

QUALIMETRIC METHODS IN ASSESSING THE EFFECTIVENESS OF MANAGEMENT DECISIONS IN UNIVERSITIES

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Abstract

Purpose: Management decision in the university is a process of convergent analysis, forecasting and timely resolution of problem situations, aimed at achieving synergetic results. The research studies the advantages and feasibility of using qualimetric methods for evaluating effectiveness of the university's management decisions.

Methodology: Our proposal is to use the method, based on qualimetric analysis, in assessing the effectiveness of management decisions in the university. The theoretical propositions and the argumentation of the research findings have been grounded with the following general scientific methods system-thinking approach, structural and level-based, logical and economic-based, as well as statistical analysis.

Main Findings: The management decision effectiveness is based on the level of collaboration in decision-making. The degree of collaboration in decision-making is determined by the involvement of various stakeholders in the process. Index of timeliness of a management decision implementation is the ratio of standard time to the actual time spent. The decision is effective if the index value is equal to 1 or exceeds it. Decision efficiency is evaluated based on the quality of its implementation. The integrated indicator of decision-making effectiveness is a combination of values for all four parameters.

Implications/Applications: The practical significance of the research predetermined by the fact that application of this methodology contributes to optimizing the interaction of organizational structures on the management synergy basis, and, as a result, to improving the quality of educational services provided by the university. Using the method of qualimetric analysis raises the level of personnel involvement in the process of managerial decision-making, objectivity and decisions quality.

Keywords: University, management decision effectiveness, qualimetric methods, assessment, collaboration, index.

QUALIMETRIC METHODS IN ASSESSING THE EFFECTIVENESS OF MANAGEMENT DECISIONS IN UNIVERSITIES

Management decision-making in universities is a rather complicated, important and a formalized process that requires a high professional level of the decision-makers, as any decision taken in a university, one way or another, affects its core activity - education. In this regard, the university top managers must be preoccupied with the question: "How will this management decision affect the university's performance?"

It is important to take into account everything education focuses on - education process, science, business and the social factor, as only considering them simultaneously one can make a correct and effective management decision. Therein lies the difficulty and complexity of management decision-making in universities.

In recent years, a number of theoretical and applied research papers on management decision-making in universities have been published. At the same time, researchers in economics do not pay sufficient attention to the methodological support of evaluation of the effectiveness of the university management decisions.

The goal of the research is to study the advantages and feasibility of using qualimetric methods for evaluating the effectiveness of management decisions made in universities.

The hypothesis of the research is that qualimetric methods can be used to evaluate the effectiveness of management decisions in higher universities.

The subject of the research is a set of organizational and economic interactions connected with the decision-making process and evaluation of the effectiveness of management decisions in Kazakhstan universities.

The object of the research is the process of management decision-making in universities of Kazakhstan.

Theoretical and methodological bases of the research are fundamental works on management theory as well as works of modern scientists, which focus on making managerial decisions in higher education institutions; among them ([Allen & Seaman, 2007](#); [Belousov, Vostroilov, & Shevchenko, 2006](#); [Chong & Lee, 2017](#); [Danillayev, Malivanov, & Polskiy, 2010](#); [Fayol, 1949](#); [Kirillov, 2013](#); [Korotkov, 2006](#); [Lebedeva, 2011](#); [McGregor, 1987](#); [Mizyakina, 2012](#); [Mowday, Porter, & Steers, 2013](#); [Rensis Likert, 2010](#); [Semkin, 2003](#); [Vikhareva, 2009](#)) etc.

The theoretical novelty of the research is to justify the possibility of using qualimetric methods for evaluating management decisions made in higher education institutions.

The practical significance of the research is in contribution of the methodology, developed by the authors for assessing the effectiveness of management decisions taken in higher educational institutions of Kazakhstan, to optimization of the interaction of organizational structures on the management synergy basis, which encompasses the hierarchy of values, strategic goals of the university, employees' incentive mechanisms. As a result, the quality of the educational services provided by the university is improving, thus, the university's competitiveness is growing both in the domestic and international higher education market.

