

Research paper / Оригинальная статья  
<https://doi.org/10.51176/1997-9967-2023-1-165-179>  
MPHTI: 06.81.12  
JEL: M12, D81, C53, I21



# Management Decisions under Uncertainty Using Controlling Tools

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**For citation:** Koshkina, N.V., Koshkina O.V., & Tkhorikov, B.A. (2023). Management Decisions under Uncertainty Using Controlling Tools. *Economics: the Strategy and Practice*, 18(1), 165-179, <https://doi.org/10.51176/1997-9967-2023-1-165-179>

## ABSTRACT

The management decision performs three critical functions: guiding, organizing and motivating. It is obvious that the growth of the university's potential largely depends on management processes and on the effectiveness of management decisions made in the activities of the staff of the educational organization. As practice shows in modern conditions, not many domestic leaders are familiar with the theory of development and adoption of managerial decisions. The study analyzes the main approaches to the process of making managerial decisions at the university. The expected results are related to the study of theoretical approaches and the determination of the possibility of using controlling tools. The study was conducted based on primary data that were collected through a questionnaire. The survey of respondents was conducted among the teaching staff at Almaty Management University. To solve the problem, the classic Pareto Chart tool and the modern Tree Diagram tool were used, which showed different results. In the course of the study, hypotheses were put forward, some of which needed practical confirmation. The results showed that there is no standard algorithm for the process of making managerial decisions in all universities in Kazakhstan. The resulting decision-making algorithm is not ideal and, with mass implementation, will lead to an increase in risks in the personnel management of educational organizations. However, the method of building control itself can be used by other universities since the scheme of primary and new controlling methods considered by the authors is quite flexible.

**KEYWORDS:** Management Decisions, Controlling, Problem, Strategy, Decision-Making Tools, Methods, Kaizen

**CONFLICT OF INTEREST:** the authors declare that there is no conflict of interest.

**FINANCIAL SUPPORT:** the study was not sponsored (own resources).

## Article history:

Received 15 January 2023  
Accepted 26 February 2023  
Published 30 March 2023

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## Басқару құралдарын пайдалана отырып, белгісіздік жағдайында басқару шешімдерін қабылдау

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**Дәйексөз үшін:** Кошкина Н.В., Кошкина О.В., Тхориков Б.А. (2023). Басқару құралдарын пайдалана отырып, белгісіздік жағдайында басқару шешімдерін қабылдау. Экономика: стратегия және практика, 18(1), 165-179, <https://doi.org/10.51176/1997-9967-2023-1-165-179>

### ТҮЙІН

Басқару шешімі үш маңызды функцияны орындайды: бағыттаушы, ұйымдастырушы және ынталандырушы. Университет әлеуетінің артуы көбінесе басқару процестеріне және білім беру ұйымы ұжымының қызметінде қабылданған басқару шешімдерінің тиімділігіне байланысты екені анық. Дегенмен, тәжірибе көрсеткендей, қазіргі заманғы жағдайларда, отандық көшбасшылардың көпшілігі басқарушылық шешімдерді әзірлеу және қабылдау теориясымен таныс емес. Зерттеудің негізгі мақсаты – университеттегі басқарушылық шешімдерді қабылдау үдерісінің негізгі тәсілдерін талдау. Күтілетін нәтижелер теориялық тәсілдерді зерттеуге және бақылау құралдарын пайдалану мүмкіндігін анықтауға байланысты. Зерттеу сауалнама арқылы жиналған алғашқы деректер негізінде жүргізілді. Респонденттерге сауалнама Алматы Менеджмент Университетінің оқытушылар құрамы арасында жүргізілді. Мәселені шешу үшін классикалық Парето диаграммасы құралы және қазіргі заманғы ағаш диаграммасы құралы пайдаланылды, олар әртүрлі нәтижелерді көрсетті. Зерттеу барысында гипотезалар алға тартылды, олардың кейбіреулері практикалық растауды таппады. Нәтижелер Қазақстанның барлық университеттерінде басқарушылық шешімдерді қабылдау процесінің стандартты алгоритмі жоқ екенін көрсетті. Алынған шешім қабылдау алгоритмі идеалды емес және жаппай іске асыру кезінде білім беру ұйымдарының персоналды басқаруындағы тәуекелдердің артуына әкеледі. Дегенмен, бақылауды құру әдісін басқа университеттер де қолдана алады, өйткені авторлар қарастырған негізгі және жаңа бақылау әдістерінің схемасы айтарлықтай икемді.

