor} + u, \\ y_{budget} = 117,17 - 1,18 \cdot x_{ikt} + u, \end{cases}$$

In the first equation, the "Number of students in school per personal computer" (the xpc variable), which has steadily increased at a moderate rate over the past five years, begins to have a negative impact on zgrade performance when the inflection point is reached (17 people per PC) in 2020. If the current trend of xpc continues, further negative impacts will be exacerbated by the quadratic nature of the dependency (Figure 12). The first equation of the system is adequate for Fisher's F-criterion, all its parameters are significant according to the student's t-criterion at the selected significance level of 10%, Figure 13.

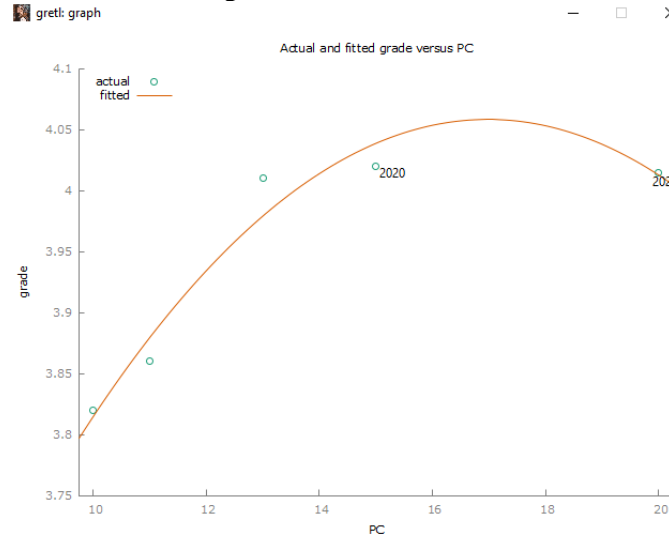


Figure 12. Assessment of The Impact of Computerization on Academic Performance

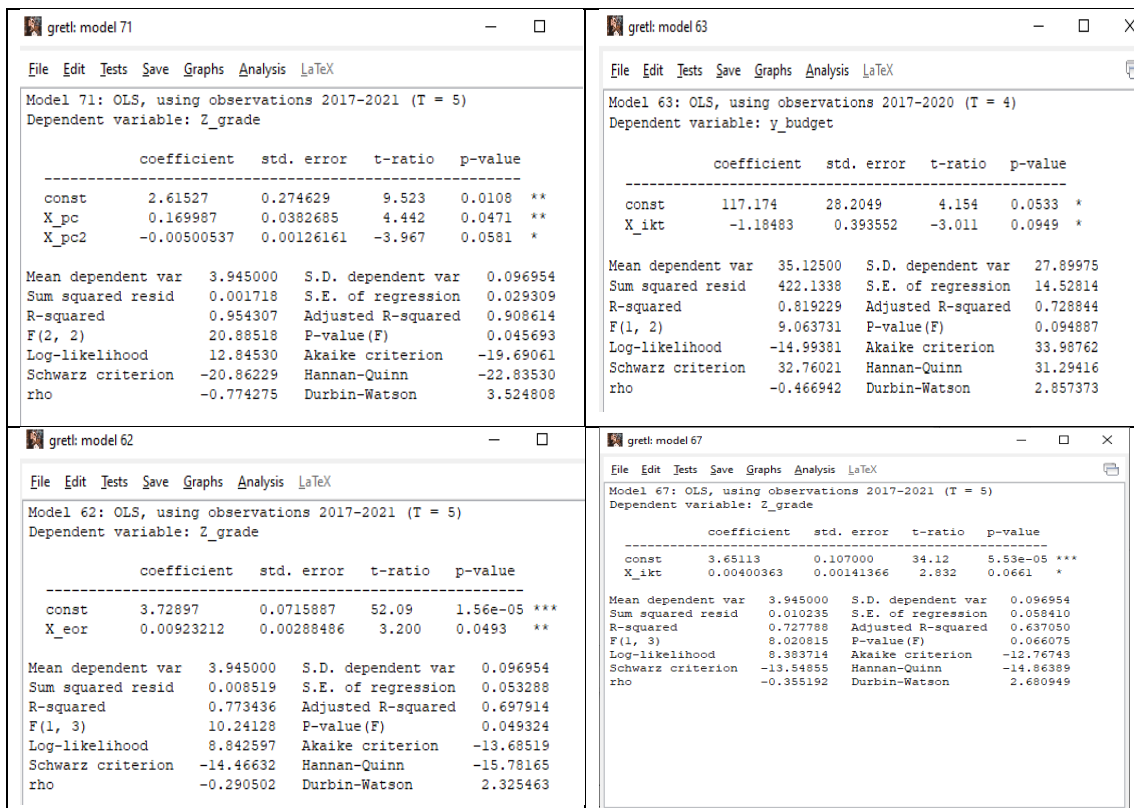


Figure 13. Modeling The Impact of Digitalization Indicators on The Performance Indicators of Educational Activities