REVIEW

The most important feature of a management decision in a university is its convergent character, as the decision should cover aspects of many fields of science: psychology, management, marketing, finance, computer science, etc ([Rijal, 2016](#)). It is due to the fact, that the decision-making process is characterized not only by the choice of the trajectory of the university's further activity but also by the identification of a group of people which the decision affect. It is also due to a certain way of bringing to them the information about the decision in such a way that it should motivate the university faculty and staff, students and other stakeholders to accomplish the goal.

The above-mentioned reasons let us come to the conclusion that management decision-making at the university is a process of convergent analysis, forecasting and timely solutions to the challenging situations, which is aimed at achieving synergetic result for the stakeholders ([Ivanov, Avdzhyan, & Nistotskaya, 2002](#)).

There exist many approaches to the modeling of the management decision-making process, aimed at effectiveness. [Bizon \(2016\)](#), [Ayuningrat, Noermijati, and Hadiwidjojo, \(2016\)](#), [Ran, Bing, and Jean-Lee \(2011\)](#) examine the sources of differences in decision-making by a top management team, simultaneously identifying factors that have a significant impact on the outcome of a decision: the team of top managers, process control technology, management costs, etc.

[Rezaei \(2015\)](#) proposes the so-called "best-worst method" (BWM). With this, there are alternatives: best (e.g. the most desirable, the most important) and worst (e.g. the least desirable, the least important).

These criteria are identified at the beginning of the decision-making process. Then, each of the two criteria (positive and negative), and other criteria are compared. The main problem is identified and solved to estimate the weight of different criteria. The same method is applied to estimate alternatives' weight in correlation with different criteria. The final evaluation of alternative materials is obtained by aggregating the weight of different sets of criteria and alternatives to select the best option.

[Kachulyak \(2009\)](#) proposes to evaluate the effectiveness of management decisions considering the following parameters: timeliness, validity, efficiency, profitability, compliance with the overall strategy, consistency.

RESEARCH MODEL

Evaluation of management decisions effectiveness is a cyclical process in which continuous improvement and refinement of techniques and methods to achieve the objectives of the university are made on an ongoing basis.

Moreover, the effectiveness of management decision-making at the university, like the university itself, involves constant changes and development of the process itself. It should be constantly reviewed in order to continuously ensure the accomplishment of the objectives and mission of the university, as well as meeting the needs of the stakeholders.

We believe that effectiveness should be viewed as a set of results obtained in the process of management decision-making, i.e. integrated result based on management components. Then the effectiveness of management decisions shows the extent to which the university administration realizes its goals, to achieve the results to be obtained.

Therefore, there are several types of the effectiveness of management decisions taken in university:

1. Organizational effectiveness involves the development and implementation of management decisions with the fewest resources spent. It depends on how quickly and efficiently the decision-making process is organized.
2. Cost-effectiveness is the ratio of the economic results obtained by the implementation of a particular management decision, and the cost of its preparation and implementation. Profit, lower costs, obtaining additional funding sources can be an economic result.
3. Effectiveness of management decision implementation is seen as a result of accomplishing the university goals.

Methods of evaluating the effectiveness of management decisions are based on four parameters:

- The methodology of management decisions development;
- Organization of the management decision development;
- Organization of management decision implementation;
- Assessment of the management decisions quality.

The methodology of management decisions is logical organization of work on the development of management decisions, including setting up management objectives, the choice of methods of decision development, evaluation criteria for options, compiling logical operations. Management decision-making in the university, in its turn, is carried out by using

various management decision-making techniques, which include methods and techniques of operations required to develop and implement management decisions. These include methods of analysis, information processing, selection of options, etc.

