Managerial Strategies of Effective School Principals

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Abstract. The article evaluates the effectiveness of schools with regard to their contextual characteristics. We use data from the 2012/13 Monitoring of Education Markets and Organizations, namely the results of a survey among the principals of 979 schools. A multiple linear regression analysis was performed to reveal the factors providing differentiation of the average USE (Unified State Exam) score across the schools. The analysis results were used to develop an educational outcome contextualization model allowing the evaluation of school effectiveness in the context of individual characteristics. We identified a group of schools that may be classified as effective, i. e. showing ultimate performance under the existing conditions, and analyzed the managerial strategies of the school principals. These strategies turned out to be mostly based on attracting human resources: teachers, students and their parents. Effective schools pursue a consistent selection policy. They recruit children from families of a higher socioeconomic status, which gives them a head start in terms of academic attainment. Such schools also attract committed parents who will motivate their childrentowards higher achievements.

Keywords: Monitoring of Education Markets and Organizations, effective schools, managerial strategies, contextualization model, social background, teacher selection, student attraction, parental demands.

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It has been empirically proven that socioeconomic factors determining the context of activities of an educational institution also affect its effectiveness. Researchers around the world have long been collecting relevant data and using it to assess school performance: they analyze demographic characteristics of students, take into account the migration, structural, educational and employment status of their families as well as the data on deviant behavior in school. Unfortunately, contextual characteristics play no role in assessing school effectiveness in Russia. Most often, schools are ranked based on a specific cri-

terion, such as the mean USE[1] or SFE[2] score, making no allowance for the school environment parameters which represent one of the decisive success factors.

This study aims to evaluate the effectiveness of schools with due regard for their contextual characteristics, to identify schools that could be qualified as effective, i. e. showing ultimate performance under the existing conditions, and to analyze the management strategies of the school principals.

We use the data obtained by the Monitoring of Education Markets and Organizations carried out by the Higher School of Economics, namely the results of a survey among school principals, who were asked, in particular, about their professional priorities and managerial practices.

It appears impossible to establish any cause-effect relationship between school performance and specific managerial techniques. However, by analyzing which specific techniques are used by the principals of effective schools and other school leaders we can derive the general effective school management strategy.

Effective school concept

Our research is based on the concept of effective school. Educational effectiveness research has a rich history [Sammons, Hillman, Mortimore, 1995; Teddlie, Reynolds, 2000; Reynolds, 2010; Reynolds et al., 2011; 2012] and reveals the intricate relations among specific factors and processes that shape the high quality of educational effectiveness, enabling the school to have positive effects on student attainment. These factors have been analyzed at both student/class and school levels [Goldstein, 1995; Kilchan, Junyeop, 2006; Kyriakides, Creemers, 2008]. The close interrelation between school effectiveness and teacher performance has been proven empirically [Muijs, Reynolds, 2003; Kyriacou, 2007; Ko, Sammons, Bakkum, 2013; Sirаj et al., 2014].

The correlation between school achievements and school resources has also been confirmed in Russia, although it was found to be much weaker (including teacher characteristics) than that between school effectiveness and student characteristics, which can be seen from the previous stages of research conducted by the Center for Socio-Economic Development of Schools[3] [Yastrebov et al., 2013]. These findings are consistent with the results obtained by Eric A. Hanushek and LudgerWoessmann [Hanushek, 1989; Woessmann, 2005]. Besides, this has also been confirmed by studies based on large data

[1] Unified State Exam

[2] State Final Examination

[3] Center for Socio-Economic Development of Schools, Institute of Education, National Research University Higher School of Economics. http://ioe.hse.ru/schooldevelopment

sets and conducted using more complex statistical methods, so the correlation between school effectiveness and school resources is still considered to be rather limited [Hedges, Laine, Greenwald, 1994; Rivkin, Hanushek, Kain, 2005; Rockoff, 2004].

