DATA-DRIVEN DECISION-MAKING AS A COMPONENT OF SCHOOL MANAGEMENT EFFECTIVENESS

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Abstract

This thesis examines how data-driven decision-making can improve school management. Drawing on international research, it considers how assessment results, attendance records, classroom evidence, and staff feedback can support planning and school improvement. The analysis shows that data are most useful when interpreted in context, discussed collaboratively, and linked to action. For Uzbekistan, strengthening school leaders' data literacy and connecting evidence with school development plans may support more effective and transparent management.

Keywords: data-driven decision-making, school management, educational leadership, school effectiveness, data literacy, Uzbekistan.

ПРИНЯТИЕ УПРАВЛЕНЧЕСКИХ РЕШЕНИЙ НА ОСНОВЕ ДАННЫХ КАК КОМПОНЕНТ ЭФФЕКТИВНОСТИ УПРАВЛЕНИЯ ШКОЛОЙ

Аннотация

В работе рассматривается роль принятия решений на основе данных в повышении эффективности управления школой. На основе международных исследований анализируется, как результаты оценивания, посещаемость, наблюдения за учебным процессом и обратная связь педагогов помогают планировать развитие школы. Данные приносят наибольшую пользу, когда их рассматривают с учётом контекста, обсуждают совместно и используют для практических действий. Для Узбекистана важными направлениями являются развитие навыков анализа данных у руководителей и связь выводов с планами развития школы.

Ключевые слова: решения на основе данных, управление школой, образовательное лидерство, эффективность школы, анализ данных, Узбекистан.

MAKTAB BOSHQARUVI SAMARADORLIGINING TARKIBIY QISMI SIFATIDA MA'LUMOTLARGA ASOSLANGAN QAROR QABUL QILISH

Annotatsiya

Ushbu tezis maktab boshqaruvi samaradorligini oshirishda ma'lumotlarga asoslangan qaror qabul qilishning ahamiyatini o'rganadi. Xalqaro tadqiqotlar asosida baholash natijalari, davomat, dars kuzatuvlari va o'qituvchilar fikridan maktab faoliyatini rejalashtirishda foydalanish masalalari tahlil qilinadi. Ma'lumotlar kontekst asosida talqin qilinib, jamoaviy muhokama va amaliy harakatlar bilan bog'langandagina samarali bo'ladi. O'zbekiston uchun maktab rahbarlarining ma'lumotlarni tahlil qilish ko'nikmalarini rivojlantirish va natijalarni maktabni rivojlantirish rejalari bilan bog'lash muhimdir.

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Kalit so'zlar: ma'lumotlarga asoslangan qaror qabul qilish, maktab boshqaruvi, ta'lim liderligi, maktab samaradorligi, ma'lumotlar tahlili, O'zbekiston.

I. INTRODUCTION

School management increasingly requires leaders to make decisions in conditions where expectations for learning outcomes, transparency, inclusion, and responsible use of resources continue to grow. A school director must decide which learning needs require attention, how staff time and material resources should be allocated, which professional-development activities are likely to be useful, and whether an intervention is producing the intended results. These decisions are stronger when informed by systematic evidence rather than intuition alone. Data-driven decision-making (DDDM) therefore represents an important dimension of contemporary educational leadership.

In this thesis, data-driven decision-making refers to the purposeful collection, interpretation, and use of multiple forms of evidence to guide educational and organizational decisions. Relevant evidence may include student assessment results, attendance and progression records, classroom observations, teacher and student feedback, family perspectives, and information about staffing and resources. Data should not be understood as numbers alone: qualitative evidence can explain why a pattern appears and how school members experience a policy or intervention.

International research indicates that data use is most productive when it forms part of a continuous improvement process. Schools identify a problem, examine evidence, develop an action, monitor implementation, and review whether the action has improved learning or school operations. However, data can also be misused. A narrow focus on test scores may overlook student wellbeing, classroom context, or unequal access to learning opportunities. Performance indicators can encourage superficial compliance if they are collected mainly for external reporting rather than improvement.

For Uzbekistan, the topic is relevant as schools are expected to strengthen planning, accountability, and the quality of educational provision. School leaders need practical ways to interpret available information, establish priorities, and connect school development plans with observable needs. The central question is not whether schools should collect data, but how they can use appropriate evidence responsibly and consistently to improve management and learning. The aim of this thesis is to examine the role of data-driven decision-making in school management effectiveness and to identify practical principles that may support its responsible use in Uzbekistan. The object of the study is the school management process as an organizational system. The subject is the use of educational and administrative data in planning, decision-making, implementation, and evaluation of school improvement.

