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9 Data, autonomy and reform

Robert Zemsky, Saule Abeldinova and
Aigul Aktymbayeva

Since independence in 1991, Kazakhstan's political economy has been dominated by the intertwining of three potent issues: Kazakhstan's need to maximise and benefit from the nation's oil and gas reserves; its search for a political culture that minimises corruption and promotes accountability and autonomy; and the desire to establish an education system that enables political and scientific progress, and supports a burgeoning national identity. Over the last 25 years, Kazakhstan has paused periodically to take stock of its progress in each of these areas, often engaging the help and insights of outside experts. The World Bank has been responsible for many of these efforts, sometimes working on its own, at other times with another major international agency. While much of this effort has focused on the need to develop Kazakhstan's natural resources and shore up its commitment to a civil society largely free of corruption, underlying these discussions has been the conviction that only a broadly reformed education system – primary, secondary, tertiary and postgraduate – could assure the Republic the future it sought.

THE ROADMAP PROJECT

Over the last decade a number of these external evaluations attempted to chart a clear and certain path towards educational reform despite the fact that the nation's educational system remained underfunded and underdeveloped. One of the most recent of these efforts was launched

in 2013, when Kazakhstan's Ministry of Education and Science (MoES) commissioned a project team to develop a 'Roadmap for Education 2015–2020'. The project team made its first report in August of that year. While that report celebrated Kazakhstan's decision to make institutional quality a central goal of the new 'State Program of Educational Development', it described, in often stark terms, the importance of continued investment in institutional autonomy and accountability in the years ahead. What Kazakhstan required was a stronger accountability process and new mechanisms for reviewing and accrediting the nation's public and private universities. Of particular concern was the continued 'emphasis on centralised quality control and on compliance, rather than on a culture of quality assurance and self-evaluation at the institutional level' (Diagnostics Report 2013, 13). The report of the Roadmap project team presented a concise summary of what was required to shift from a system of centralised, top-down control and regulation toward a system of institutional accountability. Only a commitment to accountability and a concomitant investment in transparency would guard against the chaos that often flowed from unchecked decentralisation and deregulation. The preferred alternative was a system in which a central authority used data, set national goals and monitored institutional performance. The ministry should steer, rather than control the plans and performances of individual universities and allied institutions.

The guiding concepts advocated by the Roadmap team were adopted from an OECD report (2006). Progress and reform required moving from outdated concepts to more purposeful plans and action items.

From:	To:
Planning for the higher education sector isolated from national or state priorities	Strategic planning linking higher education to the future competitiveness of the country or state
Centralised control and regulation, and limited institutional autonomy	Steering 'at a distance', emphasising decentralised institutional governance and using finance policy (e.g. performance funding) to ensure that institutions respond to public priorities
Subsidy of public institutions Resource allocation based on inputs and cost-reimbursement	Funding of institutions based on outcomes Resource allocation based on performance Subsidy of students through student grants

(Continued over page)

Quality assurance related primarily to public institutions (mainly in-country/state)	Quality assurance related to public and private providers (public and private, cross-border, open/distance learning, etc.)
Accountability based on inputs	Accountability based on outcomes/performance and evidence of cost-effective and efficient utilisation of resources

(Source: OECD 2006; reproduced in Diagnostics Report 2013, 163)

To realise enhanced autonomy-cum-accountability in higher education, the Roadmap project team proposed that MoES's roles and responsibilities be redefined to include:

- Developing the core competencies of national-level professional and technical staff;
- Developing new policy tools and competencies related to budgeting and allocation of funding; and
- Developing data/information systems and the capacity to use data to monitor institutional and system performance. (Diagnostics Report 2013, 168)

What was required next was a strategy for fixing the public's mistrust of higher education itself – a mistrust that readily mixed questions of corruption with popular perceptions of a system in which standards did not matter and, as a consequence, quality was a sometime thing. Or, as the project's Diagnostics Report concluded: 'The reputational damage to the system is such that students, their families and potential employers are not convinced of the quality or integrity of educational outcomes from even the best institutions' (Diagnostics Report 2013, 132).

Equally important was the realisation by the project team that they lacked reliable data for even their most basic conclusions. '[Our] ability to make sound diagnoses of the situation in Kazakhstan relative to these topics has been seriously compromised by the inability to acquire even the most fundamental data about the overall stock and flows of funds into higher education in the country' (Diagnostics Report 2013, 150).

