Perception of strategies by university middle managers: is there any relationship with actual universities’ operations?

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Abstract
The study focuses on the discussion of how universities middle managers perceive the effects of strategic plan’s elaboration and implementation. The paper presents the institutional context of strategic thinking in the Russian higher education system, and the analysis of changes in universities’ activities with the influence of the strategy implementation. The latter is based on the survey data and represents the perception of universities’ middle managers (faculty deans and research department heads). The analysis of survey data is complemented by the calculation of changes in organizational-level performance indicators. The results suggest that middle managers’ perception of strategies in general correlates to the changes in actual institutional performance indicators.

Keywords University strategy · University performance · Middle managers · Internal governance

Introduction
Higher education institutions (HEIs) are facing different complex challenges, among which scholars highlight, for example, declining public funding, changing demographics, technological changes, increasing market pressures, etc. (Davis et al., 2016). Within the rational management paradigm, these challenges, and governments directly, require universities to reconsider the set of management practices to be successful and effective public organizations. They adopt practices that are usually used to run commercial firms and organizations, including a strategic planning process (Kolsaker, 2008). Using strategies, universities articulate the ways of achieving long-term goals, positioning in different higher education niches, and legitimizing their activities in relation to the different groups of stakeholders.

There is a vast literature covering different aspects of strategy elaboration at universities, discussing motivations for strategy development (Fathi, Wilson, 2009), different parts of
strategies such as mission statement (Seeber et al., 2019), particular tools for strategic management (Dyson, 2004), etc. Review of the existing literature is presented, for example, in Fumasoli and Lepori (2011). However, there is not much evidence of how strategy development and implementation are related to university performance (both perceived and actual). There are papers that try to relate different management practices and their quality to university performance (for example, McCormack et al. (2014)) but to the best of our knowledge, there are only few studies focused on how strategic planning in universities is related to their organizational performance. Particularly, Wagner (2006) implements case study design and shows that organizational change, rather than productivity and efficiency gains, is a key outcome of the strategic planning process. Birinci and Eren (2013) came up with similar results on a sample of Turkish universities. They confirmed the hypothesis that the process of strategic planning itself, and then the control and flexibility of strategic plans, positively affect the effectiveness of universities (subjectively assessed). There are also some papers which are focused on the perceived changes in operations and performance. For instance, Daniel (2009) analyzed how perceived performance of university middle managers is affected by CAMIEO factors (climate, ability, motivation, environment, opportunity to perform). Sheehan (2012) used a perceived performance measures in order to evaluate training programs for managers.

In this study we analyze how strategy development and implementation can be related to universities’ operations and, consequently, performance level as perceived by middle-level managers, looking at the case of Russian higher education institutions. On the one hand, over the last decades, various mechanisms of strategic management in the public sector were introduced in Russia at the federal level. As a result, in the higher education sector, the majority of universities report using the tools of strategic thinking. On the other hand, Russian public policy in higher education of the last decades pays considerable attention to stimulating universities’ performance. Particularly, in 2012 the Russian Ministry of Science and Higher Education (hereafter - MoSHE) introduced performance-based accountability (see details in Agasisti et al. 2021a) and performance-based funding tools (see details in Agasisti et al., 2021b). Both the agenda for universities’ performance steering and the agenda for strategic management at universities are important for public policy debate in Russia.

In order to study the relationship between strategizing and perceived performance changes at Russian universities we use a survey data from Monitoring of education markets and organizations (hereafter - MEMO) which has been conducted by HSE University since 2006. This is an annual survey of different stakeholders of the educational process at different levels - school, vocational, and higher education. In this paper, we perform our analysis using a questionnaire that was offered to the universities’ heads of departments (faculty deans, directors of institutions, etc.). We combine this investigation based on the survey data with exploratory analysis of changes in actual performance indicators. The data source for universities’ performance indicators is the annual Monitoring of performance of higher education institutions, launched by the MoSHE in 2012. It contains data on different performance indicators that reflect teaching, research, financial and other activities of universities. The combination of survey data analysis and administrative data on institutional performance allows exploring whether perceived effects of strategy on institutions’ operations corresponds to the changes in actual performance indicators. Both datasets that we use in this study refers to 2020.
In this paper we make two conditional assumptions that are important for interpretation of the analysis presented in the next parts. Firstly, although institutional performance may be driven by various external factors (e.g. changes in national legislation and available resources), the specific internal governance models might play an important role in how employees perceive the changes in organization’s operations and, as a result, in achieving different performance levels. Secondly, referring to strategic processes we mainly limit our view to the strategies as a product (formulated and adopted document).

