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МАЗМҰНЫ СОДЕРЖАНИЕ

ПЕДАГОГИКА. ПСИХОЛОГИЯ.

1. БИОЛОГИЯ САБАҚТАРЫНДА ЖОБА ӘДІСІН ЗЕРТТЕУШІЛІК
ДАҒДЫНЫ ҚАЛЫПТАСТЫРУДА ПАЙДАЛАНУДЫ БАҒАЛАУ
(Ж. К. Серікбай, А.М. Дүйсебекова, Қожа Ахмет Ясауи атындағы
Халықаралық қазақ-түрік университеті)..... 7
2. «МҰҒАЛІМНІҢ КӘСБИ ҚҰЗІРЕТТІЛІГІН
ҚАЛЫПТАСТЫРУДА ШЫҒАРМАШЫЛЫҚ ІС-ӘРЕКЕТТІҢ
МАҢЫЗЫ» (С.Е. Қаппар, Қазақ Ұлттық Қыздар Педагогикалық
Университеті) 14
3. ЭФФЕКТИВНЫЙ СЦЕНАРИЙ ИСПОЛЬЗОВАНИЯ
ДОПОЛНЕННОЙ РЕАЛЬНОСТИ В ИНКЛЮЗИВНОМ
ОБРАЗОВАНИИ (Хасенов А.Р., Евразийский национальный
университет им. Л.Н. Гумилева)..... 20
4. ПОТЕНЦИАЛ ПСИХИКИ И ЕГО ВЛИЯНИЕ НА
ДЕЯТЕЛЬНОСТЬ ИНДИВИДА (Р.Б.Абдрахманов, М.Л.Утегенова,
А.А.Аманов, Международный казахско-турецкий университет
им.Х.А.Ясауи)..... 25
5. ФРАКТАЛЬНОСТЬ ПОТЕНЦИАЛА ОРГАНИЗАЦИОННЫХ
СИСТЕМ (Р.Б.Абдрахманов, С.О.Мамадалиева, А.А.Аманов,
Международный казахско-турецкий университет им.Х.А.Ясауи)..... 31
6. ОЦЕНКА ПСИХОЛОГИЧЕСКИХ КОМПОНЕНТОВ ДЛЯ ОТБОРА
СПОРТСМЕНОВ НА СПОРТ ВЫСШИХ ДОСТИЖЕНИЙ
(Р.Б.Абдрахманов, М.Л.Утегенова, С.О.Мамадалиева, Международный
казахско-турецкий университет им.Х.А.Ясауи)..... 38
7. ФРАКТАЛЬНОЕ ПЛАНИРОВАНИЕ И ЭФФЕКТИВНОСТЬ
УПРАВЛЕНИЯ В ОРГАНИЗАЦИОННЫХ СИСТЕМАХ
(Р.Б.Абдрахманов, М.Л.Утегенова, С.О.Мамадалиева, Международный
казахско-турецкий университет им.Х.А.Ясауи)..... 46

ФИЛОЛОГИЯ. ЛИНГВИСТИКА.

8. АҒЫЛШЫН ТІЛІНДЕГІ МӘДЕНИЕТАРАЛЫҚ
ИДИОМАЛАРДЫ АУДАРУ ТӘСІЛДЕРІ (Аширхатова М.А., Түрдісбаева
Д.С., Абылай хан атындағы Қазақ халықаралық қатынастар жөніндегі
әлем тілдері университеті)..... 53

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9. ЛИНГВОКУЛЬТУРОЛОГИЧЕСКИЙ АСПЕКТ
МЕЖЭТНИЧЕСКОЙ КОММУНИКАЦИИ (С.М. Валитов,
Жетысуйский государственный университет имени И. Жансугурова)..... 63

ИНФОРМАТИКА. ИНФОРМАЦИОННЫЕ СИСТЕМЫ. ИТ-ТЕХНОЛОГИИ.