Development and implementation of a management decision involve regulating and correlating activities of individual units and personnel in the decision-making process. The process is carried out by means of regulations, standards, organizational requirements, instructions, etc. Evaluation of management decisions quality involves identifying their effectiveness, i.e. the result of comparing the ratio of the effect obtained by the implementation of the decision and the university costs.

We propose to use the method, based on the qualimetric analysis principles in the evaluation of the university management decisions' effective-ness.

RESULTS OF THE RESEARCH

As the effectiveness of a university management decision can be evaluated based on the specific characteristics of the result obtained, the main factors that characterize the effectiveness of a university decision should be identified. We consider the effectiveness of the management decision to base on the following factors:

- Level of collaboration in decision-making;
- Compliance of the decision to the university development strategy;
- Timely implementation of the decision;
- The decision effectiveness.

The total sum of points on all of these parameters characterizes the effectiveness of decision-making in university management.

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As world practice shows it, in foreign HEIs the faculty and students are actively involved in making management decisions related to the general university activities. In other words, there is international experience in the collaborate form of management. At the same time, management in higher education institutions of the Republic of Kazakhstan reveals that university faculty and staff do not participate in management decision-making.

We believe that involvement of the university faculty and staff, as well as students in the process of management decision-making, has a significant impact on the decision effectiveness. The fact that both the faculty and students are interested in the university managers' taking effective decisions, since the consequences of these decisions may directly affect them.

Collaboration in management decision-making will ensure consideration of interests of all stakeholders who work/study in the university, and who will strive to fulfill them. This raises the need to assess the degree of influence of each stakeholder party on the adoption of a management decision in a particular university, as well as the level of collaboration in decision-making at various universities.

Of equal importance to the HEI is not only the process of management decision-making but also the implementation of the decision. This means that the effectiveness of the management decision is not only based on the development of high-quality decisions, but also on the proper implementation of this decision. Often, to implement a management decision is much more difficult than to make it. It is, therefore, important to estimate in advance the feasibility of the objectives and targets of the management decision.

Thus, the effectiveness of management decisions implementation is greatly influenced by the following factors: professional, business, and personal qualities of the performers, their motivation, the university material resources, as well as the factors of the internal and external environment.

With the qualimetric analysis methods, one can evaluate the collaboration level in management decision-making in a particular Kazakhstan university. Before we proceed to describe methods of testing results, it should be noted, that the composition of the management decision-making, which is, in general, the same for all Kazakhstan universities, are the founders of the state (depending on whether the university is a state or a private one), the rector and vice-rectors, the Scientific Council, the trade union, dean's offices, departments, students, and external stakeholders.

Thus, in the evaluation of the collaboration level in the university decision-making the following scale can be applied (see Appendix A for more information). As a rule, the major external stakeholders (consumers) of the services HEIs provide are employers (companies, organizations, public agencies, financial institutions, etc.), which expect graduates to have professional knowledge, skills, and competencies meeting the demands of both Kazakhstan and the global market.

To external stakeholders, foreign universities, international associations, and unions with which the university is developing international cooperation, the basis of the provision of the educational process with innovative programs that meet the needs of the world market, could be referred.

While evaluating management decision-making one should identify how many and who are involved in decision-making in relevant areas of the university activity. If a participant can take part in the decision of the range of issues only partially, we should estimate it as 0.5, but not 1. As, in our case, there are eight participants, the maximal score is equal to 8. The more people are involved in decision-making, the higher the level of collaboration is, and the more effective the result of management decisions will be, as more participants will be interested in the successful implementation of this decision, which means all of them will strive to implement it as well as possible.

In this case, the maximal level of collaboration may be equal to 1, which means full collaboration. Values of collaboration level are shown in Appendix B. As can be seen from Table B1 in Appendix B, the value of the collective decision-making level ranges from 0.125 to 1. The next step is to identify the compliance of a decision to the university's development strategy.