This paper is in five sections among which this is the first. The next section provides a summary of academic discussion on the relationship between strategy development and university performance. Next, we provide reflections on strategizing in the Russian higher education sector. The fourth section presents the results of empirical analysis. Finally, the last section provides the discussion of the obtained results, some policy implications and concluding remarks.

**Literature review**

The core argument of this paper is that despite different contexts why universities develop their strategies, there might be a relation between strategic activities (strategic planning, strategy formulation and implementation) and changes in universities’ operations (as perceived by the employees in our case), and, consequently, to the performance level. This argument is based on several dimensions of the discussions - from meta- to micro-level - developed in the literature.

Firstly, a flourishing rational managerial environment links strategy with effectiveness in higher education (Gumport, 2012). Strategies are the element of good governance in the global perception of modern organization (Ramirez, 2006). Modern public organizations including universities are emphasized to have strong and ambitious leadership, result-achievement, decision-making structures and strategic planning, engaging boards, etc. (see in Toma 2010). There is high societal legitimacy of the practices, which are usually adopted by for-profit organizations including strategic planning (Pucciarelli and Kaplan, 2016; Gibbs, Murphy, 2009). In this context, it is not surprising that large consulting agencies, which work with HEIs, provide support in strategy development for the means of higher effectiveness and efficiency (McClure 2017).

From this perspective, the classical view is that strategies are the rational tools to match institutional actions with the set priorities, taking into account external and internal factors. The priorities are assumed to be successful when formulated as measurable performance indicators (Cameron 1986). Universities’ strategies include detailed road maps, which targets relate with accountability parameters, league tables, rankings, etc. (Shattock, 2003). Of course, the development of strategy and its implementation does not always lead to the successful achievement of the set goals (Rowley, 1997). Strategies, as a part of good governance in principle (Shattok, 2003), do not guarantee universities success, but they can make a contribution if they correspond to the institution’s aims, culture, environment, external challenges and stakeholders’ requests. For example, strategies help to respond to changes in the external environment. Fathi and Wilson (2009) highlight that external challenges related to economics, demographics, environment, technology and politics may force HEIs to elaborate strategies. Most recent papers (see, for example, Bebbington, 2021) consider COVID-
19 pandemic as a motive for HEIs to reconsider their strategic plans. Strategy development can be considered as a possible way for the university to develop a unique organisational identity (Fumasoli et al., 2014), which is helpful in coping with different uncertainties and growing demands from the stakeholders. The latter is one of the most discussed issues related to the reasons for strategy development. For example, Stensaker and Harvey (2011) have demonstrated that strategic planning can be considered as an action that allows improving external legitimacy. By developing their strategies, universities demonstrate to the external stakeholders that they are efficient and responsible public organisations.

Secondly, the role of public government is emphasized in formulating key priorities and governing tools for higher education institutions (Capano 2011). The public government body communicates their priorities through specific instruments and structures. The government, shaped by New Public Management principles, requires from universities different planning procedures; increases the level of competition between higher education institutions; adopts steering models (Fumasoli and Lepori 2011). Universities have to align their activities with specific performance goals framed by accountability and funding procedures (Capano 2011; Frølich 2011). Despite the levels of formal autonomy of universities, the public government may engage in strategic processes through dialogue with universities (Frølich et al. 2019), and as Norwegian study shows the Ministry became more concerned with long-term development and aims, and less detail-oriented. Besides, in many national contexts a national government sees strategy as a necessary document for higher education institutions (Uslu 2018). For example, in Finland strategies have 10% value in the funding formula (De Boer et al., 2015 p. 66).