Without a full complement of verifiable data that both the institutions and the ministry used to formulate policy and assess progress there would be little if any real transparency across the system – and

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Without a full complement of verifiable data that both the institutions and the ministry used to formulate policy and assess progress there would be little if any real transparency across the system – and

without that transparency, accountability would become a chimera and truly autonomous institutions a near impossibility. Patrick Callan, a widely respected American expert member of the Roadmap project team summed up the team's frustrations:

It was not clear to me whether data that is critical for effective policy-making, strategic public investments and accountability does not exist or whether it was not made available. This became a particular problem in the area of higher education, particularly higher education finance. What is critical is to assure that data needed for strategic planning, benchmarking and monitoring of progress toward state goals be available and used strategically by policymakers and school and institutional leaders. At a minimum, this includes the characteristics and progress of students through each level of education and through transitions between sectors; school and institutional performance; the efficacy of public subsidies in relation to national goals and to labor markets; other sources of financial support, including college tuition. To the extent possible, this information should be internationally comparable. With respect to higher education, information that rigorously documents the performance outcomes of institutions should be a core component of policies that seek greater delegation of authority and responsibility to universities. (quoted in Alan Ruby, Unpublished memorandum, n.d.)

This lament over the paucity of reliable data would become a recurring theme in subsequent Roadmap reports.

The Roadmap project team's next report (November 2013) spelled out the tasks needed to be done to build the analytical capacities and data collection instruments that a programme of educational reform would require. Specifically, MoES needed a

'data/information policy' for: (1) monitoring/reporting on progress toward national goals; (2) holding institutions accountable for outcomes/performance; (3) ensuring fiscal integrity in the system; and (4) developing capacity for use of data/information in institutional management. (Roadmap 2013, 24) The goal was a higher education system committed to autonomy and accountability in which every public university in Kazakhstan had the capacity to engage in evidence-based planning and management because they had access to reliable data describing both their own circumstances and those of the other universities with which they cooperated, competed, or both.

Long before the Roadmap project began, MoES had executed a contract with a software developer to supply a data retrieval system labeled the 'Unified Higher Education Management System' (Rus.: *Edinaya Sistema Upravleniya Vyshim Obrazovaniem; ESUVO*). Key MoES officials had the utility loaded onto their computers' desktops, even though the database was empty and the utility was not functioning. Then in 2011, as everyday needs for routine reporting and data requests were becoming increasingly problematic, MoES decided to put the ESUVO database into operation. MoES officials commenced working with individual university managers and leaders on the processes and procedures that would be used to supply institutional data to the ESUVO database. In the initial stage it was a very simple database, with simple tables to be filled out by each publicly funded university: 32 separate forms (later reduced to 21) containing summary metrics reflecting the conditions to be found at each institution. In the course of improving the database, the forms were redesigned so that the data for each individual student, faculty and staff member was stored as a separate data record. In the initial stage, university representatives filled out the database forms manually, but then in 2013, MoES launched a new information management system, Platonus, to be used by each of the nation's publicly funded universities. That system provided for the integration of the internal university systems with MoES's automated process of collecting data. This process of discussing, developing and launching the ESUVO database took roughly two years. MoES, as urged by the Roadmap project, had put in place a set of seemingly reliable data protocols capable of supplying the day-to-day data needs of the government. Left to be dealt with were concerns about data reliability and the extent to which the system's publicly funded universities were making evidence-based decisions and developing strategic plans that similarly used real-time data and evidence to set goals and measure institutional progress.

THE DATA WAREHOUSE PROJECT

It was at this point that we became involved. We were a mixed team – Robert Zemsky, Richard Morgan and Patricia Burch from the University of Pennsylvania; and Aida Sagintayeva, Fatima Zhakypova, Saule Abeldinova and Aigul Aktymbayev from Nazarbayev University – commissioned by MoES. Stung by the Roadmap project's claim that MoES

lacked sufficient data to accurately describe the higher education system in Kazakhstan, key officials within the Ministry wanted to know just how big a data challenge they faced.

We began with two key questions:

1. To what extent was the data supplied to MoES by the nation's universities reliable?
2. What accounted for the wide variation in data supplied to MoES?