10. СИТУАЦИОННО-ОРИЕНТИРОВАННЫЕ БАЗЫ ДАННЫХ И
ИХ ОСОБЕННОСТИ (Абишев Р.У., Евразийский национальный
университет имени Л.Н.Гумилева)..... 71
11. ЛАВС ЭНЕРГЕТИКАЛЫҚ СИПАТТАМАЛАРЫН
ҚОЛДАНАТЫН ТЕКСТУРАЛЫҚ СЕГМЕНТАЦИЯ АЛГОРИТМІ
(А. Г. Жұмағали, Л.Н. Гумилев атындағы Еуразия ұлттық
университеті)..... 77
12. DEVELOPMENT OF THE WEB APPLICATION FOR MALARIA
INFECTED CELLS PREDICTION USING TENSORFLOW AND
KERAS-BASED CONVOLUTIONAL NEURAL NETWORKS
(M. Yesseyev, L.N. Gumilyov Eurasian National University)..... 82
13. ПРЕИМУЩЕСТВА ЭЛЕКТРОННЫХ МЕДИЦИНСКИХ КАРТ
(ЭМК) В СТОМАТОЛОГИИ (Турсумбаева А.Б., Бакиев М.Н.,
Евразийский национальный университет им. Л.Н.Гумилева)..... 88
14. RISK MANAGEMENT METHODS FOR THE IMPLEMENTATION
OF STARTUPS AND IT PROJECTS FOR THE TRANSITION OF
KAZAKHSTAN TO THE LEADERS ON THE EXPERIENCE OF
LEADER FOREIGN COUNTRIES (Alimzhanova L.M., Umarova I.R.,
International IT University)..... 92

ЭКОНОМИКА. ПОЛИТОЛОГИЯ.

15. УЧЕТ ДИФФЕРЕНЦИАЦИИ СТРУКТУРЫ
ПОТРЕБИТЕЛЬСКИХ РАСХОДОВ ДОМАШНИХ ХОЗЯЙСТВ В
РЕГИОНАХ В ПРОЦЕССЕ РАСЧЕТА ИНДЕКСА
ПОТРЕБИТЕЛЬСКИХ ЦЕН ПО ОБЛАСТЯМ РЕСПУБЛИКИ
КАЗАХСТАН (Жумадилин М.С., Академия государственного
управления при Президенте Республики Казахстан)..... 99
16. ОБЕСПЕЧЕНИЕ ДОСТОВЕРНОСТИ ПЕРВИЧНЫХ
СТАТИСТИЧЕСКИХ ДАННЫХ ГОСУДАРСТВЕННОГО
УПРАВЛЕНИЯ В УСЛОВИЯХ ЦИФРОВИЗАЦИИ (Жунусов А.И.,
Академия государственного управления при президенте Республики
Казахстан)..... 107

17. INNOVATIVE FACTORS INFLUENCING ECONOMIC DEVELOPMENT OF ALMATY REGION (A. Mukhtaruly, Academy under the President Republic of Kazakhstan)..... 116
18. АНАЛИЗ АНТИКОРРУПЦИОННЫХ РЕФОРМ В СФЕРЕ ГОСУДАРСТВЕННЫХ ЗАКУПОК: ОПЫТ КАЗАХСТАНА И ГРУЗИИ (Кумарова З.К., Адалиев Н.К., Академия государственного управления при Президенте Республики Казахстан)..... 122

ТЕХНИЧЕСКИЕ НАУКИ

19. ЖЫЛУ ЭЛЕКТР СТАНЦИЯНЫҢ ЖЫЛУ ЦИКЛДЕРІНДЕГІ ҚАҚТЫҢ АЛДЫҢ АЛУҒА АРНАЛҒАН СУДЫ ЭЛЕКТРОМАГНИТТІК ӨНДЕУ ҚҰРЫЛҒЫСЫ (Ж.Ж. Иманов, А.Д. Мехтиев, А.М. Исакова, Қарағанды мемлекеттік техникалық университеті)..... 127

СЕЛЬСКОХОЗЯЙСТВЕННЫЕ НАУКИ

20. ОПТИМИЗАЦИЯ СУТОЧНОГО РАЦИОНА КОРМЛЕНИЯ МОЛОЧНОГО СКОТА (У. Ж. Айтимова, Н. Д. Шүкірбаев, Казахский Агротехнический Университет имени С. Сейфуллина)..... 131
21. ТҮРКІСТАН ӨНІРІНЕ ҚАРАСТЫ ШОРНАҚ АУЫЛДЫҚ ОҚРУГІНДЕГІ МАҚТАНЫҢ ӨНІМДІЛІГІНЕ АГРОФАКТОРЛАРДЫҢ ӘСЕРІ (Ерденев М.Т., Әлі Н.О., Естай Г.Ж., Қожа Ахмет Ясауи атындағы халықаралық қазақ-түрік университеті).... 138