**ТҮЙІН СӨЗДЕР:** басқару шешімдері, контроллинг, проблема, стратегия, шешім қабылдау құралдары, әдістері, кайзен

**МҮДДЕЛЕР ҚАҚТЫҒЫСЫ:** авторлар мүдделер қақтығысының жоқтығын мәлімдейді

**ҚАРЖЫЛАНДЫРУ:** зерттеуге демеушілік қолдау көрсетілмеді (меншікті ресурстар)

### Мақала тарихы:

Редакцияға түсті 15 Қаңтар 2023

Жариялау туралы шешім қабылданды 26 Ақпан 2023

Жарияланды 30 наурыз 2023

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## Принятие управленческих решений в условиях неопределенности с использованием инструментов контроллинга

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**Для цитирования:** Кошкина Н.В., Кошкина О.В., Тхориков Б.А. (2023). Принятие управленческих решений в условиях неопределенности с использованием инструментов контроллинга. Экономика: стратегия и практика, 18(1), 165-179, <https://doi.org/10.51176/1997-9967-2023-1-165-179>

### АННОТАЦИЯ

Управленческое решение выполняет три важные функции: направляющую, организующую и мотивирующую. Очевидно, что рост потенциала университета во многом зависит от управленческих процессов и от эффективности принимаемых управленческих решений в деятельности персонала организации образования. Однако, как показывает практика в современных условиях не многие отечественные руководители знакомы с теорией разработки и принятия управленческих решений. В исследовании проводится анализ основных подходов к процессу принятия управленческих решений в университете. Предполагаемые результаты связаны с исследованием теоретических подходов и определением возможности использования инструментов контроллинга. Исследование проводилось на основе первичных данных, которые были собраны путем анкетирования. Опрос респондентов проводился среди преподавательского состава в Алматы Менеджмент Университета. Для решения поставленной задачи были использованы классический инструмент «Диаграмма Парето» и современный инструмент «Древовидная диаграмма», которые показали разные результаты. В ходе исследования были поставлены гипотезы, часть из которых не нашла практического подтверждения. Результаты показали, что нет стандартного алгоритма процесса принятия управленческих решений во всех университетах Казахстана. Полученный алгоритм принятия решения не является идеальным и при массовом внедрении приведет к увеличению рисков в управлении персоналом организаций образования. Однако сама методика построения контроллинга может применяться другими университетами, так как рассмотренная авторами схема базовых и новых методик контроллинга достаточно гибкая.

**КЛЮЧЕВЫЕ СЛОВА:** управленческие решения, контроллинг, проблема, стратегия, инструменты принятия решений, методы, кайдзен

**КОНФЛИКТ ИНТЕРЕСОВ:** авторы заявляют об отсутствии конфликта интересов.

**ФИНАНСИРОВАНИЕ:** исследование не имело спонсорской поддержки (собственные ресурсы).

### История статьи:

Получено 15 января 2023

Принято 26 февраля 2023

Опубликовано 30 марта 2023

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### Introduction

One of the features of administrative activity is the creation and approval of executive conclusions, representing the choice of an alternative from various options. Also, an indicator of the activity of any leader is his ability to make correct and effective decisions. The ability to make correct and prompt decisions is the sphere of managerial art. The management team acquires the main job qualifications, such as knowledge and abilities in the course of their professional activities.

Many scientists consider employers as active stakeholders in the quality training of specialists and indicate that employers occupy a border position between internal and external university stakeholders. On the one hand, employers are customers and consumers of the educational services of the university, on the other hand, they are directly involved in the training of specialists (Pratt, 1999; Boyd et al., 2011).

On the other hand, this information, in turn, allows us to draw conclusions about problem areas in the organization of the educational process at the university. Thus, the university management creates a holistic indicative basis for improving the quality of the educational process's target, content and technological components, bringing this process in line with the requirements of all stakeholders (primarily students and teachers). In some studies, the tool that is more often used is the development and adjustment of questionnaires among students, criteria were determined for assessing the quality of training of university graduates. Other studies are conducted on the basis of a survey of university professors. The authors of this paper decided to follow this path and conduct a survey among teachers (Gillespie et al., 2001; Putra & Ali, 2022). At the root of any decision, there is always a critical question - a problem. To solve a problem is to choose among many objectively available courses of action and translate this choice into a realistic reality. After all, from what decision the leader makes, the result of the last activity of the entire company will be determined from this.

In the modern university management and decision-making system, more and more attention is paid to the kaizen system. It deserves particular attention to how this system solves the problems that have arisen, what is the role of the leader and what tools can be used to reveal the situation and determine ways to solve it (Mizuno & Bodek, 2020; Herbert, 1978).