The second equation reveals a slight positive correlation between the variables *zgrade* (average grade) and *Xeor* (number of electronic educational resources), indicating that there is a negligible relationship between students' academic performance and the utilization of electronic educational resources such as video lectures and electronic textbooks. The adequacy of the second equation is confirmed through Fisher's F-criterion, with all parameters found to be significant based on the student's t-criterion at a 5% significance level. A similar relationship is observed between *zgrade* and *Xikt* (number of information and communication technology tools).

The third equation shows an inverse linear relationship between the variables *y_budget* (the percentage of students who get college scholarships) and *x_ikt* (the number of electronic learning tools used in the school's teaching), such as computer simulators, testing systems, game-based training programs, information retrieval systems, and databases. Fisher's F-criterion finds that the third equation is adequate, and the student's t-criterion at a 10% significance level determines that all parameters are significant.

Based on the above analysis, the sixth problem point of the organization can be formulated: "The integration of technology and extensive adoption of digital educational methods in the school's educational process either have minimal impact on the student's academic performance or can even have a detrimental effect. Despite the significant growth in the number of electronic educational resources and information and communication technologies utilized, there is insufficient evidence of their positive influence on students' academic outcomes. Additionally, there is an inadequate number of computers available for students, contributing to decreased academic performance."

Despite a 68.75% increase in the number of computers from 2017 to 2021 (from 32 to 54 units), the ratio of computers to students has declined due to the growing student population. In 2021, the computer-to-student ratio stood at 1:20, which is insufficient and has a negative impact on academic performance. Currently, there is only one computer classroom equipped with a local network and internet access at a speed of at least 100 Mbps.

However, there has been a rapid increase in the utilization of educational platforms, web 2.0 services, and other software, including electronic journals, platforms like Mirapolis, Mind.com, tutor.org, Online Test Pad, Foreign Electronic School, and interactive notebooks such as edu.skysmart.ru, among others. The number of electronic educational resources has increased by 250% between 2017 and 2021, rising from 10 to 35 items. Additionally, information and communication technology tools have increased by 137% during the same period, from 38 to 90 items. Nevertheless, the extensive digitization of the educational process has not resulted in significant changes in academic performance and has contributed to certain negative outcomes, such as a decrease in the proportion of students receiving scholarships to the university. This suggests that either the quality of electronic educational resources and information and communication technologies needs to be improved or their use needs to be sufficiently effective.

In the second stage of the analysis, the impact of teaching staff quality on the effectiveness of the educational process will be assessed. It is worth noting that there is no shortage of personnel in the organization, and the teaching staff is relatively homogeneous, predominantly young (under 40 years old), and proficient in digital skills. Female teachers are the majority of the staff.

$$z_{vvuz} = 53,76 + 1,43 \cdot x_{renew} + u, \dots\dots\dots (6)$$

z_{vvuz} – schoolchildren who, after the 11th grade, enter the regional universities,

x_{renew} – review of the renewal of the pedagogical staff of the school,

u – random error.

The resulting model is adequate according to Fisher's F-criterion, and the parameters are significant according to Student's t-criterion at a significance level of 10% (Figure 14).