What quickly became clear was that MoES was quite literally awash in data – data that was seldom examined and, as the Roadmap project team discovered, almost never relied upon. Among the most basic data-processing axioms is the notion that data that are unexamined quickly lose whatever value they might once have had. If no one is paying attention – running consistency checks, or using the data to produce reports that are, in fact, read – data first loses its relevance and shortly thereafter its reliability. The worst-case scenario pertains to data that are never examined, and hence are little more than empty cyphers. Such was the case at both MoES and across the institutions that were expected to supply reliable data.

The first answer to the question of why the Roadmap project found it all but impossible to assemble reliable summary data was simply that no one was paying attention – no one was responsible, no one was in charge. The solution, we argued, was to create a situation where the data that were collected were widely examined and actually used. Our answer was to create in Kazakhstan something that was roughly analogous to the US Department of Education's Integrated Postsecondary Education Data System (IPEDS). Developed over the last 20 years, IPEDS is broadly accepted as the primary repository of institutional data across all sectors of American higher education. The key variables are all there: faculty, staff and student counts, a range of admission and student financial aid data, a range of financial data, and the scale and scope of programme. IPEDS reports institutional control (public or not-for-profit private or private-for-profit) and length of degree and certificate programme, as well as each institution's Carnegie Classification. Using the data redundancy within IPEDS makes it possible, to put the matter discreetly, to identify those institutions that fudge their data. The role IPEDS data now play in the calculation of the key university rankings in the US practically guarantees that most institutional chief executives will pay close attention to the data their offices of institutional research

submit annually to IPEDS. To reinforce this sense of responsibility, the Department's National Center for Education Statistics (NCES) routinely sends to all presidents, chancellors, and CEOs an easy-to-read institutional profile summarising their submissions. One of the benefits of this additional scrutiny is a marked increase in the professionalisation of the institutional research function on most campuses. At the same time, the National Center for Educational Statistics – IPEDS' owner and manager – has made major investments in creating a user-friendly front end that makes the data readily available to anyone who seeks it.

Thus began the development of the Kazakhstan Data Warehouse project. The first step was to assemble a group of Kazakhstan senior university administrators to participate in a professional development programme at the University of Pennsylvania's Graduate School of Education. At that session the participants were introduced to IPEDS and invited to explore how that system made for the ready comparison of individual institutional data across a wide spectrum of functions and attributes including enrollments, costs and revenues, faculty characteristics and performance metrics.

Believing that MoES had IPEDS-like summary data in the 21-plus forms the institutions filled out and submitted, the Data Warehouse project set two goals for itself: first, to develop a more useable, IPEDS-like interface to allow a wide variety of MoES and university personnel to peruse the data stored in the ESUVO database; second, the Data Warehouse project began planning for a series of leadership seminars which would teach participants how to access the ESUVO data and explore what could be done with that data once accessed.

At this point we discovered that MoES had pursued its own strategy for ensuring ESUVO's data reliability. The logic was nearly flawless – rather than have university staff summarise and then submit their institution's data, MoES would instead collect extracts from the universities' management information systems. Rather than having institutional staff count the number of faculty or students or staff, the institution would submit a file in which each faculty member, student or staff member was an individual record whose elements were the basic demographic elements of interest both to MoES and to the institutions: age, gender, length of service, qualifying degrees and specialties, home towns or countries, and so on. Thus MoES's new Platonus system integrated the universities' internal management information systems with MoES's automated process of transferring data.

Once we understood how the Platonus system worked, the task the Data Warehouse project had set for itself was greatly simplified. All we needed to do was develop an effective query interface giving all interested parties ready access to the ESUVO data system. The Data Warehouse project's anticipated importance was probably best reflected in the testimony of a former MoES official who later joined the project's development team.

... if ESUVO allows only the Ministry as a strategic state principal to see the whole picture about higher education institutions, then this data warehouse (the DWP) allows every participating higher education institution to see its place among like institutions. And, of course, it allows us to make decisions from a more transparent basis, it allows ... or even let's say, forces the higher education institutions to be more accountable. (Interview with Saule Abeldinova)

The Data Warehouse interface was constructed using Microsoft Windows' Excel Pivot Table utility. While some representatives of participating universities interpreted using Excel pivot tables as a 'user' approach, in contrast with what some would interpret as a more 'professional' approach requiring the application of more advanced IT programmes, we explained the advantages of using Excel and its pivot table utility in starkly different terms: the format greatly reduced the cost of providing institutions a usable data utility for both reviewing and comparing their data with those supplied by other institutions.