Making effective decisions is possible only with the correct identification of the problem. This problem is successfully handled by the Kaizen system, which starts with a problem or, more precisely, with the recognition that it exists. Where it does not exist, there is no potential for improvement and the development of new approaches to making managerial decisions. In business, a problem is anything that causes inconvenience to those lower down the business process chain. Where there is a problem, there is also the potential to improve the situation and refine management decisions and existing approaches (Imai, 2004; Von Neumann & Morgenstern, 1970; Peters & Waterman, 1986).

The survey on the Kaizen system, organized as a means of managing the quality of the educational process at the university, allows to most fully and promptly take into account the requirements of the labor market and harmonize the needs of all parties interested in the quality training of specialists with higher education. This article aims to show that using two approaches, namely the use of classical and modern controlling tools to solve the problem that the kaizen system offers, will allow us to more fully reveal the causes and consequences of its occurrence and choose the right managerial decision.

### Literature review

A modern leader must always try to improve the quality of his decisions, and the scientific approaches of well-known researchers in the field of management can help him in this. The main task facing the company's leaders is to accurately understand the actual situation, evaluate, give an accurate formulation of the problem and try to develop several alternative options. All leaders know that only some issues that arise in actual practice are worth spending time and effort on. It is worth noting that in small organizations, it is not always possible to turn to well-known scientific methods. Therefore, the "Advanced Management Methodology" helps to give an answer on what measures to take to improve the quality of management in the current and challenging situation. Modern managers, in their work, use a standard, classical approach to the process of making managerial decisions (Mizuno & Bodek, 2020). But at the same time, some leaders orient themselves in the current situation, while others manage them ahead of events, one might say, using preventive methods. As practice shows, the latter achieve effective results (Imai, 2004; Vorobieva, 2017; Bhardwaj & Sharma, 2021).

Thus, the work of any organization is a whole course of development, preference and implementation of various approaches in the decision-making process. Groups of problems are reduced to a generalized problem which indicates the effectiveness of the tasks being implemented. Usually, the solution aims to reduce the issue to the initially specified level. Reducing the problem can be achieved in other ways, mainly by changing the situation by adjusting the goal.

The significance of the problems associated with decision-making attracts the attention of a wide range of scientists and practitioners, representing sometimes widely separated areas of scientific knowledge, such as innovation management, big data analytics, mathematics, logic, economics, online education, technical sciences (Pelissari et al., 2021; Pietronudo et al., 2022). The decision-making thesis as an independent scientific field originates from the works of von Neumann and Morgenstern (1970). It did not develop by a sequential and gradational generalization of experimental data, bringing them to the development of the most general conclusions and provisions. On the contrary, it had the practical significance of a systematic approach. There have been attempts to describe the critical elements of the decision-making process based on formal-logical and precise ways (Von Neumann & Morgenstern, 1970; Zvonarev, 2019).

It is worth recalling the theory of utility by Neumann and Morgenstern (1940), thanks to which the characterizing preferences of a person acting rationally were determined. In the paper, it was said that the choice under risk is necessary to find the most appropriate solution that will lead to increased productivity. Of course, it will be required to consider the fact that the leader has his own subjective vision and, based on previous experience and theoretical training, analyzes the situation. Further, mathematical knowledge was used for modelling, which was accurate but did not consider the human factor in production (Kiker et al., 2021; Treffers, 2012).

In the modern concept, in the totality of decision-making methods, not only exclusively scientific ones are mixed, but also such approaches that characterise the ability to make decisions, i.e. organizational, mental and psychological abilities and experience of people. A decision is a situation of choice. The problem of choice has always existed, but its significance has increased significantly for several factors in recent decades. Under these conditions, the idea of

rationality is considered from the point of view of recognizing the consideration of human ties and psychological aspects in management (Van den Groenendaal et al., 2022).

Rationality in choosing decisions leads to the search for optimal ways to achieve the set goal. The accuracy of the plan makes it possible to make effective decisions on the implementation of practical actions. There is the concept of "Absolute rationality of managerial decision-making". In classical economic theory, this implies choosing the best course of action from all possible (while optimizing the selection criterion). In practice, in most cases, most people's decision-making is associated with the automatic choice of an appropriate alternative to solve the problem that has arisen. Situations, where the manager has to look for or calculate a solution are rather exceptional. At the same time, the decision made should be as rational as possible (Kiker et al., 2021; Quinlan, 1986).

Chernyak changed the postulate of strict rationality with the condition of "minimal rationality", according to which the subject evaluates not all probable alternatives but only those "which are suitable." This approach needs to be more constructive. At the same time, its advantages include taking into account the limited potential of a person in information processing and the assumption of the ability of dual and inconsistent preferences of the subject (Herbert, 1978).