Table 1: Scale of Qualimetric Indices of the Collaboration Level in the HEI Decision-Making

Activity	Founders/State	Rector, vice-rectors	Academic Council	Participants		Departments	Students	External concerned parties
				Trade Union	Dean's Offices			
Education	1 (0.5)	1 (0.5))	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)
Research	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)
Methodology	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)
Financial outputs	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)
HR Policy	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)

Table 2: Characteristics of Collaboration Levels Values of HEI Decision-Making

Value	Level	Point	Value Characteristics
0.125	nule	0	The decision in a HEI activity is made by one participant, consequently, there is absolute autocracy in the decision of the issue. Such HEIs tend to have no groups of participants in this activity, who will be interested in the implementation of the decision made, which results in slower realization of the decision because of low collaboration level during the decision-making process.
0.126 – 0.675	average	1	The decision in a HEI's activity is made by several groups of the stakeholders, even if partly. Consequently, many, but not all stakeholders are interested in the accomplishment of the decision made. At the same time, the order may be fulfilled not in time or not up to the end, which can be seen as an average level of collaboration in management decision-making.
0.626 - 1	high	2	All or the majority of the stakeholders participate in decision-making in this sphere of the HEI activity. Thus, the majority of the participants or even everybody is interested in the accomplishment of the decision. It will enhance timely and complete realization of the decision made, which demonstrates high collaboration level.

Generally, each university develops a strategy for its development, defines the objectives and stages of its gradual implementation. In this case, the decision adopted may be directed to the achievement of certain objectives of the strategy or run counter to it. In this case, the following scale can be used (Appendix C). As can be seen from Table C1 in Appendix C, the value of the index of compliance of the decision to the university strategy varies from 0 to 2. Now we need to assess the timeliness of management decisions implementation. It has been already noted, that decision can be implemented on time or later. Accurate estimation of the time required to perform certain tasks is one of the most important university management skills.

Table 3: The Scale of Compliance of the Management Decision to the HEI Strategy

Characteristic	Level	Value
The decision made does not comply with the HEI strategy	null	0
The decision made enhances the realization of the HEI strategy, though indirectly.	average	1

The decision made directly enhances the effective realization of the HEI strategy. high 2

Table 4: Scale of timeliness in the realization of management decisions

Value	Level	Index	Value characteristics
0-1	Low	0	Time spent on the realization of the decision exceeds the standard time, which reduces decision-making effectiveness in this HEI.
1	High	1	The decision made is realized timely, the time spent on it is standard.
exceeds 1	very high	2	It is possible in case the decision is realized ahead of time. However, in this case, the quality and completeness of the task should be evaluated.

Consequently, estimation of time can only be approximate, e.g. in comparison with some standard. In this case, the time required will be represented by its intensity, which can be estimated as follows:

$$TI = \frac{T_n}{T_f}, \quad (2)$$

where TI – the index of timeliness of management decision implementation;

Ts– the standard time for the task;

Ta– actual time, spent on the task.

The effective rate is with a value of 1 or more. If the value of the index is less than 1, this decision is implemented with additional time costs, which reduces the effectiveness of the decision (see Appendix D for more information). As can be seen from Table D1 in Appendix D, the values of the timeliness index of management decisions varies from 0 to 2.

Significant impact on the timeliness of management decisions implementation is often that of the communication factor since lack of established communication links adversely affects the functioning of the entire university management structure. This is due to the following reasons:

- The university faculty and staff suffer from lack of sufficient information on the university strategy, activities, plans, etc., which hampers integration processes and hinders execution of directives;
- Orders of the university top managers are often not understood and not accepted by the subordinates;
- Horizontal communication between individual units of the university, or the faculty and staff is not reliable; information flows are chaotic which causes either hunger for information, or too much conflicting information.

As it is rightly pointed out by many economists, in decision-making under uncertainty, distortion of messages, information overload, failure in the organizational structure is possible (Kachulyak, 2009). Information overload occurs when the university faculty and staff have to filter out the least important information. It may result in a situation where they will by the information that is necessary to ensure the effective functioning of the university and its units. Very often information overload is observed in managers who are to take responsibility for solving many, sometimes even minor, management issues.