Thirdly, micro-level practices matter, they shape the strategic process and bring changes in organizational behaviours (Jarzabkowski, 2005). University administrators believe that leadership, communication and decision-making procedures have the highest importance in realizing the strategy (Stensaker et al., 2014). What are the expected consequences of strategic processes for universities activities? Strategy formulation and implementation bring changes in structures (establishment of new academic and service units, merger of departments, etc.), institutional rules and principles of resource allocation (Rowley & Sherman, 2004). For illustration, as one of the cases, Fumasoli and Lepori (2011) describe the organizational changes at Swiss University of applied sciences SUPSI (Scuola universitaria professionale della Svizzera italiana):

“...the second strategic cycle started with a new executive team appointed, which immediately conducted a major restructuring of the internal governance, transforming the school centralized structure into a vertical “multidivisional” organization centered on an executive board composed by one chief executive and the directors of departments. While keeping central control on organizational strategy, this reorganization provided departments with more autonomy concerning educational and research activities and thus promoted stronger bottom-up dynamics; research activities started to grow and to differentiate and new research centers were created—four of them being recognized as research institutes towards the end of this period. Finally, a research strategy was established by an ad hoc committee of representatives of the different departments, in order to coordinate the highly differentiated research activities and to promote cooperation between domains. In this respect, an internal fund to
foster interdisciplinary research through regular calls was set up.” (Fumasoli et al., 2014, p. 172).

With strategic processes the professional administrators are given an extremely important role, as they develop strategies (Fumasoli and Lepori 2011; Frølich et al. 2019). However, the central administrative bodies, which strengthened their position, still rely on bottom-up procedures. Strategy formulation provides the platform for communication within the organization in addition to traditional structures such as chairs and boards. The participation of academic and non-academic staff members in strategy formulation vary across institutions. For example, Aarrevaara et al. (2019) shows that 60% of academics in Swedish universities have participated in strategy development, while in Norway only 40% reported so. Moreover, administrative staff is more engaged in strategy formulation than academic faculty. Although study reveals that only up to 5% of academics feel that they influence the process of strategy development at university level, around a third of the respondents in each country (Finland, Norway and Sweden) align their academic behaviour to meet goals in university strategies (ibid., p. 225). It does not necessarily mean that changes in university structures and staff behaviour directly affects performance in teaching, research and all other activities. However, as discussed above, strategy development in modern higher education systems is associated with a higher emphasis on performativity and accountability.

**Strategic thinking in Russian higher education governance**

The core of the Russian higher education system is state organizations. 494 state HEIs out of 903 all organizations accumulate about 88% of all full-time students. The governance is centered at the federal level (see more in Leshukov and Froumin 2018) and has a high level of control rooted in the Soviet past (see more in Platonova and Semyonov 2018). Some attempts to provide autonomy at the level of curriculum and financial management have been made during the last decade, however, the autonomy is limited in use (Agasisti and Shibanova 2022). Although Russian higher education institutions may have their own development agenda, they are firmly inscribed in the state administration system.

Strategy development and strategic planning have been a tool of the Russian public administration approach since early 2000. It has appeared as the result of the incorporation of two factors: the dominance of technocratic governance and conformity with the principles of new public management. At the national level at least three strategies for socio-economic development have been prepared, published and appeared in public discourse, although they have had no legal power for 15 years (Shubenkova, 2018). A legal framework for strategic planning in Russia was established only in 2014 (the federal law “On Strategic Planning in the Russian Federation” No. 172-FZ, 28 June 2014). Now there are more than 15 strategic planning documents at the federal level, such as, for example, “The Strategy of Scientific and Technological Development of Russia”, “The Strategy of Social and Economic Development of Russia” (Limonov and Batchaev 2020). Many of the strategic documents have failed in implementation and are assumed to be inefficient in terms of cost analysis (Klimenko & Kalgin, 2018). Nevertheless, ‘strategic thinking’ has become a gold standard for state bureaucrats, public organisations and state-owned companies.
In Russian higher education, strategic thinking has been gradually introduced in a line with performance management for universities (e.g. performance-based funding see in Agasisti et al. 2021b) and faculty (e.g. so-called effective contract, see in Prakhov & Rudakov 2021). The government stimulated strategic planning and competition through state-initiated projects each 3–5 years. Within these projects the additional funding for universities has been distributed on the basis of competition between the best universities’ strategies (in the view of the Ministry and invited experts). Since 2007 the establishment of 10 Federal Universities has combined two mechanisms – additional funding for strategy development and mergers – since 2007. Since 2009, 29 National Research Universities have gained new status and additional funding for their research strategies. Moreover, 15 universities of the first wave in 2013 and 6 universities of the second wave in 2015 have developed strategies to become so-called World Class universities (Project 5-top100). In addition, in 2015 and 2017 the government organized the competition between regional HEIs for the status of Flagship Universities (numbering 33) to support their locally oriented research and third mission development again on the basis of their strategies. In 2020 more than 190 universities have submitted their newly developed strategies to participate in the new government initiative Priority-2030\(^1\).