Decisions concerning the company's work are made at the level of ordinary employees who are interested in the company's development in the same way as the management. Logically, managers have more information, which means their managerial decisions are more thought out. However, heads of departments, departments, affiliates and other decision-makers, according to Simon (1997), have their own limit of knowledge, which sometimes interferes with making rational decisions. Moreover, some leaders still need to have the desire to learn something new. Stereotypes of thinking, traditions and internal attitudes lead to company stagnation [Simon, 1997).

The theory of bounded rationality provides for the shortcomings of human cognitive capabilities. Still, it allows us to get closer to some perfect concept of making rational decisions through improvements in the leader's activities.

There is a characteristic of rational models:

- professionals do not always make rational decisions;

- extreme rationality manifests itself in an unfavourable position and does not consider the existence of experiments since errors affect the company's finances negatively and lead to costs;
- healthy internal competition is impossible in the nationalist world (Peters & Waterman, 1986; Demin, 2020; Baldin et al., 2022).

In order to maintain its own competitive advantages, the organization should not abuse the settlement of issues from rationalistic positions. Qualified managers who can make the best use of theory, practice and experience are more successful in making managerial decisions. However, the lack of necessary, legitimate information can lead to a decrease in performance, and to prevent this from happening, one of the considered approaches can be used. It is also worth remembering that many managers may know about all kinds of ways to solve a problem and listen to helpful advice, but at the same time, act in their way, based on their subjective ideas about the development of upcoming events, their assessment of the current situation (Mpanga & Idowu, 2021; Thomran et al., 2021; Ivanov et al., 2020).

The process of making managerial decisions in the current conditions requires using new approaches and tools that help make rational choices and find a unique solution to the problem, which can be subjective. The ratio of objective and personal in the course of managerial decision-making is a significant problem which many scientists are actively studying.

In this connection, the study's primary purpose is to study the possibility of using classical and modern controlling tools to track management activities at the university.

Therefore, this article relies on the following hypotheses:

H1: Using old and new tools will help to choose the right approach for analytical problem-solving and effective management decisions.

H2: Low wages lead to staff turnover at universities.

H3: The teacher performance appraisal system does not affect university staff turnover.

### Methodology

To substantiate the assertion that the use of classical and modern tools will help solve the identified problem and make an effective management decision, we propose the following actions:

- Choose an object and formulate a problem;

- Determine the classical and modern tools for making managerial decisions;
- Apply selected tools to solve the problem;
- Analyze the results obtained (controlling);
- Make a conclusion (make a decision).

The methodological basis of this article is to study the work of scientists involved in developing management decisions and using control and execution tools. The main methodological research tools were statistical methods: observations, groupings of factors, questioning, GAP analysis, comparative analysis, and a systematic approach.

To solve the problems of the university, the heads of departments use two approaches: classical and modern. The difference between these approaches is the amount of information available. The first approach is used when much quantitative data can be mathematically or statistically processed and analyzed. These include issues related to production. The second approach to controlling tools is a little more complicated since decisions must be made in limited information conditions.

These groups are shown in more detail in the figure.

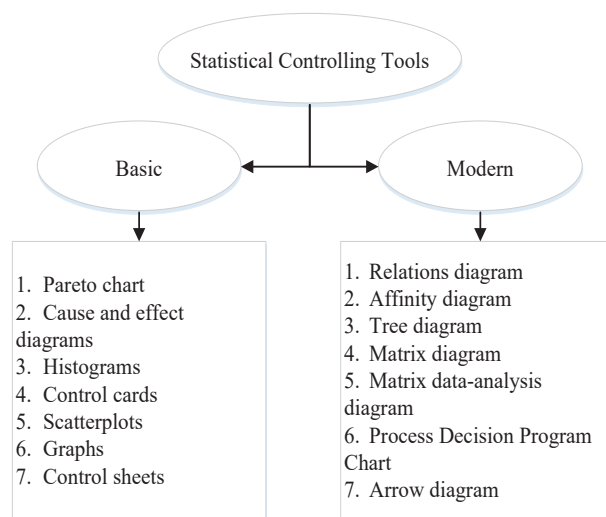


Figure 1 - Groups of statistical controlling tools

Note – Compiled by authors

The first group presents the primary statistical controlling tools in more detail. Pareto charts classify problems by manifestations and causes.

Let us consider in more detail the characteristics of the classical controlling tools presented by the first group.

The Pareto chart breaks down all the factors that caused the problem into three categories. The first category is the most important in solving the situation that has arisen and requires a solution in the first place. The visualization of problems in this tool in the form of a bar chart shows in percentage the importance of solving these problems.

The Ishikawa diagram reveals the causes and consequences of the problem and is used to analyze the characteristics of the process, the situation and the factors influencing them. The chart is also called the “fish skeleton”, in the tail, they write the only decision accepted for implementation.