The thesis addresses three questions: (1) what forms of data are most relevant to school management decisions; (2) what organizational and professional conditions enable effective data use; and (3) what principles could support the development of data-informed school management in Uzbekistan?

II. LITERATURE REVIEW AND METHODOLOGY

2.1. Conceptualizing data-driven decision-making

The literature uses related terms such as data-based decision-making, evidence-informed practice, and data use for school improvement. Although these expressions overlap, evidence-informed decision-making is often the more cautious term because data do not mechanically determine a single correct response. Evidence must be interpreted alongside professional expertise, local circumstances, and the values of the school community. Schildkamp and Kuiper (2010) describe data use as a process through which educators analyse information about students and teaching in order to improve educational

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practice. This approach places interpretation and action at the centre rather than treating data collection as an end in itself.

Mandinach and Gummer (2016) emphasize data literacy for teaching: the knowledge and skills required to transform information into instructional decisions. In a school-management context, this competence extends beyond classroom assessment to include the ability to ask useful questions, judge data quality, recognize limitations, identify patterns, communicate findings, and evaluate the consequences of a decision. Leaders do not need to become statisticians, but they should be able to challenge misleading conclusions and support staff in making careful interpretations.

A useful distinction is between data availability, data analysis, and data use. A school may have extensive records but lack routines for interpreting them. It may identify a pattern but fail to translate it into a feasible action. Effective DDDM therefore depends on a connected sequence: a clearly defined problem, relevant evidence, collaborative interpretation, an action plan, implementation, and follow-up review.

2.2. Data and school management effectiveness

School management effectiveness can be understood as the capacity to organize people, resources, and processes in ways that support learning, a safe school environment, and continuous improvement. Data can strengthen this capacity in several areas. First, assessment evidence can help identify learning gaps and determine whether additional instruction or targeted support is required. Second, attendance and participation information can help schools recognize patterns that may be associated with disengagement or barriers to access. Third, classroom observation and feedback can inform instructional support and professional learning. Fourth, budget, staffing, and resource-use information can support more transparent operational planning.

Robinson, Lloyd, and Rowe (2008) show that leadership practices closely connected to teaching and learning can have a meaningful relationship with student outcomes. Data-informed leadership can support such practices when evidence is used to focus attention on learning, coordinate staff work, and evaluate interventions. Similarly, the OECD's work on school leadership and improvement emphasizes the importance of coherent leadership, professional capacity, and the use of information to guide school development (Pont, Nusche, & Moorman, 2008).

Nevertheless, indicators must be interpreted in context. A low average score, for example, may reflect curriculum alignment, language demands, attendance, assessment design, or differences in prior learning. Treating a single measure as a complete description of school quality risks confusing a signal with an explanation. Multiple sources of evidence and professional discussion are therefore necessary.

2.3. Conditions and risks associated with data use

Research identifies several conditions that support meaningful data use. These include leadership commitment, time for collaborative analysis, accessible and reliable information, staff data literacy, a culture of inquiry, and a clear connection between analysis and action. Datnow and Park (2014) describe data-driven leadership as a social and organizational practice, not merely a technical activity. The way school leaders frame data discussions matters: staff are more likely to investigate problems openly when data are used for learning and improvement rather than blame.

The risks are equally important. Incomplete records, inconsistent definitions, delayed reporting, and incompatible systems can undermine confidence in the evidence. Staff may focus on indicators that are easy to count rather than those that matter most. High-stakes pressure can encourage selective reporting or teaching narrowly to a test. Privacy and confidentiality also require attention, particularly when

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student-level information is shared. Schools should collect only information relevant to a legitimate educational purpose, restrict access appropriately, and avoid using data to label students or teachers unfairly.

The analytical framework of this thesis therefore treats data-driven decision-making as an interaction between evidence quality, staff capability, leadership routines, ethical safeguards, and follow-up action. The presence of digital systems alone is not considered sufficient evidence of effective data use.

2.4. Methodology

The thesis uses a comparative-descriptive approach based on a focused review of international research and policy literature on school data use, data literacy, educational leadership, and continuous improvement. Key conceptual contributions include work by Schildkamp and Kuiper (2010), Datnow and Park (2014), Mandinach and Gummer (2016), and Robinson et al. (2008). The analysis also draws on broader international policy perspectives concerning school leadership and education-system improvement.