Universities react and reflect the policy agenda of strategic thinking according to the survey data as well. In 2015, 335 out of 401 the rectors of the state HEIs said that their university had a strategy developed no later than 5 years ago; 61\% of which emphasized that the reason was the state policy. All other reasons related somehow to internal needs were selected by less than 30\% of the rectors (Fig. 1). Those 28 rectors who answered ‘other’ have a chance to write down their own reasons. They may be aggregated into following categories: the direct recommendation of the Ministry (appeared 8 times), need to fulfill of accountability requirements (the Monitoring of performance) (1), rise activities’ efficiency (4), (global) competitiveness (2), low research income (1), new elected rector (2) and new administration team (1), initiative of the university’ administration (1), common practice (2).

Thus, strategies for Russian HEIs are externally determined. Strategy is a document that enables universities to be in line with the state policy as a whole, or to conform to the direct recommendations of the governing body. At the operational level, a strategy, which meets

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\(^1\) The results have not yet been announced at the time of the writing.
the requirements of the Ministry for a particular project, is a tool to get additional resources. In exchange for them, universities admit higher control and micro-management from the Ministry through the strategies: (1) the strategic plans have straightforward frameworks from the Ministry (a system of indicators to drive to specific national goals); (2) the government monitors the progress of these universities against the key performance indicators of strategies; (3) the additional funding can be spent only to achieve goals of the strategic plans, and spending are monitored as well (Froumin and Lisyutkin 2018, pp. 250–252). It is not only an operational burden, but also administrators do perceive higher control over their activities (Oleksiyenko, 2021). Nevertheless, as the Project 5-top100 showed, universities had different governing approaches even in a highly controlled environment (Chirikov, 2018). The additional funding provides some room for actions for the managing body of a university, and an adopted strategic document is a legitimate source for decision-making and changes.

How is the strategy implementation in russian universities related to perceived changes in operations and performance?

Step 1. The perception of changes

Data sources

In the described above context, the universities’ strategies may drift toward ceremonial documents aimed at demonstrating to the regulator that the organization implements efficient and modern management practices. With all limitations considered, we rely on universities’ middle management staff perceptions of changes. We utilize the MEMO dataset that refers to 2020 year and includes 2049 respondents who are representatives of the university middle management (we use ‘department heads’ as synonyms, the category includes faculty deans and research institutions heads). These 2049 respondents represent 410 Russian public higher education institutions. Appendix 1 presents relevant characteristics of the respondents: on average they take a job of the department head for nine years, most of their time they contribute to administrative duties, however about 11 hours they spend on teaching and seven – on research, almost all of them have at least PhD degree level (or Russian equivalent). The main limitation of the MEMO dataset which is important for our analysis is that it allows exploring just middle managers’ perception of changes associated with elaboration and implementation of strategy. It is not possible to figure out whether there are actual changes in universities’ operations related to strategy. Taking into account this limitation, in this study we focus on a research question related to the correlation between strategic activities and changes in universities’ operations as perceived by the employees. Then we try to related these perceived changes in operations to actual changes in performance indicators.

Analysis

The middle managers survey confirms widespread development of strategic documents across Russian universities during the last three years. Almost 90% of the department heads

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2 The detailed description of the MEMO dataset is available on the website https://memo.hse.ru/en/.
Tertiary Education and Management

participating in the survey admitted that their university had developed a strategy during the last three years; 9% mentioned that their university did not have a strategy, but the strategy was in the process of elaboration; only 1% of all respondents said that their organization did not have a strategy. Moreover, we can observe from the data that among department heads who admitted that their university had a strategic plan, 84% said that their department participated in formulation of the strategic plan. We are limited in understanding the practice of involvement (participation in the discussions, document development or formal approval). However, these results for Russian administrative staff are consistent with the Nordic universities’ survey, reported in Aarrevaara et al. (2019).

Russian department heads were suggested to assess the direction of changes within five institutional characteristics. They answered the following question: “In your opinion, how have the following characteristics of the department’s operations changed with the influence of the strategy?” The question consisted of the following dimensions:

- competition among different departments of the university;
- autonomy level of the departments;
- opportunities for the human development;
- opportunities for additional funding of research projects;
- administrative burden on the departments.

The respondents could select one out of three possible ways of changes for each item: decreased/no changes/increased. Table 1 presents the distribution of the respondents’ answers.