To identify how disadvantaged a school is and to assess its effectiveness with due regard for the context, we construct a contextualization model based on international practices [National Center for Education Statistics, 2012; OECD, 2008]. This contextualization model is based on considerationof the socioeconomic status of student families. A number of researchers, from pioneers [Coleman, 1966; Bourdieu, 1996; Bourdieu, Passeron, 1980] to contemporaries [Lupton, 2004; Bowles, Gintis, Groves, 2009; Sirin, 2005; Breen, Jonsson, 2005], have demonstrated the strong correlation between social characteristics of student families and academic achievements. This correlation is also manifest in Russian education [Prakhov, Yudkevich, 2012; Pinskaya, Kosaretsky, Froumin, 2011]. There are multiple economic and sociological models explaining the correlation between socioeconomic background and academic performance [Breen, Goldthorpe, 1997; Erikson, Jonsson, 1996; Coleman, 1988; Bourdieu, Passeron, 1980].

The correlation between school effectiveness and social characteristics of students is very important for Russia. According to the 2009 and 2012 PISA (The Programme for International Student Assessment) reports, the index of social inclusion in Russia is considerably lower than average [OECD, 2010; 2014]. In addition, there are studies confirming that children from disadvantaged families are likely to be concentrated in schools with inadequate financial and human resources [OECD, 2010; Konstantinovskiy et al., 2006].

Empirical basis

The Monitoring of Education Markets and Organizations is carried out by the Higher School of Economics in cooperation with Levada Analytical Center. Since 2010, it has included annual surveys among school principals. The 2012/13 Monitoring collected information on 1,004 educational institutions. Elementary and middle schools were left out because they take no part in the USE. In our study, we analyze the answers of 979 school leaders.

We used structured face-to-face interviews based on a specifically designed questionnaire to collect the data. The questionnaire for the school principals contained questions about the type of school, its educational effectiveness, the educational trajectories of its middle- and high-school graduates, the school's financial indicators, its staff and recruiting policies, and the managerial strategies pursued by the principals. The 2012/13 questionnaire also asked school leaders to assess the social context their schools had to work in. As a result, we had an opportunity to analyze school effectiveness with due regard for the contextual characteristics.

Table 1. **Regression model parameters**

	Non-standardized β-coefficients	Value	95.0% confidence interval for β	
			Lower limit	Upper limit
(Constant)	47.101	0.000	43.911	50.292
Merged school status	–1.957	0.005	–3.334	–0.580
Advanced school status	4.219	0.000	2.734	5.703
Percentage of teachers belonging to the highest qualification category	0.103	0.000	0.071	0.135
Percentage of children from families where one or both parents have higher education	0.080	0.000	0.053	0.107
Percentage of children with criminal or poor disciplinary records	–0.126	0.086	–0.270	0.018
Percentage of children who are non-native Russian speakers	0.073	0.000	0.036	0.111

Response variable: mean USE score in mathematics

School effectiveness contextualization tool

We performed a multiple linear regression analysis to identify the factors providing the differentiation of the average USE score across the schools. This type of analysis allows for measuring the relationship between the response variable (the mean USE score in mathematics in this case) and a number of independent variables, whose effect is interpreted as a contribution to the change of the response variable, provided that all other variables in the model are held constant.

Table 1 presents the regression analysis results, i. e. the variables that we found to be significant at 95% confidence. The β-coefficient shows how the mean USE score changes following a one-point shift in the relevant independent variable (all other independent variables held constant). The negative coefficient indicates that the correlation between the response variable and the independent one is negative (reverse).

We used the mean USE score in mathematics as a response variable because it is more sensitive to socioeconomic characteristics of students than the mean USE score in Russian. R^2 (determination coefficient) is 0.209 here, which indicates the fraction of variance for the response variable explained by other variables. In other words, the variables listed in Table 1 explain up to 21% of the changes in the mean USE score in mathematics.

The merged school status has a negative effect on the response variable, i. e. it lowers school effectiveness. Numerous school mergers have been initiated in Moscow, leaving many school principals unhappy with the results[4].