The material is examined thematically. First, the forms of data relevant to school management are classified by their function. Second, the conditions that support or obstruct effective use are identified. Third, these themes are considered in relation to the needs of school management in Uzbekistan. This is a literature-based conceptual analysis, not an empirical survey of Uzbek schools; consequently, the recommendations should be understood as directions for policy and practice that require local testing rather than as measured findings about every school.

III. RESULTS

The review suggests that data-driven decision-making contributes to school management effectiveness when evidence is connected to a recurring improvement cycle. Five interdependent components emerge: purposeful data selection, reliable interpretation, collaborative professional discussion, action-oriented planning, and evaluation of results. These components are presented below.

3.1. Selecting data according to the decision

The first result is that data should be selected in relation to a specific management question. Collecting every available indicator can create an excessive reporting burden and obscure priorities. If a school wants to improve reading comprehension, relevant evidence may include item-level assessment results, samples of student work, lesson observations, student attendance, and teacher reflections. If the issue is persistent absence, the school may need attendance patterns alongside conversations with students and families to understand possible causes.

A practical distinction can be made between learning data, participation data, process data, and resource data. Learning data describe progress and achievement. Participation data include attendance, engagement, and access to activities. Process data concern the implementation of teaching approaches, interventions, and school procedures. Resource data concern staffing, time, facilities, and expenditure. Combining these categories allows leaders to examine not only what outcomes are occurring, but also what processes and conditions may be associated with them.

The principle is relevance rather than volume. Every indicator should have a clear purpose, an identifiable source, a reasonable collection schedule, and a person or team responsible for interpreting it. This can reduce unnecessary paperwork and help staff focus on questions that matter for students and school improvement.

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3.2. Interpreting evidence in context

The second result is that data become useful through interpretation. Numerical results can reveal patterns, but they rarely explain those patterns on their own. A difference between classes, for example, may be related to prior attainment, curriculum coverage, student attendance, assessment conditions, or the composition of the groups. Before deciding on a corrective measure, leaders should check whether the comparison is valid and whether other evidence supports the initial interpretation.

Triangulation is a particularly useful practice: examining the same question through more than one source. Assessment results can be considered alongside student work, classroom observations, teacher explanations, and student feedback. When the sources converge, confidence in the interpretation may increase; when they differ, the discrepancy becomes a question for further investigation. Such a process supports professional judgement instead of replacing it with a single score.

School leaders should also distinguish description from explanation. A dashboard may show that attendance declined during a particular period, but it cannot by itself establish why. Data-informed management requires leaders to frame explanations as hypotheses, seek additional evidence, and avoid conclusions that exceed what the information can support.

3.3. Building collaborative data-use routines

The third result is that data use is more sustainable when it is embedded in collaborative routines. A school can establish regular meetings in which staff examine a small number of priority indicators, identify learning needs, share possible explanations, and agree on next steps. Such meetings should be structured around inquiry rather than blame. The purpose is to improve collective understanding and practice, not to rank individual teachers without context. Distributed leadership can support this process. Subject leaders, grade-level coordinators, counsellors, and teachers may contribute different forms of expertise. The school director remains responsible for ensuring that discussions are focused and that decisions lead to action, but interpretation need not be concentrated in one person. This shared approach can strengthen ownership and make it more likely that the agreed actions will be implemented.

A useful meeting routine includes four questions: What does the evidence show? What might explain the pattern? What action will we take, and who is responsible? When will we review the result? Recording concise answers creates continuity between meetings and prevents data discussions from becoming isolated reporting events.

3.4. Connecting analysis to school development and professional learning

The fourth result is that data use has limited value unless it changes practice. Findings should inform school development priorities, classroom support, allocation of resources, and professional learning. If evidence suggests that students struggle with a particular skill, the response may include collaborative lesson planning, targeted teaching strategies, peer observation, or carefully designed intervention sessions. The school should then identify how progress will be checked.

The connection between data and professional learning is especially important. When teachers can examine student work and assessment patterns together, professional development can respond to demonstrated needs rather than rely solely on generic training topics. The same logic applies to management development: school leaders may need support in interpreting indicators, communicating findings, setting measurable objectives, and evaluating whether an initiative is working.

A school development plan can make this connection explicit by linking each priority to a baseline, a target, an action, a responsible person, a timeline, and a review measure. Targets should be ambitious

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but realistic, and qualitative evidence should be included where numerical indicators cannot adequately represent the intended improvement.

3.5. Monitoring, ethics, and accountability

The fifth result is that effective data use requires follow-up and ethical safeguards. After an action is implemented, the school should review whether it was carried out as planned and whether the expected change occurred. If the result is weak, the appropriate response is to reconsider the hypothesis, implementation, or suitability of the measure rather than automatically attributing failure to individuals.