Hence, the teaching staff at "My Horizons" School is uniform, regularly refreshed, relatively young (with an average age of up to 40 years old), and predominantly female with a religious orientation. They possess digital competencies and are equipped with laptops; however, their professional knowledge and pedagogical skills are insufficient to shape competitive graduates in both basic school (grades 5-9) and high school (grades 10-11). There is no shortage of personnel, as the number of teaching staff has remained consistent over the past three years.

	coefficient	std. error	t-ratio	p-value	
const	53.7602	8.37847	6.416	0.0234	**
X_renew	1.42612	0.429383	3.321	0.0799	*
Mean dependent var	80.50000	S.D. dependent var	9.669540		
Sum squared resid	43.05032	S.E. of regression	4.639522		
R-squared	0.846523	Adjusted R-squared	0.769784		
F(1, 2)	11.03126	P-value (F)	0.079933		
Log-likelihood	-10.42790	Akaike criterion	24.85581		
Schwarz criterion	23.62840	Hannan-Quinn	22.16235		
rho	-0.998903	Durbin-Watson	2.493908		

Figure 14. Results of Regression Dependence Modeling

Discussion

Based on this analysis, we can formalize the analytical profile of "My Horizons" School, incorporating its characteristics, advantages, and problem points as follows.

General characteristics and features

All services at the school are fee-based, with the approximate tariff constituting 43.57% of the average regional salary. The teaching staff is relatively young, homogeneous, and predominantly female, with a high turnover rate. The staff-to-student ratio is favorable at 1:3. Teachers possess digital competencies, although there is room for improvement in their professional and pedagogical knowledge. The school engages in active multidirectional project activities, hosting approximately 10-15 events per month, primarily focused on creative projects. Parents prefer religious education and value a respectful and individualized approach to their children, which is facilitated by the school. The educational process is adjusted to accommodate the preferences of the parent community.

Competitive Advantages: 1) The school attracts clients from the upper-middle social class, characterized by a stable and relatively high income. 2) The teaching staff possesses satisfactory digital competencies and effectively incorporates them into their work, with teachers being fully provided with laptops. 3) The school utilizes IT tools for operational management and the implementation of a comprehensive distance learning framework, including an electronic journal (myhorizont.eljur.ru) and a learning management system (LMS Mirapolis), among others. 4) The school maintains a conflict-free environment through regular interactions with the parent community, saving time by avoiding the need for conflict mediation. 5) Students benefit from comfortable learning conditions and an emphasis on creative development. 6) The school has an active presence and promotion across major social media platforms.

Problem Points, 1) A significant number of middle school graduates (grades 5-9) do not continue to high school due to low academic performance. 2) The competitiveness of 11th grade graduates is low, resulting in relatively fewer students receiving scholarships or pursuing tertiary education outside the local region. 3) The level of subject-specific training for students is insufficient, particularly in mathematics. Internal assessment tends to be overly optimistic, both in middle and high school, and there is a decline in the quality of students' knowledge. 4) The school faces challenges in closing the gap in the quality of education compared to top schools at both the national and regional levels, even in the medium term. 5) The quality of knowledge acquired by middle school students does not significantly impact performance at the high school level, as a substantial change in student composition occurs after the 9th grade. As a result, there is no significant relationship between the average scores obtained in 9th and 11th grade exams. 6) The integration of technology and extensive use of digital educational methods in the school's educational process show either minimal effects on students' knowledge quality or even negative effects. The number of electronic educational resources (EER) and information and communication technologies (ICT) utilized has increased significantly, but this has not translated

into improved academic performance. Furthermore, there is insufficient computer equipment available in the school.

Current strategies and strategic recommendations for the Private School "My Horizons"

By the organization's current strategies, two main approaches can be identified: (1) a differentiation strategy for enhancing learning conditions, and (2) a strategy focused on fostering creative potential.

The first strategy involves improving the learning environment in multiple ways. This includes upgrading physical settings to enhance creature comforts, such as the implementation of air conditioning, improved lighting, and comfortable furniture. Additionally, there is a focus on improving the treatment of students by faculty members and promoting better social relationships among students. A practical example of implementing this strategy can be seen in the design of the school library. In this case, the use of colorful books and comfortable upholstered furniture aims to stimulate interest in reading.

Simultaneously, an atmosphere of benevolence towards children and between peers is cultivated by the school's motto, "With love we change the hearts of our children." The teaching staff maintains constant interaction with the parent community through joint activities aimed at resolving potential conflicts at their early stages. Reduced mediation requirements result from this proactive approach to conflict resolution, made possible by real-time access by both teachers and parents to an updated electronic journal (myhorizont.eljur.ru).