A further advantage of casting the Data Warehouse as an Excel Workbook employing pivot tables was the ready availability of summary counts of the individual based data elements. That meant that the pivot tables employed by the Data Warehouse software could be built from a database using individual student and staff records to produce true summaries. But at the same time, when users opened a pivot table, they would not see any of the individual records reflected in the summary counts of the data. The actual data remained in an encrypted Box 'cloud' storage account that only the Data Warehouse technical staff could access. Provided the data input by the participating institution was both accurate and complete, the Excel utility could produce reliable summaries while simultaneously keeping the individual data confidential.

Starting in April 2014, the project proceeded through two phases. During the prototype phase, eight Kazakh universities, along with MoES

staff, were invited to test the data utility that allowed rapid comparisons of key data elements between and among the participating institutions. The Prototype was completed in December 2014 and was presented to the eight participating institutions. During the second phase, the Data Warehouse project was extended to include 16 institutions. At the conclusion of the second phase in October 2015, participating institutions were supplied with an Excel Data Warehouse workbook along with a user's manual containing data definitions and instructions for using the pivot tables. Each institution's Data Warehouse workbook contained its own data and a coded set of data for each of the other participating institutions.

Initially, the Data Warehouse utility was expected to increase the reliability of the higher education data available to both MoES and the higher education system for which it was responsible. But before leaving the MoES, the official responsible for developing both the ESUVO and Platonus systems had also come to understand the Data Warehouse's potential for reducing the amount of labour necessary to produce reliable data.

... if we combine ESUVO and Data Warehouse utility, I think it will be a good system that is able to decrease labor inputs by 4-5 times ... it will be a strong system that will allow us to see ... in dynamics and in comparison, all is transparent, they (data) will be placed on website. (Confidential interview with Saule Abeldinova)

The initial goal of the ESUVO system was to collect and make data available. Putting in place a user-friendly interface for customised reports and establishing a comprehensive data archive, capable of tracking changes over time, only later became a MoES priority. And only then was the power of Excel fully appreciated.

The 16 universities participating in the Data Warehouse project in 2015 were selected because of their general reputation for being well-run institutions: nine were national universities, six state universities, and one was a private university. As in the prototype phase, two different extracts were requested: Faculty-Staff data (including faculty and administration staff) and Student data (including postsecondary education: Bachelor's, Master's and doctoral levels of all forms; full-time, part-time, distance and other). Ultimately, Faculty-Staff data was provided for 15 of the 16 participating institutions; Student data was provided by 14 of the 16 participating institutions. The Faculty-Staff individual data

records had eight fields: age, gender, length of service at the institution, position, length of scientific and pedagogical service, academic degree, and academic rank. The Student individual data records had 14 fields: Year of Study, Grade Point Average (GPA), Age, Programme, Major Code, Major, Nationality, Language of Study, Gender, Credits, City, School, Year of Entry, and Degree sought.

DATA RELIABILITY

Among the other goals sought by MoES was the hope of avoiding what one official called the 'the human factor' in developing the data. To test the reliability of the individual data records that the 15 universities supplied for the ESUVO system, we developed a rudimentary set of measures for gauging completeness, accuracy and comparability.

Data completeness and data accuracy were calculated and principally by identifying the confusions that helped explain the absence of both data completeness and data accuracy across the Data Warehouse database.

DATA COMPLETENESS

The data completeness score for each field for a given institution was the total number of individuals at the institution for whom there was valid data. Next, for each institution and each field an average data completeness score was calculated by adding the completeness scores for all fields and dividing by the number of fields. In compiling the management information that the Platonus system transferred to MoES and the Data Warehouse, the institutions had difficulty supplying complete data for three elements within their Student data systems: City, GPA and School. On average, 30% of student records did not include a City data element; on more than half of the records, fields for GPA and School were left blank. As might be expected, the completeness scores also varied substantially across the 15 participating institutions that supplied Student data. Altogether, eight universities supplied incomplete data for at least one of the three data fields, one institution failed to provide complete data in two of the fields, and one institution supplied incomplete data in all three fields.