Drawbacks in the organizational structure (a large number of management levels, lack of established horizontal links between departments) impede information transfer from the subordinates to the administration and vice versa and can lead to its distortion. Clear and well-functioning information channels, the quality of information disseminated via them increase the degree of timeliness of decision-making.

The next step in evaluating management decisions effectiveness is to assess the impact of these decisions. The main objective of the decision implementation is the timely and precise accomplishment of the task, i.e. the main evaluation parameter is the quality of the work. As a rule, the quality of decision implementation may be low, medium or high. Therefore, there is certain subjectiveness in evaluation of the decision evaluation. However, from our point of view, the assessment of the management decisions effectiveness should be based on the result obtained and its relevance to the task being done (see Table E1). As shown in Table D1, indices of decision-making effectiveness vary from 0 to 2. The integrated index of the university decision-making effectiveness is a combination of values for all the four parameters.

The resulting code, assigned to the final index of decision-making at the university, will inform of a particular decision, which is characteristic of this index code. Let us grade the data values. Based on the codes, assigned to the final index, one can make an appropriate decision focusing on what is urgent. In this case, the trajectory of the decision made can be shown as a decision tree (see Appendix F for more information on the decision track).

Now combinations of values for obtaining the decision-making index code should be identified. We must emphasize that the first two values of the code show the characteristics of a management decision-making procedure, whereas the latter two - performance characteristics of the decision-making procedure. Together, they reflect the outcome of the implemented

solutions and make it possible on this basis to take appropriate management decisions in one direction or other HEI activities.

It should be noted, that when comparing the index codes of decision-making values in the university, you must connect the decisions obtained. For example, we got the indicator values code of decision-making equal to 1220. The first code values are 12. In accordance with our classifier, if the decision has the code "11" or "12", it means that "we should clearly define the objectives and strengthen the motivation of the staff." And here there are two options: "it is worth reviewing the management structure" and "sufficiently effective decision-making." Since the next value is higher than 1, it is necessary to consider the second decision from line 12, which states: "rather effective decision-making".

Then the last code values should be considered. In this case, it is 20: "the decision itself should be revised: it should focus on the implementation of the university strategy." It also has two options: "It may be reasonable to attract other members of the university to decision-making" and "the goals and the way of implementing the decision should be defined more clearly." Since the first code value is higher than 1, we consider the second option of line 20, which states: "the goals and the way of implementing the decision should be defined more clearly." If we combine both options, we get quite effective decision-making because of its high collaboration level; the decision is aimed at achieving the goals of the university strategy, however, we should clearly define the goals and the way to implement the decision, because, in spite of implementation of the task ahead of time, the result may not comply with the goal to be achieved. Why did it happen? Most likely, the top managers did not set goals and demanded results clearly and precisely. Thus, our algorithm for management decision-making, based on the method of evaluation of their effectiveness, is quite applicable and can be adapted to specific needs of a specific university (see Appendix E for more information on identification of the decision-making index). In general, the algorithm for management decision-making in the university includes the following steps:

1. Monitoring the decision-making procedures and the very structure of the HEI management;
2. Selection of the decision and its focus on the implementation of the university strategy;
3. Development of management decisions project, setting the time frame and precise results to be achieved;
4. Delegation of management decisions to various management levels;
5. Evaluation of the effectiveness of decision-making on the basis of the proposed methodology;
6. Identification of the decision code;
7. Determining the direction of the decision.