The second strategy is centered around nurturing comprehensive creative development in children, with the guiding principle being "let children play." This approach is implemented through active project-based initiatives such as thematic quizzes, video projects and photo exhibitions, fairs, creative and culinary master classes, theatrical performances, and workshops. Project activities occur at a frequency of approximately 10-15 monthly events, allowing for the engagement of nearly all students by catering to their diverse interests. Cutting-edge resources, such as 3D printers, are also employed to facilitate project activities. Many of these endeavors actively involve students' families, providing opportunities for parents to participate in their children's lives.

Notably, both strategies are applied across all levels of education within the organization, encompassing primary (grades 1-4), basic (grades 5-9), and high (grades 10-11) schools. Furthermore, an additional differentiation strategy has been implemented as of 2021, focusing on the profiling and individualization of training in high schools. The aim is to organize education in the 10th grade according to individual educational trajectories, allowing for customization based on student preferences. Five training profiles have been established: socio-economic, humanitarian, technological, natural science, and general. These profiles have been carefully aligned with the expectations and input of the parent community.

While the first two main strategies are more applicable to the early years of primary school, it becomes crucial to shift the emphasis towards strategies that address students' attainment of quality academic knowledge. This involves modernizing the educational process and addressing the challenge of producing competitive and highly sought-after graduates with commendable testing scores after 9th and 11th grades. Focusing on providing comfortable learning conditions and fostering creativity takes a backseat as students progress toward the final grades. Consequently, the priority shifts towards enhancing academic performance, necessitating a rebalancing between project activities, creativity development, and a high-quality educational process.

Therefore, the following strategies are proposed to improve the quality of the educational process: 1. Strategy of additional testing preparation classes. This strategy aims to boost average scores and improve ranking quickly. Many students struggle with unfamiliarity regarding the format and methodology of standardized tests. Hence, exposing students to the types of questions commonly encountered in these exams and teaching effective test-taking techniques can significantly enhance their scores on timed exams. The implementation of preparatory classes for state exams should be provided to all students across all levels and sections of My Horizons School. This prepares students for the methodology and types of questions involved, resulting in

improved scores and, potentially, better overall knowledge. While genuine knowledge improvement should be prioritized, any immediate improvements in average scores in critical situations can be instrumental in maintaining parental confidence in the school's esteemed reputation as a leading educational institution.

Second, the strategy of segmentation of the composition of students by their abilities into "remedial," "basic," and "elite" sections and at each class of the school. As part of this strategy, the organization plans to categorize students into "remedial," "basic," and "elite" classes across the primary (grades 1-4), basic (grades 5-9), and high (grades 10-11) school levels. The criteria for this categorization could be based on current academic performance or internal and external testing results. This division will allow the most gifted students in the "elite" classes to delve deeper into subjects and access additional elective courses. Consequently, their focus will shift towards acquiring academic knowledge, with decreased involvement in creative projects and activities. The "basic" classes will maintain the same level of knowledge quality, prioritizing the development of creative abilities, while the "remedial" classes will offer adapted programs for students with disabilities, hyperactivity, and other deviations from the norm.

Such differentiation based on intelligence level and knowledge quality will allow the organization to expand its market segment by targeting additional specific niches with reduced or absent competition. The "remedial" section will cater to the needs of poor-performing students, addressing the significant importance of educational services for this group. For parents of children with disabilities, education represents the primary means of ensuring their child's relative independence in life despite the challenges associated with learning, which requires adjustments according to each student's characteristics.

The second section will serve normally developing children with average or slightly below-average learning abilities. In this case, the emphasis on education itself, considering the child's weaker or average learning ability, will take a backseat. Parents in this category seek to prioritize a "happy childhood" and entertainment instead of filling their children's minds with perceived unnecessary knowledge. In a traditional school setting, a child with below-average ability might be labeled as "dull," leading to low self-esteem. However, an average student may respond positively in such a situation.

The third section is dedicated to "gifted" students who, due to their family's financial situation and intellectual capabilities, could qualify for university scholarships at elite institutions and obtain improved employment prospects that may not be available in public schools. In this case, the focus shifts towards acquiring academic knowledge as the foundation for their future careers. Meeting the requirements of this section is the most challenging, as it necessitates improvements in the quality of teaching staff and the overall educational process. However, if these requirements are met, the organization will experience enhanced effectiveness in its educational activities and maintain a stable competitive advantage in the market for educational services.