The histogram is used to identify problems by analyzing the data and the mean of the resulting factor. The highest value on the graph outlines the problem areas in solving the problem, by what amount deviations from the maximum allowable values go.

Control charts, a tool for visually determining deviations from planned indicators. They must indicate the upper and lower limits of variations. This is a kind of red line, which is not recommended to go beyond if a positive solution to the problem is essential for us.

A scatter plot helps see how the results are distributed relative to the planned activities. The relationship between results shows the relationship between relevant data and factors.

The checklists are designed to tabulate the results of an ongoing situation review. This tool is used for the visual presentation of quantitative data. Using classic controlling tools, we visualize the results obtained using bar charts, line charts, and pie charts, then analyze and make a decision.

Modern controlling tools are presented in the second group, and their application feature is still being determined since there needs to be more information to make a decision. The relations diagram shows the relationship between factors describing the causes of a problem with determining the consequences of their manifestation. The affinity diagram is a group work with much information on its distribution into the same categories. This diagram allows the collection of many problems, then they are grouped according to criteria, analyzed and proposed solutions.

A tree diagram is a visual tool that allows systematising the causes of problems and details

the cause of their occurrence at different levels. A matrix diagram is a controlling tool that establishes the relationship between the characteristics of an object. Visually, this table includes factors between which a connection is established to study the problem.

A matrix data-analysis diagram is a controlling tool that allows the processing of much information obtained when building matrix diagrams. This tool analyses the information received and gave a quantitative result. Flowchart of the decision-making process PDPC (Process Decision Program Chart), a controlling tool that launches a continuous planning mechanism. It is used in solving complex problems, estimating the timing of the execution of work and correcting them.

An arrow diagram is a controlling tool that helps to plan the timing of tasks to achieve the goal. The peculiarity of using this tool is that it is helpful after identifying a problem. Using it after working out at least one modern tool is recommended.

To understand the depth of the problem and select a practical solution, it will be necessary to choose one tool from each group and compare the results. Visualization will be an effective control tool for the management decision selected.

In management practice, various approaches are used to justify difficult decisions, such as “Modeling and forecasting the situation”, “Analysis of the consequences of decisions made”, and others. Based on the approaches provided, we see that it is more effective and correct, in our opinion, to use and apply the approach in the development and adoption of managerial decisions, this is the “Behavioral Decision Theory”.

This theory proposes the realization of three behavioural functions.

- the function of foresight - builds a direction of activity, determine the actions of people who are ready to take part in solving the problem;
- explanation function—prescribes algorithms of human actions
- practical process - a tool for optimizing personal and organizational decisions.

To improve the properties of organizational decisions, “advanced management” was developed. The peculiarity of this approach is that it focuses on managers of different levels of management who offer different approaches to solving managerial problems (Ivanov et al., 2020).

The main content of advanced control is the use of systematized information processing methods. These methods include “causal

analysis”, “decision making”, “plan analysis”, and “situation review”. It is necessary to pay special attention to the fact that a complete solution to the problem is possible only with a deep analysis of the cause of the problem, its symptoms and consequences. Also, decision-makers should be aware that to correct the situation, it is permissible to influence the symptoms. These actions usually lead only to a temporary improvement in the current situation (Tebekin, 2022; Postnikov, 2020).

The method of cause-and-effect analysis includes formulating the problem, identifying the causes of the pain, and searching for deviations from the given norms, plans and standards. This is the most crucial method and should be used when understanding the problem’s essence and content.

The decision-making method includes the process of analyzing and solving problems in situations where the success of a case depends primarily on the correct assessment of alternatives. Here the emphasis is on the action, on its comparison with the future. The main actions carried out at this stage are the correct setting of the goal of the solution; setting decision criteria; separation of standards; development of alternatives; risk definition; risk analysis (probability, severity) and decision making.

The plan analysis method is necessary to assess the consequences and risks of implementing each alternative and choosing the implementation of the alternative that will solve this problem. Plan analysis is an algorithm of actions that includes a list of the main tasks that must be solved to achieve the main result.

The analysis of the plan is based on the identification of possible problems and potential opportunities that the manager can expect in the course of implementing the plan. The research of the plan includes a summary of the following points; analysis of the stages of the plan and detection of problems; identification potential problems and opportunities; identification of possible factors of origin of potential issues, and development of appropriate measures.

A situation review is based on finding and addressing problems; defining tasks to be implemented; determining the importance of solving each problem; explain control points of the analysis.

With proactive management, managers can start the cycle with any process in the future, following a logical sequence of actions. Suppose forward control begins with a cause-and-effect analysis. In that case, the final element is

adopting a specific decision on what must be done to eliminate the problem. If the cycle begins with a decision, then, naturally, it will form the basis for developing a work plan.