From 33 to 80% of respondents do not observe any changes in each side of university activities. However, more respondents tend to see positive changes in opportunities for research and academic staff development (41 and 45 per cent correspondingly). Any kind of changes in more comprehensive institutional rules such as autonomy and competition level within the department are less notable for middle managers. The most unanimous change is related to the bureaucratic burden that strategy stimulated. We are limited to know if the changes in particular side of activities the direct purposeful result of the strategy or the side effect of strategy implementation are. Nevertheless, the first step of survey analysis shows

| 1. Competition among different departments of the university |
|-------------------------------------------------------------|
| Decreased | No changes | Increased |
| 2% | 66% | 32% |

| 2. Autonomy level of the departments |
|-------------------------------------|
| Decreased | No changes | Increased |
| 10% | 81% | 10% |

| 3. Opportunities for additional funding of research projects |
|---------------------------------------------------------------|
| Decreased | No changes | Increased |
| 7% | 52% | 41% |

| 4. Opportunities for the human development |
|---------------------------------------------|
| Decreased | No changes | Increased |
| 9% | 46% | 45% |

| 5. Administrative burden on the departments |
|---------------------------------------------|
| Decreased | No changes | Increased |
| 2% | 33% | 65% |
despite the top-down stimulus of strategy development in Russian universities, more than a third of faculty deans and research departments’ heads have noticed changes in different aspects of institutional activities.

**Step 2. The changes in actual performance**

**Data source**

As the second step of analysis, we compare perceived changes in universities’ activities determined by the implementation of the strategic planning process and changes in measurable performance indicators at organizational level. In order to do that, we combine the MEMO dataset described above with the Monitoring of Performance of Higher Education Institutions conducted by the MoSHE. This monitoring was started in 2012 and conducted annually. It includes more than 150 university performance indicators reflecting different dimensions of university activities - educational, research, international, finance, academic staff and so on. Monitoring of performance covers almost all Russian higher education institutions (excluding HEIs subordinated to the Ministry of Defense, Ministry of Internal Affairs and other law enforcement agencies).\(^3\)

Considering university as a multi-functional organization (Cohn et al. 1989), we utilize 4 performance indicators from the Monitoring of performance which reflect different sides of university activities. The first indicator is a number of publications indexed in the Web of Science (WoS) database per 100 of faculty members. This variable represents a measure of research productivity. The second performance indicator is an average unified state exam score (USE)\(^4\) of students enrolled to the publicly financed places\(^5\) reflecting the prestige of the university and its ability to attract the most talented students. The third performance variable is the amount of R&D per faculty member which can be considered as a measure of the ability to attract additional funds (both private and public) for research activities. Finally, the fourth performance variable is a total income of the university per faculty member. This variable is a proxy for financial stability of HEI and for its ability to attract additional funding (both public and private) for different purposes.

In order to combine the data from the MEMO survey to the performance indicators from the Monitoring of Performance we have aggregated individual-level MEMO data to the university level. The number of department heads participated in the survey per one university is ranging between 1 and 65 representatives. University-level score was calculated as the mean value of the answers of all department heads representing this university. Despite there might be some heterogeneity in answers inside one university, the standard deviation within universities does not exceed 0.25, therefore, there are not so many contradictions in answers of the department heads representing one institution. Taking into account missing

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\(^3\) More detailed information about Monitoring of Performance can be found, for example, in (Sokolov & Tsivinskaya, 2018) and (Agasisti et al., 2021).

\(^4\) Admissions in Russian universities are based on the unified state exam which is taken by all school graduates who want to continue education at the university. Average USE score usually reflects the level of university prestige (see details, for example, in Francesconi et al., 2019).

\(^5\) Russian HEIs have a dual-track admission system, i.e. one particular public university can offer both publicly funded places and tuition based places (see details in Smolentseva 2020).
values, after merging data from the Monitoring of Performance and the MEMO our sample includes 311 public universities representing 67% of the total student body in the country.