[4] This information was obtained from principal questionnaires during the 12th

The status of advanced school correlates positively with the response variable, raising the mean USE score in mathematics by 4.22. This category includes lyceums and gymnasiums offering advanced education programs. In fact, we cannot say for sure whether it is the high level of teaching or the better quality of students that actually makes advanced schools stronger. Anyway, it would be wise to impose higher academic requirements on such schools. "Western researchers describe it as the problem of self-selection, which can be a source of error in analysis of actual school effectiveness (understood here as the ability of a school to provide high learning outcomes) if there is no additional information that can be used to deduce the cause-effect relationship between student characteristics and academic performance" [Yastrebov et al., 2013. P. 192].

USE performance is also related to the quality of the teaching staff. A 10% increase in the percentage of the highest qualification category teachers entails a 1.03 increase in the mean USE score in mathematics.

Among the characteristics of students, three variables proved to be significant: the percentage of children from families where one or both parents have higher education, the percentage of children who are non-native Russian speakers, and the percentage of children with deviant behavior among school students. The proportion of children from families where one or both parents have higher education correlates positively with the mean USE score in mathematics. This correlation has been confirmed repeatedly by research on the relationship between academic performance and socioeconomic status, parental education being the strongest indicator of the latter. Parents with high levels of education are more concerned about the educational achievements of their children and more involved in the learning process. Teachers also find it easier to work with students whose parents pay particular attention to their kids' studies, investing actively in their education.

The percentage of children who are non-native Russian speakers was also found to be statistically significant and in a positive correlation with the response variable. This indicator reflects the migration status of a family, i. e. the record of its domestic and international migration. A study performed by the Laboratory for Sociology of Education and Science (HSE) demonstrated that belonging to a specific social class plays a greater role in children's distribution among schools than ethnic background. In addition, migrant parents are committed to integrating their children into Russian society and thus seek to put them in a Russian-language learning environment [Alexandrov, 2012. P. 50–52]. Children immersed at an early age in a Rus-

wave of the Monitoring of Education Markets and Organizations (2014). The data is still unpublished.

sian-speaking class have no language troubles in the future, which reduces the risk of lagging behind and boosts their chances of obtaining a pretty high USE score. The positive correlation between the proportion of non-native Russian speakers among school students and the mean USE score in a school may be explained by the fact that immigrant children often have a higher motivation for learning due to their parents' ambitions and expectations and the "immigrant optimism" typical of first-wave immigrants [Ibid. P. 53].

Finally, the percentage of children with deviant behavior who have a poor disciplinary record or even a juvenile crime record correlates negatively with the mean USE score in mathematics. This variable indicates the presence of disadvantaged students, which hampers school efficiency a lot.

Identifying effective and ineffective schools

As we can see, high USE scores can be provided by both the quality of staff and the socioeconomic background of students which does not depend on the school or the education program. The educational outcome contextualization model that we constructed based on the regression analysis allows us to assess the effectiveness of a school with due account for its individual characteristics. Using the regression model, we can determine the range of "normal" values for each of the independent variables (see Table 1, upper and lower limits of β-coefficients) based on the size of standard error. This adjustment will help us make allowance for statistical errors caused by errors in the coefficients. Such limits are calculated for each observation.

To identify effective and ineffective schools, we compare the mean USE score with the predicted confidence interval values. If the actual USE score lies within the interval, it will mean that the school shows results "typical" of its situation. If the actual USE score is lower or higher than the specified interval, we can be 95% sure that this school deviates from the common pattern and shows results lower or higher than those that can be considered "typical" for its resource and contextual characteristics.

Based on the above, we can classify all schools into three groups: effective schools demonstrating higher educational outcomes than those predicted by the model; ineffective schools demonstrating lower USE scores than predicted; and, finally, typically performing schools which fit into the confidence interval predicted by the model.

Having classified the schools, we analyze the managerial strategies pursued by the leaders of schools of different categories. To do this, we apply a Student's *t*-test to test the hypothesis that the mean values in the two samples were equal[5].