Analysis and diagnostics of the situation should be carried out when there are several problems in the organization, many of which are related to the solution to some issues. In this case, the leader in this current situation must first find out the priorities for their solution.

An even more important priority for any organization is continuous improvement. The Kaizen system allows not only to improve of the process of making managerial decisions but, through the use of its main tools, to influence the result of management positively.

The authors compiled a questionnaire consisting of 10 questions. The questions were not open-ended, and for each question, three possible answers were offered: “yes”, “no”, or “don’t know”. The survey was conducted online during the 2021-2022 academic year.

The survey involved 43 respondents (N=43). The respondents were teachers from Almaty Management University, belonging to two faculties: “Management” (about 24 teachers) and “Economics and Finance” (about 26 teachers). The sample was 86% of the total number of teachers who received the questionnaire. The age of the interviewed teachers ranged from 25 to 65 years.

### Results and discussions

The biggest problem for universities is the unreasonably high rate of faculty turnover. In our study, we decided to study the causes and consequences of this problem, as it leads to a decrease in the potential of the university, an increase in staff costs and a reduction in the quality of education. Before choosing classical and modern tools for making managerial decisions, we need a clear picture of why this indicator tends to increase in education. The authors compiled a questionnaire consisting of 10 questions. The questions were not open-ended and for each question, three possible answers were offered: “yes”, “no”, or “don’t know”. The survey was conducted online during the 2021-2022 academic year. The survey was attended by teachers with work experience at the university for at least one year. The results obtained during the study are shown below in Table 1.



**Table 1** – The reasons turnover of teaching staff

No.	Question	Poll results, N		
		Yes	No	Don't know
1	Do you think that you are paid according to your qualifications?	23	12	7
2	Do you think that the salary at your university is low?	37	3	3
3	Do you think that the unhealthy climate in the university staff is the reason for the departure of your colleagues?	26	13	4
4	Do you think conflicts with immediate supervisors are the reason for the dismissal of teachers?	20	17	4
5	Do you think that the reason for leaving is an unfair assessment of the performance of the teaching staff?	30	9	5
6	Do you think that the reason for leaving is the excessive requirements for the activities of teaching staff?	18	20	4
7	Do you think the reason for leaving needs more logistical support?	12	28	3
8	Do you think the reason for leaving is the lack of effective motivational programs for teaching staff?	34	6	4
9	Do you think that the reason for leaving is the tight control over the work of the teaching staff?	24	12	8
10	Do you think that conflicts with students are the reason for leaving?	8	23	12
Note - compiled by the authors				

According to the data obtained, it can be concluded that there are three important reasons for the growth of the university staff turnover rate. The first is the low level of wages, the second is an unfair assessment of the activities of the teaching staff, and the third is the lack of effective motivational programs.

To describe the problem, the classic tool “Pareto Chart” and the modern tool “Tree Diagram” are used, the authors of which are V. Pareto and M. Lorenz. The primary purpose of this method is to identify problems that need to be addressed first. This method allows to specification of various influencing factors and impact elements of particular importance for achieving the goal and, in this regard, have a high priority.

A table of factors was compiled to apply this method, and the frequency of manifestation of this factor was indicated. A positive response to the identified factors is necessary so that can use the data presented in Table 2.

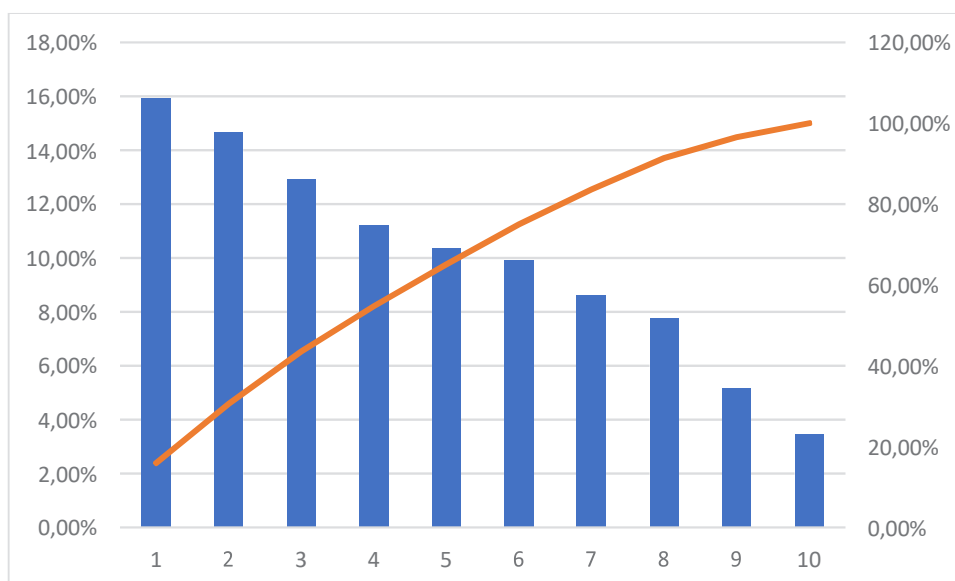
Analyzing the data obtained, we can conclude that the final frequency is 232 positive answers, which is the reason for the turnover of the teaching staff. The most influential factor, “Low wages”, is 15.9%. It is also worth paying particular attention to the factor of the lack of effective motivational programs, its value is also high and amounts to 14.7%. The least significant factor is “Conflicts with students”, which is 3.4%.