The Faculty-Staff data were more complete, though for no single field was the data complete for all 15 universities. On average, nearly a third of the data in the two Length of Service fields were missing. On average, 10–15% of the data denoting academic rank and position were missing. Across the 15 institutions that supplied Faculty-Staff data, at least 25% of the data proved to be missing. A variety of factors might have accounted for the low completeness rates for some elements and some institutions. The most basic explanation involves the competence of the administrative officials and staff responsible for their institution's Student and Faculty-Staff record systems. Some university representatives also suggested that some data might have been accidentally deleted while they were transferring from internal institutional information systems to the ESUVO system or to the Data Warehouse.

DATA ACCURACY

Data accuracy could be calculated for those categories where errors were obviously visible or where there were anomalous statistical deviations for the Year of Study, GPA, Age and Year of Entry fields in the Student data. For the Faculty-Staff data, the fields that could be similarly checked for their plausibility were Age, Length of Service in higher education, and Length of Service in the institution. Age was the easiest category in which to spot mis-entered data as, for example, when an institution's data records indicated more than 10% of the faculty were 100 years or older. For each of the requisite fields we established a maximum/minimum expected value and then counted the number of data entries that were outside those expected norms.

Against this standard the Student data held up reasonably well. For only one field, GPA, did 10% or more of the records fall outside the expected norms, and only one university supplied data that, across all four inspected fields, were judged to be only 81.5% accurate. Faculty-Staff data followed much the same pattern. For just one field, Age, was there a 10% average error rate. For the other four fields being tracked, the error rate, on average, was 5% or less – a more encouraging result.

DATA COMPLIANCE

Combining our measures of data completeness and data accuracy yielded an initial judgment of the degree to which an institution's data was reliable. We used the following standards:

- Fully Compliant = combined rate of completeness and accuracy is higher than 99%
- Mostly Compliant = combined rate of completeness and accuracy is between 90% and 99%
- Suspect = combined rate of completeness and accuracy is between 70% and 90%
- Not compliant = combined rate of completeness and accuracy is less than 70%

For the Faculty-Staff data the combined rates of completeness ranged from a high of 98.7% to a low of 50.8%. No institution was judged to be fully compliant, and six of the fifteen (40%) were mostly compliant. The remaining nine universities were judged to be non-compliant.

The Student data on average proved to be even less compliant. Again, no institution had an average error rate of less than 1% and nine institutions had error rates that exceeded 10%. Only five institutions had mostly compliant Student data.

DATA VARIABILITY

Recall that one of the principal goals of the Data Warehouse project was to develop a utility that allowed ready comparison of data across a set of individual institutions. But true comparisons require a high level of consistency across all data elements and all institutions. For Kazakhstan the requirement for data unification ought to be easily satisfied, since the Kazakhstani higher education system is unified to a greater degree than most other national systems. Most information and most data elements are regulated centrally. For example, the higher education list of majors (specialties) is codified in the national Classification Code of Specialties, and the list of academic degrees and ranks are also unified. And yet inspection of the individual institutional data revealed a high degree of variability in some data fields across institutions and even

within an institution. A simple explanation for this variability is that the data was entered by different departments each operating with its own set of definitions.

In the Student data, three categories were characterised by a high level of variability: Programme, City and School. Inspection of the individual data entries revealed many confusing entries. Some departments used self-defined abbreviations instead of entering the full standard title. In other cases, the responsible data clerk would enter a sub-specialty instead of the title, for example, of an academic programme. In some cases, English terms were mixed in with Russian names, though Russian was the mandated language. Similar confusion existed in the naming of cities and schools.

For Faculty-Staff data it was the Position category that proved to be the most variable. The types of confusion in some elements were similar to those in the Student data: inconsistent abbreviations, too much or too little detail, entering a sub-specialty instead of the approved name of a position, using codes to identify a position instead of the approved name, entering academic rank instead of the position title, mixing of Russian and English terms, and using non-standard terms often inconsistently.

LESSONS LEARNED

These inconsistencies across the data entered by the institutions into their own Platonus systems, and then transferred to the ESUVO system and into the Data Warehouse, constitute that project's most basic lesson. The problems the Roadmap project encountered developing a cogent higher educational portrait for Kazakhstan was rooted not in MoES, that is the Ministry, but in the institutions for which MoES was ultimately responsible. The Ministry did, in fact, have a functioning data utility that allowed Ministry staff to access data supplied by the institutions to the ESUVO system. The problem was not the software or even MoES's strategies for processing the data the universities supplied, but rather the data elements themselves.