[5] For each module of questionnaire items, we compare the answers to those in other categories of schools ((a) typical, (b) effective and (c) ineffective) and to the mean sample value (the capital *T* (total) indicates a value much high-

Table 2. **Educational outcomes**

	All schools (T/t)	Typical schools (a)	Effective schools (b)	Ineffective schools (c)
Mean USE score in Russian	66	69 Tc	72 aTc	57 t
Mean USE score in mathematics	54	56 Tc	68 aTc	42 t
Percentage of students who scored over 70 points in mathematics (%)	26	23 t	40 aTc	26
Percentage of students who scored less than 30 points in mathematics (%)	10	8 t	8 t	15 abT
Percentage of students who failed the USE test in mathematics (%)	5	4 t	4	7 abT
Number of respondents	979	582	142	255

Analysis of managerial strategies in effective schools

To group the schools based on their effectiveness, we use the mean USE score in mathematics. Otherwise speaking, we assume that the mean USE score in mathematics is higher than average in effective schools and lower than average in ineffective ones. Table 2 reveals that other indicators of academic performance are also better in effective schools. Thus, effective schools demonstrate a considerably higher mean USE score in Russian and a higher percentage of students who scored over 70 points in mathematics. Conversely, ineffective schools show a higher proportion of students who scored less than 30 in mathematics or failed the test.

We should consider a number of limitations before analyzing the managerial strategies of effective school principals. The proportion of lyceums and gymnasiums is considerably higher among effective schools with the highest educational outcomes than in the other groups. This is a very important circumstance, because “elite” schools are found most often among schools with the highest educational outcomes, as Russian studies show [Konstantinovskiy et al., 2006. P. 189; Yastrebov et al., 2013]. Another statistically significant difference is that rural schools account for 17% of ineffective schools, while the percentage is 10% or less in the other categories. Furthermore, 39% of effective schools and 33% of typically performing schools are based in Moscow, which are rather large proportions. Quite naturally, being located in a capital allows schools to turn the rich cultural and educa-

er than average, and the lowercase *t* indicates a value much lower than average). Letters in the table cells denote significant differences in principals’ answers. For example, the mean USE score in Russian is 72 in Table 2, and the cell also contains letters *aTc*. This means that the value of 72 (the cell of the *b* school category) is considerably higher than the relevant values for school categories *a* and *c* and also much higher than the mean sample value.

Table 3. **School staff salaries (rubles)**

	All schools (T/t)	Typical schools (a)	Effective schools (b)	Ineffective schools (c)
A salary that would guarantee that your teachers focus on their primary activity	49.079	50.629 c	51.600 c	44.241 t
A salary that would allow you to attract young promising teachers on a full-time basis	38.196	39.373 c	39.436 c	34.896 t
Average teacher salary	35.534	36.480 c	38.806 c	31.678 t
Average salary of recent graduates (three years or less after graduation)	25.879	26.759 c	28.802 Tc	22.498 t
Average salary of administrative and management staff	48.969	51.414 c	55.940 c	39.770 t
Average salary of other school personnel	18.744	19.578 c	20.564 c	15.684 t
Number of respondents	979	582	142	255

tional setting into additional resources for providing better outcomes [Leland, Harste, 2005]. We should keep in mind that high USE scores may be attributable to these characteristics to some extent.

Teaching staff management

The principal surveys show that effective schools rely on the high level of teaching expertise, demonstrating a significant proportion of the highest and first category teachers (41% and 43%, respectively). The proportions of highly qualified teachers in ineffective schools are somewhat lower (38% and 41%). The percentage of teachers with no category at all was found to be 21% in ineffective schools, which is much more than in effective schools (16%).

Salary opportunities differ greatly across the types of schools. As we can see in Table 3, all groups of teachers in ineffective schools are paid less than their counterparts in effective and typically performing schools. Meanwhile, salary expenses account for 65% of the budget in effective schools, which is less than in other types of schools (68%).

Motivating teachers to increase teaching quality as well as allocating incentives wisely are important ingredients in human resource management. Effective schools use non-financial recognition more often to motivate teachers, resorting less often to penalties. Thus, the principals of ineffective schools believe that position held (28%) and participation in school management (45%), including being a member of the governing board, count for a great deal when it comes to allocating incentives among teachers. Apart from incentive payments, effective schools also use non-financial incentives, e. g. additional professional growth opportunities (exploited by 49% of effective school principals and only 38% of ineffective school principals) and public

recognition (56% and 43%, respectively). If a teacher's performance is measured as low, the teacher will unlikely get a pay cut—this is the policy of 34% of effective school principals. Meanwhile, this type of penalty is practiced by 46% of leaders of ineffective schools.