Analysis

At the next step of the analysis, we test whether there are statistically significant differences in performance indicators among HEIs, separated into groups. For each type of possible changes in universities’ activities (opportunities of additional funding of scientific projects, competition among different structural units, etc.) we form three groups of universities which middle managers selected if the item decreased, not changes or increased. We calculate mean values of performance indicators changes for each group. In order to test statistical significance of the observed difference we employ standard two-sample t-test which allows identifying whether the unknown population means of two groups are equal or not. “Decreased” and “Increased” categories are compared with the “No changes” category, in other words, we test tes two hypothesis:

- whether the universities where department heads admit positive changes in different activities caused by the strategic planning demonstrate better actual performance;
- whether the universities where department heads admit negative changes in different activities caused by the strategic planning demonstrate worse actual performance.

We test both the differences in the absolute values of the performance indicators (Appendix 2) and in the growth rate of the performance indicators during the last 3 years (2017–2020). The results of the hypothesis testing for growth rate of the performance indicators during 2017–2020 are presented in Table 2.

Table 2 demonstrates that increased opportunities for additional funding of scientific projects caused by strategic planning and mentioned by the department heads are associated with the higher growth rates of R&D per faculty member and WoS publications per 100 faculty members. Universities whose department heads point out an increase in additional potential for human development also show, on average, higher growth rates in the number of publications indexed in the WoS. On the contrary, the negative impact of strategy on human development opportunities is, on average, associated with statistically significantly lower growth rates of research productivity.

Increased competition among different structural units of the university corresponds to the higher growth rate of the average unified state exam score and WoS publications per 100 faculty members. Vice versa, decreased competition due to the strategic plan implementation associated with statistically significant lower growth rate of publications number. Autonomy level of the departments is positively related with changes in research performance indicators (R&D per faculty and WoS publications per 100 faculty members). Finally, in a situation where, in the opinion of department heads, the development of a strategy leads to a decrease in the administrative burden on the departments, we can observe a decrease in the volume of R&D.

The results of testing similar hypotheses for absolute values of performance indicators are presented in Appendix 1. In general, we can observe similar results: in most cases, the positive influence of the strategy on various aspects of the university’s activities is associated with higher values of indicators associated with research productivity.
Thus, the results of the analysis show that universities in which department heads note the positive impact of the strategy on various aspects of their activities, on average, are

| Table 2 | The comparison of changes in performance and activities |
|-----------------|-----------------|-----------------|-----------------|
| **Opportunities of additional funding of research projects**  | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
| Decreased       | 1.44            | 1.41            | 1.04            | 1.36            |
| t-test p-value  | 0.33            | 0.20            | 0.45            | 0.19            |
| No changes      | 1.28            | 1.96            | 1.05            | 1.43            |
| Increased       | **1.52***        | **2.77***        | 1.03            | 1.44            |
| t-test p-value  | 0.09            | 0.02            | 0.16            | 0.88            |

| **Competition among different structural units of the university**  | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
| Decreased       | 2.49            | **1.31**         | 1.14            | 1.56            |
| t-test p-value  | 0.22            | 0.02            | 0.42            | 0.40            |
| No changes      | 1.31            | 2.01            | 1.04            | 1.42            |
| Increased       | 1.26            | **2.84**         | **1.14**        | 1.47            |
| t-test p-value  | 0.79            | 0.03            | 0.09            | 0.55            |

| **Opportunities for the human development**  | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
| Decreased       | 1.29            | **1.5**          | 1.06            | 1.43            |
| t-test p-value  | 0.98            | 0.04            | 0.68            | 0.84            |
| No changes      | 1.29            | 1.92            | 1.04            | 1.44            |
| Increased       | 1.49            | **2.75**         | 1.07            | 1.41            |
| t-test p-value  | 0.43            | 0.02            | 0.25            | 0.51            |

| **Autonomy level of the departments**  | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
| Decreased       | 1.31            | 1.74            | 1.04            | 1.41            |
| t-test p-value  | 0.87            | 0.35            | 0.22            | 0.65            |
| No changes      | 1.34            | 2.11            | 1.05            | 1.44            |
| Increased       | **1.89***        | **4.05***        | 1.36            | 1.41            |
| t-test p-value  | 0.06            | 0.07            | 0.42            | 0.87            |

| **Administrative burden on the departments**  | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
| Decreased       | **0.79**         | 2.16            | 1.04            | 1.54            |
| t-test p-value  | 0.03            | 0.91            | 0.42            | 0.51            |
| No changes      | 1.39            | 2.01            | 1.06            | 1.42            |
| Increased       | 1.22            | 2.16            | **1.07**        | 1.46            |
| t-test p-value  | 0.26            | 0.69            | 0.01            | 0.25            |

* the difference is statistically significant with p-value <0.1
**the difference is statistically significant with p-value <0.05
characterized by relatively higher growth rates of performance indicators. Most often, statistically significant differences are observed in indicators reflecting research productivity - volume of R&D per faculty and number of publications indexed in the WoS per 100 faculty members. This observation can have different explanations. In recent years in Russia various policy interventions have stimulated research productivity in the higher education sector, which prompted universities to create different incentives for researchers. An alternative explanation for these results is related to the fact that university managers can have a greater influence on the indicators of research productivity in the short term compared to other indicators that were included in the analysis.