The Data Warehouse project did not examine institutional data practices per se other than to share with the participating institutions our conclusions about data compliancy and comparability. What struck us most was the relatively muted response to the problems we had

identified. In an American university error rates that often exceeded 10% would have called into question the basic accuracy and reliability of all the data the university was using to manage itself. What distinguishes the American experience is not just the institutions' investment in increasingly sophisticated technologies for storing, accessing and analyzing their management data but, just as important, the institutions' commitment to a data discipline that is capable of bestowing a crucial legitimacy on the data systems themselves. The taunt 'garbage in – garbage out' is one that haunts even the best American information technology organisations. And those within the nation's principal research universities who distrust administrative imperatives know that all they need do to win an argument with their administration is to prove that it is using faulty data, even though the conclusions the administration has drawn are most likely correct.

It is data discipline that promotes the accountability that in turn justifies the institution's claim to autonomy. Kazakhstan is only halfway there. There is a growing dialogue on the importance of transparency and autonomy. There are parallel arguments that only a system of accountability – both within each university and between the universities, both collectively and individually, and the publics they served – would ensure the success of the nation's reform agenda. MoES, after several false starts, has in place the makings of a management information system with the capacity to serve both the institutions' and MoES's needs. Success will depend on data discipline and the necessary habits of management that use data to make evidence-based decisions.

The largest lesson taught by Kazakhstan's attempts to integrate institutional and system-wide educational data in support of a reform agenda is that what is required is a political commitment to institutional autonomy-cum-accountability and a parallel commitment to management information systems that incorporate data discipline in pursuit of evidence-based decision making. In developing the Kazakhstan Data Warehouse project we encountered a number of officials, both within MoES and at the universities participating in the project, who said that what was required was a management information strategy that minimised the 'human factor'. We have come to a different conclusion. What is required is a strategy and a set of resources capable of reforming management practices within the nation's universities such that data discipline and the making of evidence-based decisions become the prevailing norm. That is not an easy task, particularly within any nation in which a

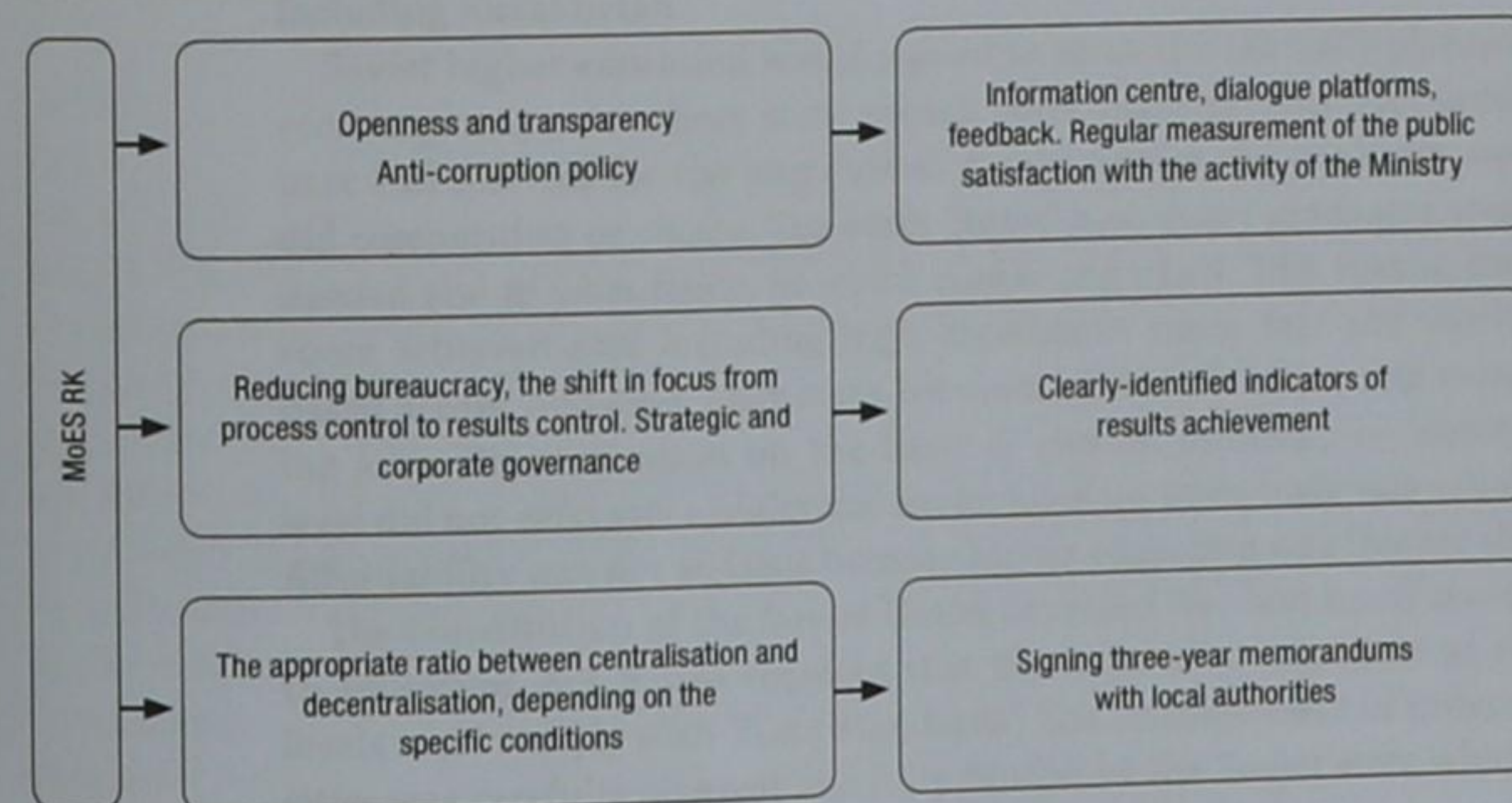
majority of its universities are under-resourced – where the technology is both limited and outdated and the management staff that use and maintain the institutions' data files remain untrained, and perhaps unpersuaded, as to the importance of transparency and autonomy.