The role of the governing boards is assessed differently across the school categories. Of effective school principals, 76% report that the management has agreed school bylaws with the governing board, as compared to only 64% in ineffective schools.

School principals' priorities

Only 65% of ineffective school principals pay heed to school budget allocation, as compared to 76% in typical and effective schools. The principals of ineffective schools specify more often among the areas of their focus the things that point to their authoritarian leadership style, including monitoring student behavior (30%, as compared to 23% in other types of schools) and ensuring that teachers fulfill their responsibilities (32%, as compared to 24% in other types of schools). Meanwhile, the principals of effective schools prioritize school budget management (77%) and distribution of teaching hours (41%).

More than half (58%) of the ineffective school principals specify the lack of material resources as one of their foremost problems since the transition to the Federal State Educational Standard of basic general education. The level of per capita spending is considerably lower in ineffective schools than in effective ones. The principals of typical and effective schools have witnessed an increase in per student financing over the last three years (40% of principals), whereas the leaders of ineffective schools only mention a small inflation-based increment (65%).

Attracting parents

When answering what attracts parents in choosing a specific school, the principals actually describe their own school as viewed by parents (Table 4). This is a "mirror" question: the criteria that principals believe are important for parents are most likely the priorities they use to position their own schools. The answers of effective school principals allow for the conclusion that they stake on attracting parents concerned about the educational outcomes of their children.

Among the school characteristics attractive for parents, the principals of effective schools mention the academic performance indicators, such as the high proportion of graduates enrolled in universities (56%), high USE scores (43%) or student achievements in olympiads and competitions (36%), much more often than the principals of other two types of schools. Besides, they also emphasize the importance of modern school equipment (38%) and diverse specialized education programs (31%). All in all, effective schools place an emphasis on the high quality of teaching and the favorable learning environment in their self-positioning. Material resources represent a key factor of

Table 4. **What principals believe attracts parents to schools**
(% of school principals who gave an affirmative response to the relevant questionnaire item)

	All schools (T/t)	Typical schools (a)	Effective schools (b)	Ineffective schools (c)
A great number of students with high USE scores	30	30 c	43 aTc	23 t
High achievements of students in olympiads, competitions and exhibitions	25	25	36 aTc	21
Popularity/prominence in the city/district	49	52 c	56 c	39 t
Availability of modern equipment	28	28 c	38 aTc	21 t
High positions in surveys among students and their parents or in rankings based on their opinion	38	40 c	43 c	32
Reputation of school leaders and teachers	31	31	35	27
Transport accessibility	25	25	26	24
Diversity of specialized education programs	22	22 c	31 aTc	16 t
Diversity of supplementary education courses, excursions, study groups and clubs	21	22	26	17
High percentage of graduates enrolled in universities	42	43 c	56 aTc	31 t
Number of respondents	979	582	142	255

school attractiveness for families of a certain socioeconomic status. Many principals of ineffective schools report the lack of material resources suffered by their educational institutions.

Selection policy

Table 5 shows the procedure of recruiting children in elementary, middle and high school classes. Effective schools pursue a consistent selection policy at all stages of education. This is perhaps the most influential factor providing high educational outcomes. Selecting children with parents committed to their education and those with the best admission scores is a consistent policy of attracting families of a high socioeconomic status.

Keeping to the selection policy in elementary school is associated with certain difficulties, as schools are legally obliged to enroll children living in the neighborhood. However, the principals of effective schools are more likely to put a checkmark beside the answer “We always recruit children with the best admission scores”.