Discussion and concluding remarks

This study contributes to the discussion regarding the correlation between strategic planning and changes in operations as perceived by middle managers and performance of higher education institutions. Considering that the strategy development might have different aims and contribute to positioning, fundraising, teambuilding etc., here we focus on the strategies as a part of change management.

The analysis carried out on the data from Monitoring of performance of universities and MEMO survey indicates that, in general, about 90% of all Russian universities have a development strategy. However, as the analysis using the data of the survey of department heads shows, often the strategy is a formal document and does not related to perception of the changes of different processes taking place at the university. Considering different aspects of university activities, from 33 to 80% of the department heads do not observe any changes at the university after development of the strategic plan. Knowing that, one may argue that in a situation where the regulator stimulates universities to introduce strategies as management tools, universities respond to this formally, developing a document that does not entail

| Degree level (multiple choice) | number of respondents |
|-------------------------------|-----------------------|
| Doctor of Science             | 577                   |
| Candidate of Science (Russian equivalent of PhD), | 1286                  |
| PhD                           | 23                    |
| No science degree             | 187                   |

| Position                      | share of the sample, % |
|-------------------------------|------------------------|
| Head of the department        | 85%                    |
| Deputy head of the department | 9%                     |
| Other                         | 6%                     |

| Work experience               | years (average)        |
|-------------------------------|------------------------|
| Work experience as the head of the department | 9                    |
| Work experience at the governance bodies | 14                  |

| Working time distribution     | hours per week, on average |
|-------------------------------|-----------------------------|
| Research                      | 7                           |
| Teaching                      | 11                          |
| Department-level governance   | 15                          |
| University-level governance   | 6                           |

Appendix 1: The characteristics of respondents, MEMO survey, N = 2049
Appendix 2  The comparison of institutional changes and of performance absolute values

**Opportunities of additional funding of research projects**

|                        | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
|------------------------|----------------------------------|---------------------------------------------------------------|---------------------------------|-------------------------------------------|
| **Decreased**          | 177.38                           | 13.97                                                         | 66.88                           | **3242.99***                             |
| t-test p-value         | 0.33                             | 0.41                                                          | 0.36                            | 0.06                                      |
| **No changes**         | 244.02                           | 17.64                                                         | 64.06                           | 3614.19                                  |
| **Increased**          | **284.85***                      | **21.14***                                                    | 65.04                           | **3891.31**                              |
| t-test p-value         | 0.09                             | 0.09                                                          | 0.78                            | 0.29                                      |

**Competition among different structural units of the university**

|                        | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
|------------------------|----------------------------------|---------------------------------------------------------------|---------------------------------|-------------------------------------------|
| **Decreased**          | 181.36                           | 14.09                                                         | 59.15                           | 3953.11                                  |
| t-test p-value         | 0.78                             | 0.13                                                          | 0.50                            | 0.90                                      |
| **No changes**         | 194.65                           | 19.62                                                         | 62.15                           | 4081.12                                  |
| **Increased**          | **282.51***                      | **20.41**                                                     | 65.43                           | **3779.81**                              |
| t-test p-value         | 0.07                             | 0.84                                                          | 0.49                            | 0.53                                      |

**Opportunities for the human development**

|                        | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
|------------------------|----------------------------------|---------------------------------------------------------------|---------------------------------|-------------------------------------------|
| **Decreased**          | 289.35                           | 20.63                                                         | 65.00                           | 3655.39                                  |
| t-test p-value         | 0.48                             | 0.72                                                          | 0.91                            | 0.95                                      |
| **No changes**         | 245.02                           | 18.91                                                         | 65.35                           | 3641.08                                  |
| **Increased**          | **342.91***                      | **23.59***                                                    | 63.92                           | **4356.68**                              |
| t-test p-value         | 0.02                             | 0.03                                                          | 0.66                            | 0.02                                      |