In the Fall of 2013, MoES issued a detailed report partially in response to the issues being raised by the Roadmap project's reports and recommendations. That presentation opened with a quotation from a speech by the President of the Republic to the Eurasian Forum on Emerging Markets:

Development of the human capital in the future will allow our country to lay foundations of creating the economy which will be intertwined with science and will be fully competitive. (Nazarbayev 2013)

The presentation reminded its audience that the oft-stated goal of the Republic's government was the 'Joining of Kazakhstan to the list of the most developed 30 countries of the world.' Each of the educational strands of that policy were then reviewed, beginning with pre-school and proceeding through secondary school, technical and vocational training and education (TVET), and ending with tertiary education. MoES's presentation then concluded with a restatement of the management principles that guided its efforts.

Figure 1: Principles of the Ministry of Education and Science of the Republic of Kazakhstan activity



(Source: Adapted from MoES 2013)

What the Data Warehouse project demonstrated was that the kinds of educational reforms MoES are seeking are within the realm of the possible. At the moment they are unattainable – and would remain so without a national management information system, which fosters within each of the Republic's universities, a commitment to data transparency and the practices that promote a culture of data discipline.

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10 The imperative of faculty participation in university governance for higher education development in Kazakhstan

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As the introductory chapter in this volume explains, Kazakhstan is a young country in transition from the previous centralised Soviet system to a market economy, democratic governance, civil society and the rule of law. The reform of higher education is an integral part of the transition process since it is responsible for cultivating human capital. The most significant challenge for higher education is to develop institutions that have greater autonomy and to move towards a model of shared governance with greater faculty participation in academic and student affairs. While the Soviet Union has disappeared, elements of its higher education system remained in the new independent states including Kazakhstan.

Soviet higher education was designed to serve the centrally planned economy, a system where state-owned enterprises produced all products and services for the population. A free market did not exist, nor did competition or choice. The state 'knew' how many graduates were needed and in what fields, in which region and when. This system had some achievements including high enrollment rates, fair and merit-based access, and close alignment between higher education and existing jobs. Discrimination on the basis of gender, ethnicity or income level did not exist since under the Soviet ideology everybody was equal. Affordability was not an issue because higher education was free for all.

The Constitution of the Soviet Union provided free and equal access to education. But it also required that the content of education at all levels must comply with 'State Standards'. The establishment of universities was carefully planned and fully funded by the Soviet state which