Data governance is part of management quality. Student records and staff information should be accurate, securely stored, and shared only with people who need them for legitimate educational purposes. School leaders should explain why information is collected and how it will be used. Comparisons should account for relevant contextual factors, and data should not be used to stigmatize students, families, or teachers.

Accountability and improvement are not necessarily opposing aims. Transparent indicators can help a school explain its priorities and progress, but accountability is more constructive when it encourages honest diagnosis and corrective action. A balanced system uses measures to support learning while recognizing that not all important aspects of school quality can be captured by numerical indicators.

3.6. Implications for Uzbekistan

For Uzbekistan, the findings point to several practical directions. First, school leaders should be supported in developing data literacy, including the ability to read basic trends, check data quality, interpret assessment information, and communicate findings responsibly. Second, schools can establish manageable evidence-review routines linked to existing planning and monitoring processes, rather than create additional reporting structures without a clear purpose.

Third, data use should be connected to school development plans and teacher professional learning. A school should be able to explain how an identified need led to a selected action and how subsequent evidence was used to evaluate the result. Fourth, common definitions and clear procedures for collecting and handling information can improve comparability and reduce avoidable inconsistencies. Finally, implementation should be sensitive to differences in school size, resources, student population, and digital capacity.

These proposals are not claims that all Uzbek schools currently face identical problems. Since this thesis is based on literature rather than original fieldwork, their relevance should be examined through pilot studies, interviews with school leaders and teachers, and analysis of existing school planning practices.

IV. DISCUSSION

The analysis supports the view that data-driven decision-making is a component of school management effectiveness, but not an independent solution to management challenges. Data have value when they improve the quality of questions leaders ask, strengthen the reasoning behind decisions, and make it possible to learn from the consequences of action. Without these links, digital dashboards and extensive reporting can increase administrative workload without improving educational outcomes.

An important implication is that effective data use depends on organizational culture as much as technical capacity. A school may have accurate information but still fail to use it if staff fear blame, lack time for discussion, or do not see how findings influence decisions. Conversely, a culture of professional inquiry can make even relatively simple evidence useful when teams examine it carefully and revisit their

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assumptions. Leadership therefore involves creating conditions in which evidence can be discussed honestly and converted into shared responsibility.

The findings also caution against equating effectiveness with performance indicators alone. Standardized assessments can help identify learning gaps, but they cannot fully represent creativity, wellbeing, inclusion, student agency, or the quality of relationships. A narrow indicator system can distort priorities if schools are rewarded only for what is easiest to measure. A more defensible approach combines quantitative measures with qualitative evidence and professional interpretation.

For Uzbekistan, the practical challenge is to make data use routine without making it bureaucratic. A small number of meaningful indicators, regular team discussions, clear responsibilities, and planned follow-up may be more useful than a large collection of disconnected reports. The approach should also protect privacy and avoid simplistic comparisons between schools operating in different conditions.

The principal limitation of this thesis is its reliance on published literature and conceptual analysis. It does not establish causal relationships between specific data practices and management outcomes in Uzbek schools. Further empirical research is needed to understand which data are currently available to school leaders, how they are interpreted, what barriers teachers experience, and whether structured evidence-review routines improve decision quality over time.

V. CONCLUSION

This thesis has examined data-driven decision-making as a component of school management effectiveness. The literature review indicates that data can support more informed planning, instructional improvement, resource allocation, and accountability when they are selected purposefully, interpreted in context, discussed collaboratively, and linked to action. The key finding is that the effectiveness of data use depends not on the volume of information collected, but on the quality of the process through which evidence informs decisions and subsequent learning.

Five practical principles emerge: define the decision before collecting data; combine multiple sources of evidence; build staff capacity for interpretation; connect findings to school development and professional learning; and monitor results while protecting privacy and fairness. These principles can help prevent data use from becoming a purely administrative reporting exercise.

For Uzbekistan, the study recommends strengthening school leaders' data literacy, establishing regular and manageable evidence-review routines, improving consistency in data collection, and connecting findings with school development plans. These measures should be adapted to local conditions and introduced with attention to staff workload, data protection, and the professional culture of each school.

Two directions for further research are proposed. The first is empirical: interviews and surveys with school leaders and teachers could identify current practices, needs, and barriers in data-informed management. The second is developmental: a pilot framework for school evidence-review meetings could be designed and evaluated, with attention to the quality of decisions, implementation of agreed actions, and student learning indicators. Such work would help determine which approaches are feasible and effective in the Uzbek context.

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