**Autonomy level of the departments**

|                        | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
|------------------------|----------------------------------|---------------------------------------------------------------|---------------------------------|-------------------------------------------|
| **Decreased**          | 239.55                           | 17.48                                                         | **45.29***                      | 4731.60                                  |
| t-test p-value         | 0.51                             | 0.84                                                          | 0.09                            | 0.45                                      |
| **No changes**         | 266.07                           | 18.57                                                         | 64.90                           | 3874.58                                  |
| **Increased**          | **296.35***                      | **25.89***                                                    | 66.97                           | **3510.90***                             |
| t-test p-value         | 0.08                             | 0.05                                                          | 0.38                            | 0.06                                      |

**Administrative burden on the departments**

|                        | R&D per faculty, thousand rubles | Number of publications indexed in WoS per 100 faculty members | Average unified state exam score | Total income per faculty, thousand rubles |
|------------------------|----------------------------------|---------------------------------------------------------------|---------------------------------|-------------------------------------------|
| **Decreased**          | 209.03                           | 20.48                                                         | **73.67***                      | 4056.06                                  |
| t-test p-value         | 0.64                             | 0.91                                                          | 0.08                            | 0.62                                      |
| **No changes**         | 257.58                           | 19.76                                                         | 65.93                           | 3707.20                                  |
| **Increased**          | **305.70***                      | **21.04**                                                     | **62.64***                      | **4017.39**                              |
| t-test p-value         | 0.05                             | 0.94                                                          | 0.05                            | 0.22                                      |

* the difference is statistically significant with p-value < 0.1
** the difference is statistically significant with p-value < 0.05

any changes in their activities. The increase in administrative burden, mentioned by the middle-managers, supports this consideration (and corresponds with qualitative analysis in
Oleksiyenko 2021). In other words, universities are trying to imitate the use of ‘effective’ management practices in order to attract more public resources and to build external legitimacy that is common vision of the role of the strategies in European context as well (see e.g. Stensaker et al., 2014, Stensaker et al. 2019). The general bureaucratization of higher education governance and the rush to develop and implement strategies may affect the fact that managers do not have time to feel significant changes other than the administrative burden. This is common for post-Soviet university governance model that operate in a top-down management environment (see cases in Huisman et al., 2018, Chankseliani, 2022). If so, the development of the strategy might have greater involvement of the managers into the process of strategizing not just preparing documentation with hard deadlines, providing space for down-top initiatives. However, these interpretations are limited to the type of observations that the survey provides.

Nevertheless, in cases where department heads note real changes in the university’s activities due to the development and implementation of a strategic plan, we observe statistically significant differences in key performance indicators compared to universities, where department heads note the absence of any real effects of the strategy. Particularly, if in the opinion of department heads the development of strategy leads to the opportunities of additional funding of scientific projects; opportunities for human development; competition among different departments; autonomy level of the departments; we observe both higher absolute values of performance indicators and their growth rate. The most significant effects are observed in terms of indicators related to research productivity. This can be explained both by the greater opportunities for improving these indicators in the short term, and by the importance of research productivity indicators from the point of view of policy-makers translated to the universities’ administrators.

The main limitation of the empirical results obtained in this study is that we cannot discuss the causal nature of the relationship between strategic planning and performance indicators. In this regard, the differences found in performance indicators can have two alternative explanations. On the one hand, in those cases when middle-managers notice changes in activities and institutional rules with strategy implementation, strategy might be assumed as an effective management practice that allows universities to achieve higher performance indicators. If so, both types of actions might be performed: structural/institutional changes that strategies stimulate and more efficient communication of these changes to middle managers.

On the other hand, the results can be explained by self-selection, in other words, universities that achieve high performance indicators on average more often have strategies that are not just ceremonial documents, but also imply real effects on various aspects of activities (again, as middle managers perceive it). However, regardless of the direction of dependence, descriptively we can argue that universities which have a strategy as a working management tool, on average, demonstrate higher performance.

Appendix head

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Data availability The data from the Monitoring of Performance of higher education institutions, conducted by the Russian Ministry of Science and Higher Education, is an open-source data available at the website: https://monitoring.miccedu.ru/?m=vpo (in Russian). The survey data from the Monitoring of education markets and organizations, conducted by the HSE University, is available by request (https://memo.hse.ru/en/).

Code availability Not applicable.

Declarations Not applicable.

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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