Next, a graphical interpretation of the areto Chart will be carried out. When constructing a Pareto chart, all factors are divided into three groups: A, B, and C. The first group ombines three factors superior to all others and arranged in descending order. The following three factors are entered into the second group, also in descending order, and the third group is all the remaining reasons. Figure 2 below shows the Pareto Chart.

**Table 2** - Cause/factor of staff turnover

No.	Cause	Frequency	Percentage
1	Salary does not match qualifications	23	9.9
2	Low pay	37	15.9
3	The unhealthy climate in the university staff	26	11.2
4	Conflicts with immediate supervisors	20	8.6
5	Unfair assessment of the performance of teachers	30	12.9
6	Exaggerated requirements for the activities of the teacher	18	7.6
7	Lack of logistics	12	5.2
8	Strict control over the work of teachers	34	14,7
9	Lack of effective motivational programs for professional and personal growth	24	10.3
10	Conflicts with students	8	3.4
	Total	232	100

Note - compiled by the authors



**Figure 2** - Pareto diagram of the reasons for the turnover of the teaching staff. Note - compiled by the authors

In the presented diagram, we see the causes of fluidity in descending order of their frequency. The first three reasons in the total amount to 43.5%, and this category is A, which deserves special attention and active response to its constituent components. The following three components form category B, which makes up 31.4% and includes: an unhealthy climate in the university staff, strict control over the work of teachers and salaries that do not correspond to qualifications. To solve these problems, delibe-

rate, balanced solutions require a detailed study of development and implementation. And the last category, C, is 25.1% and includes conflicts with immediate supervisors, excessive demands on the activities of a teacher, defective material and technical support, and conflicts with students. This category is characterized by a situational approach to solving the problem, which is probably why it is necessary to pay special attention to categories A and B to reduce the frequency of negative causes of component C.

Analysing the data obtained, it can be concluded that group A includes such important factors for the dismissal of the faculty as low wages, lack of effective motivational programs and unfair assessment of the faculty results.

Therefore, universities, first of all, need to pay attention to these factors in order to reduce the rate of staff turnover.

When using modern controlling tools, we offer can stop attention on the tree diagram shown in Figure 3.