It is acceptable to recruit children from other neighborhoods in middle and high school in case there are enough spare places. The principals of effective schools report much more often than their coun-

Table 5. **The procedure of recruiting children to elementary, middle and high school** (% of school principals who gave an affirmative response to the relevant questionnaire item)

	All schools (T/t)	Typical schools (a)	Effective schools (b)	Ineffective schools (c)
Recruiting elementary school pupils				
A kindergarten is affiliated with our school. We recruit graduates from this kindergarten to elementary school	27	27	28	27
We provide pre-elementary education courses. Children who complete them are given admission priority	26	25	24	28
We provide pre-elementary education courses. Children who complete them are given no admission priority	28	28	29	29
Children who live in the neighborhood are given admission priority	62	65 c	60	55
We admit all children regardless of the neighborhood they live in	36	36	32	39
We always select children with the best admission scores	4	4	8 c	2
Recruiting middleschool pupils				
Elementary school graduates progress to middle school	90	90	85	91
If we have enough spare places, we recruit students from other schools to grades 5–9 on a competitive basis	18	20 c	23 c	11 t
If we have enough spare places, we recruit students from other schools to grades 5–9 on a non-competitive basis	60	59 b	46 t	69 abT
We do not provide middle school education	0	0	0	0
We create new classes and recruit children on a competitive basis	4	4	10 aTc	3
Recruiting highschool students				
Middle school graduates progress to high school on a non-competitive basis (if they wish)	68	66	66	75 abT
We select the best middle school graduates	21	24 c	17	16
If we have enough spare places, we recruit students from other schools to grades 10–11 on a competitive basis	28	28	36 c	24
If we have enough spare places, we recruit students from other schools to grades 10–11 on a non-competitive basis	47	47 b	34 t	53 b
We do not provide high school education	2	2	1	0
We create new (specialized) classes and recruit children on a competitive basis	11	11	17 c	8
Number of respondents	979	582	142	255

terparts in the other two groups that they recruit children from other schools on a competitive basis (23%) and create new classes where children are also admitted on a competitive basis (10%). On average, 60% of school principals practice non-competitive admission to spare places, but the low is only 46% in effective schools, as compared to the high of 69% in ineffective ones.

Obviously, the high school selection policies should become tougher, now that we have introduced the Unified State Exam and started using its results to assess school performance. This raises the question of admitting middle school graduates with low educational outcomes to high school, which ispracticed by 75% of ineffective school principals. Typical schools normally do not attract children from other schools, but 24% of them do select their own best pupils, as compared to 16% of ineffective schools.

The principals of low-performing schools are the least likely to select their students: most schools in this category are rural, often underfilled. They usually admit children from other educational institutions to middle (62%) and high school (56%) on a non-competitive basis.

Conclusion

Using a nationally representative sample of schools, we managed to identify categories of schools that may be classified as effective or ineffective, i. e. those that perform better or worse than predicted by the regression model constructed based on their social contexts. Using the results of principal surveys, we determined the specific strategies of effective school principals that distinguish them from ineffective school leaders.

Effective schools are more likely to use non-financial teacher incentives, such as additional professional growth opportunities or public recognition, and less likely to apply penalties like pay cuts.

Effective schools pursue a consistent policy of attracting and selecting a certain kind of household. Most often, they teach children from families of a relatively high socioeconomic status, thus getting a better head start in terms of academic attainment. Effective schools also attract committed parents who will motivate their childrentowards higher achievements. The principals of effective schools see the competitive edge of a school in providing a varied education program with extracurricular activities and specialized education opportunities and in motivating students to be active and competitive in learning. The transition to middle and high school should involve selection of candidates and attracting the best-performing students from other schools on a competitive basis.

The limitations to the analysis that we carried outconcern factors of environment, not those of management: there are more advanced educational institutions among the effective schools, and most of them are located in Moscow and other large cities.

The general managerial strategy of effective school principals may be narrowed down to attracting high-quality human resources, which applies to both the teaching staff and students and their parents. By recruiting children from the most advantaged families, schools boost their chances for effectiveness at the very start.

This strategy is not a recipe for each and every school to become effective. Schools that work with a more challenging student body need differenttypes of support (e.g. in providing free school meals) and they also often suffer froma lack of financing and material resources, so we can only expect some local improvements from applying the effective school managerial strategies. In our further research, we are going to identify resilient schools that achieve high educational outcomes in challenging contexts (challenging student body and insufficient resources) and define the managerial strategy of such schools.

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