Third, the marketing strategy of digital "word of mouth" (personal promotion of the school). This strategy is well-suited for the current landscape characterized by intensified competition, a growing number of private schools, and a general sense of skepticism towards direct advertising on social media platforms. In Sevastopol alone, there are already ten private schools, including the Academy of Success, Private School Bee, Tavrida, School "Chabad," School-Park Staircase, Private School of Development and Creativity, Success, Mariampol, and Traditional Gymnasium. Despite this increased competition, "My Horizons" continues to hold the top position in the ratings for private schools in the city.

Parents primarily rely on feedback from unbiased people when choosing a school, even though "My Horizons" school actively uses social media for promotion and maintains a presence on major platforms. Therefore, adopting a marketing strategy focused on digital "word of mouth" is advisable, which refers to peer recommendations shared online. Within a particular niche, the story of a genuine individual sharing their vivid impressions and emotions in a personal blog or on a parent open forum on the internet can have a significantly greater impact on potential consumers. Such information dissemination is free but challenging to control. Even the best

schools in the country receive a substantial number of mixed reviews, although the "preponderance" of positive information is important.

However, in the case of "My Horizons" school, there is currently limited information available about it on the main forums in the city, particularly on the Sevastopol.info forum. The existing information about the school on this forum is somewhat contradictory. For instance, one participant shares positive experiences, stating that her child's classmate transferred to "My Horizons" school in the fifth grade, and both the parents and child are satisfied with the school's good treatment of students. In contrast, another forum participant mentions concerns about poor high school preparedness and insufficient knowledge quality at the school.

To counter increased competition, "My Horizons" should leverage the strategy of digital "word of mouth" to generate a higher volume of reviews about the school and shift the overall perception towards a more positive direction. This entails ensuring the widespread, voluntary, and cost-free dissemination of necessary information about the school across the Internet.

Forth, the strategy of communication with school graduates (creation of a community of graduates and an endowment fund of donations from school graduates). The communication strategy aims to create a connection between "My Horizons" school and its graduates, primarily by fostering a community of alumni and establishing an endowment fund through donations from them, their families, and other sources. Regular meetings of graduates will be conducted to maintain communication between them and the school administration. This will contribute to the formation of an endowment fund, which is a trust fund created by donations for non-commercial purposes, particularly to support educational institutions. The practice of establishing such funds is common in Western schools and universities. Within this proposed strategy, the continuous support and development of gifted students will be financed through the school's endowment fund. Approximately 90% of donations to the fund are expected to come from graduates and their families, as well as other stakeholders in the school, including religious organizations and benefactors. The remaining 10% of the fund's pool will come from corporate donations and reinvestment of profits. Targeted funding from the endowment can be utilized for initiatives such as working with gifted students, promoting the school, implementing a mentoring program, facilitating teacher internships in esteemed foreign schools, acquiring technical equipment, and more.

Furthermore, a diversification strategy involving related services will be implemented. The common practice in Western schools of extending their activities beyond education serves as the model for this strategy. For example, many prestigious private schools establish their theaters with scheduled performances, a repertoire, student casts, and the involvement of professional adult actors and directors. By adopting such a strategy, "My Horizons" school can stabilize its financial position and attract new students who are interested in theatrical skills. Additionally, since the school already focuses on nurturing talent in students and has its theater group, there is potential to develop it further into a professional school theater.

Another practice from Western schools that can be adapted within the framework of this diversification strategy is the development of various sports. The school can organize urban and interregional sports games, such as football and basketball, which would not only attract spectators from the families of the players but also external audiences, provided there is suitable infrastructure for hosting such events. In addition to popular sports, rare sports like golf, mini golf, baseball, and ancient foreign sports games can be promoted. Sports competitions in these unique disciplines can generate increased revenue from external spectators and attract new students who are interested in sports.

Moreover, considering the global COVID-19 pandemic, it is advisable to train students and organize virtual e-sports tournaments on a city and regional scale as part of this strategy to adapt to the current circumstances.

CONCLUSION

This research examines a specific private school located in Sevastopol and presents anti-crisis strategies based on the methodology developed by the authors. The aim is to enhance

educational outcomes at "My Horizons" Private School through various interventions. These include providing additional instruction in test-taking techniques, implementing student segmentation based on academic promise, and addressing the need for teacher training. Furthermore, the establishment of an alumni association and an endowment fund are identified as potential areas for improvement. Enhancing the school's reputation among private schools in the city can be achieved through targeted advertising on social media platforms, as well as through the promotion of theatrical performances and the development of sports teams.

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