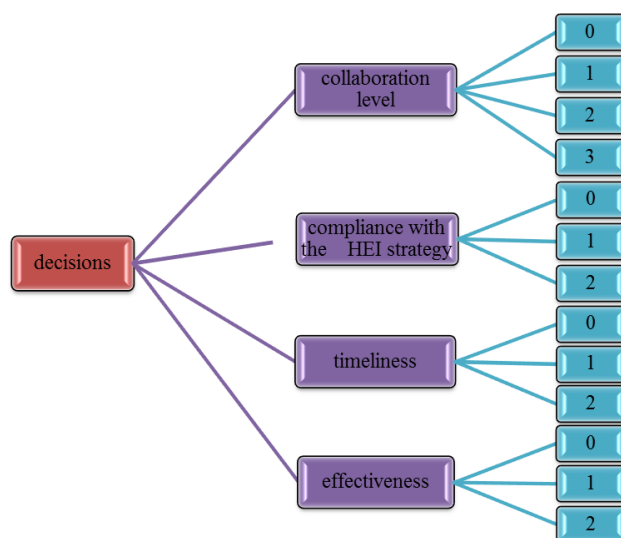


Figure 1: Identification of the Decision-Making Index

This algorithm is cyclic, i.e. after evaluation of the management decisions effectiveness monitoring takes place to ensure continuity in the implementation of the interaction of the management and the university internal and external environment.

It should be mentioned that awareness of the faculty and staff of the main directions of the university activity and understanding of their role in it contributes to the adoption of university values, self-confidence, and trust in the university top managers. With-holding information or its concealment leads to rumors destabilizing the work of the personnel.

Information exchange with the staff solves such important problems as a delegation of authority and development of pride for the university. Timely and regular communication, demonstration of trust in employees (dissemination of both good and bad news), involvement of employees in finding solutions to challenging situations, asking for their opinions contribute to increased confidence in the top managers.

To improve the quality of management decisions, the method of creating a formalized database of standard solutions can be used, as it is proposed in the algorithm. In this case, the university management will only need to choose the most optimal solution. Modification of standard or known solutions is also another way of reducing the cost of decision-making, improving its quality.

While developing and implementing management decisions, university top managers face many challenges that can be solved by developing the management system, upgrading the market of information and communication services and technologies, improving the corporate culture, implementing an effective system of control, enhancing professional development of the faculty and staff, developing the market of consulting services, production, business and innovation infrastructure.

DISCUSSION

As a result of the research, a methodological approach to the process of managerial decision-making in higher education institutions based on qualimetric principles, which will ensure maximum consideration of the university stakeholders' interests, has been proposed and justified.

The hypothesis of the research on the possible use of qualimetric methods for the evaluation of the effectiveness of university management decisions has been confirmed.

The practical application of this approach will contribute to the innovative development of universities and the competitiveness of Kazakhstan universities in the world market.

CONCLUSION

Thus, we are coming to the following conclusions:

1. Management decision-making in a university is a process of convergent analysis, forecasting and timely resolution of challenging situations with the provision of synergistic results that meet the needs of different groups of the stakeholders.
2. Effectiveness of managerial decision-making is dependent on the following factors: collegiality level in decision-making; conformity of the decision to the university development strategy; timely implementation of decisions taken; efficiency of decision-making. The total score for all these parameters characterizes the effectiveness of managerial decision-making in universities.
3. The proposed cyclic algorithm for making managerial decisions consists of the following stages: 1) monitoring the decision-making process and the structure of university management; 2) the choice of the solution and its focus on the implementation of the university strategy; 3) designing a management decision project, setting time and clear results, which should be achieved as a result of the task fulfilment; 4) delegation of managerial decisions to different management levels; 5) evaluation of the decision-making effectiveness with qualimetric methods; 6) detection of the decision code; 7) determination of the direction of the solution.
4. With qualimetric analysis methods, one can estimate the level of collaboration in management decision-making in a particular institution; efficiency of the performance of each university employee and top manager; compliance of a decision to the university strategy; timeliness of decision-making.
5. The practical significance of the research is due to the fact, that the introduction of the proposed management of quality, the innovative development of the university and that of Kazakhstan economy, in general.
6. Further research will focus on university decision-making, based on time-management mutualism and key effectiveness indices.

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