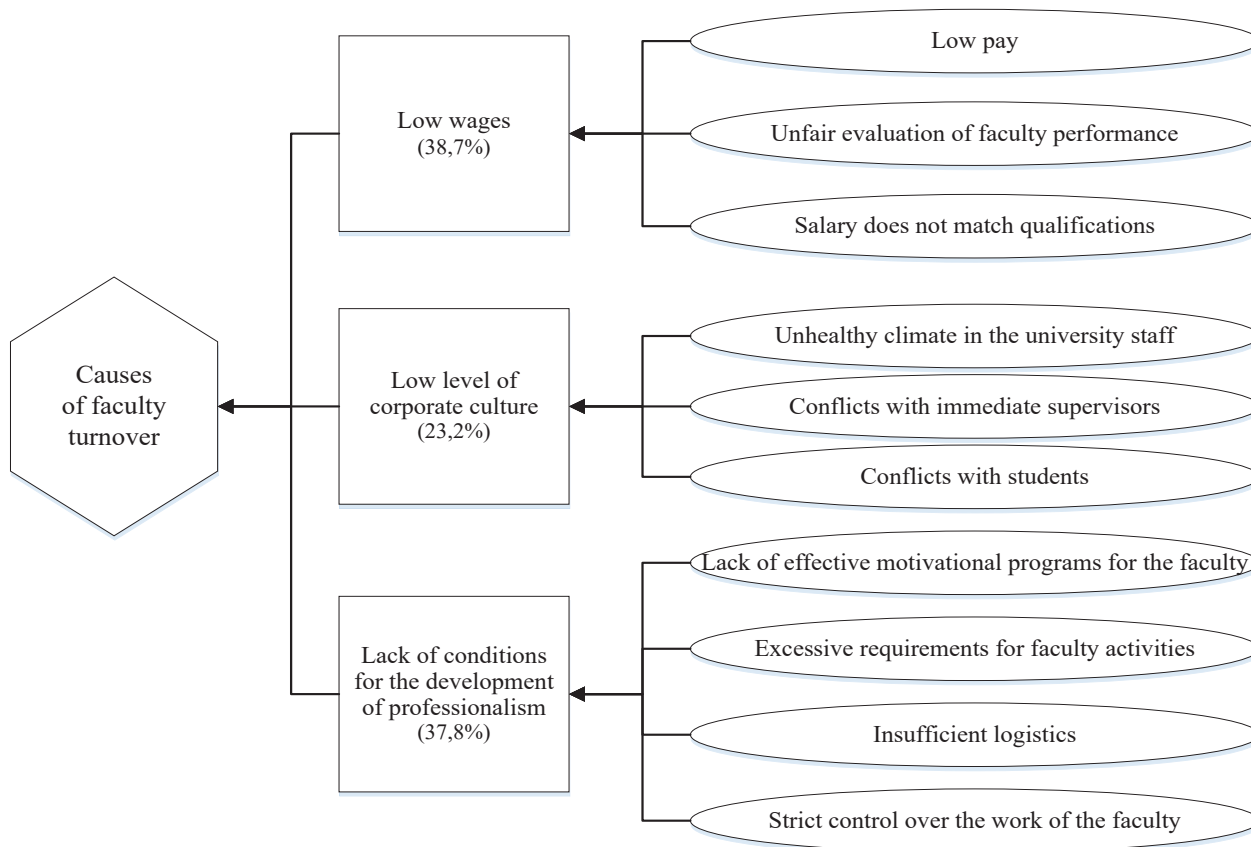


Figure 3 - Tree diagram

Note - compiled by the authors

Using the survey results, three critical areas for improving the activities of university teachers were formulated. Each direction has a set of reasons that determine the importance of its decision to reduce the turnover of teachers in the faculty. Summing up the value of each factor, we obtain a quantitative characteristic of each direction. As a result, we get that the factor of low wages, including an unfair assessment, is 38.7%.

As a result, as well as when using a standard controlling tool, we see that the main reason for faculty turnover is low wages and an incorrect system for evaluating the performance of the teaching staff. It is also worth noting that the lack

of opportunities for professional development reduces performance and increases the risk of leaving qualified teachers. The value of this component is 37.8%, and the most significant reason is the lack of effective motivational programs (14.7%), which, even if they exist, are more aimed at controlling than motivating.

The last block of reasons is low corporate culture, the value of which is 23.2% and is responsible for the consequences of the decisions made, which most often develop into conflicts and unwillingness to be accountable for the results obtained.

Conclusion on the hypotheses of the study:

H1: The active use of old and new tools will help to choose the right approach for analytical problem-solving and effective management decisions - confirmed.

H2: Low wages lead to staff turnover at universities – confirmed.

H3: The teacher performance assessment system does not affect university staff turnover – rejected.

### Conclusions

Based on the study, the following conclusion can be drawn. The above case study shows that the active use of old and new tools helps to choose the right approach for analytical problem-solving and effective management decisions. The use of the Pareto chart helped to identify the most significant problem areas in the management of the university personnel, such as low wages (15.9%), poor motivation (14.7) and unfair assessment of performance (12.9). The modern tool “Tree Diagram” confirmed that the compensation system is imperfect because universities do not have an effective method for evaluating performance.

In this case, based on the survey and the use of two tools, we can decide that universities need to revise the system for assessing the quality of the work of teaching staff, introduce a more effective motivation mechanism that provides human resources and ensure a differentiated approach to remuneration of teachers who are in one position. However, the result obtained does not mean that such a tandem of instruments is ideal. It may be necessary to analyze a combination of other tools in order to get a clear picture of the current problem and only then make a management decision regarding the existing situation.

With the recognition of the problem and the choice of classical and modern tools for making managerial decisions, an algorithm of actions was built to lead to the intended goal and control the success of the chosen direction. The selected tools not only provide guidance on what to do and when but also act as control tools in solving the problem that has arisen. In addition, the combination of classical and modern tools is the personal choice of the leader, and the correct choice of Kaizen methods depends on the professionalism and skills of the leader. Important to note that the plans have advantages and disadvantages.

This study’s limitation was that the survey was conducted based on one business university in Kazakhstan. Future research may include this toolkit when conducting a study of employees of universities of different profiles.

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