РЕЛИГИОВЕДЕНИЕ

22. ДІНИ ТҮЛҒАНЫҢ «МЕН ТҮЖЫРЫМДАМАСЫ (А.Қ.Дүйсенбаева, Ә. Шаяхметова, Нұр-Мубарак Египет ислам мәдениеті университеті)..... 145
23. СЕМЕЙНЫЕ ЦЕННОСТИ ХРИСТИАНСТВА В СОВРЕМЕННОМ ОБЩЕСТВЕ КАЗАХСТАНА (Жұмаш Т., Нұр-Мубарак - Египетский университет исламской культуры)..... 151
24. ЖАСТАР АРАСЫНДАҒЫ ДІНИ САУАТТЫЛЫҚТЫҢ МЕМЛЕКЕТ ТҰРАҚТЫЛЫҒЫНА ӘСЕРІ (М.С. Дүйсенбаева, Қ.А.Ясауи атындағы Халықаралық қазақ-түрік университеті)..... 163

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RISK MANAGEMENT METHODS FOR THE IMPLEMENTATION OF STARTUPS AND IT PROJECTS FOR THE TRANSITION OF KAZAKHSTAN TO THE LEADERS ON THE EXPERIENCE OF LEADER FOREIGN COUNTRIES

Abstract. The main purpose of this article is to consider common risks in the implementation of startups and IT projects, as well as to conduct examples of the specifics of startups in foreign countries for further conclusions and examples for the Republic of Kazakhstan. Methodology - as an example of successful risk management methods applicable to the Republic of Kazakhstan in startups and IT projects, were applied techniques such as: the verbal-numerical Harrington scale, qualitative and quantitative analysis.

Thus, analysis and examples from foreign leading countries will help bring the Republic of Kazakhstan to a new level of risk management in the implementation of startups and IT projects.

Therefore, it was found the basic methods of project risk management, as well as to identify features of risk management for startup and IT projects. At the end, based on the analysis, identify specific aspects of risk management for IT projects and startups.

Keywords: risk, startup, IT projects, numerical scale, integrated assessment, data analysis, risk management.

Projects implemented in the field of information technology (IT projects) and start-ups include a large number of technologies, hardware and specialists. In large startups and projects, the complexity of implementation increases significantly, and therefore, numerous risks arise that can negatively affect the result. In practice, project managers often abandon existing risk management methods, since their implementation can complicate the project management process. [1]

Risk is a probabilistic event that may occur (or may not occur), and also can be either positive or negative. [2]

Startup is a newly created organization that is engaged in the development of new products or services in conditions of extreme uncertainty. A startup is a

temporary structure used to search for a scalable, reproducible, cost-effective business model [3].

At the same time, a startup is a high-risk enterprise with its own operating features that do not allow equating it with a regular company, therefore, startup risks also have their own specifics. However, the risks of a startup are considered primarily from the point of view of the investor, as the risks of an investment project.

IT project can be any type of project that deals with IT infrastructure, information systems, or computer technology. This can include software development activities, such as programming a simple mobile app or a large-scale software system. [4]

In order to determine the risk management method for startups and IT projects, it is necessary to identify the risks that exist for them.

Table 1.

Classification of risk in startups and IT projects

Classification of Risk	
Startup	IT project
Product Risks	Staff competencies risk
User Risks	Business Model Risks
Team Risks	User Risks
Business Model Risks	Changes to the requirements risk
Financial risk	External suppliers risk
	Financial risk

As can be seen from the example, these risks have similarities. These risks are characterized by the fact that their sources are mistakes made in the early stages of the project, and an assessment of these risks can be performed separately for each component in large projects. [5]

To identify innovative risks of startups and IT projects, it is necessary to identify the maximum number of risks to which the organization is exposed in all areas of activity. For this purpose, all possible factors of changes in the organization should be considered in the main areas:

- strategic (long-term goals of organizational development; capital; business reputation; market positions; macroeconomic, political, social, scientific and technical factors, etc.);
- operational related to the current activities of the organization;
- financial;
- informational (control over information sources, storage and use of information, trade secrets, intellectual property and the use of modern technologies for the effective use of knowledge and information that the organization possesses);

- regulatory (compliance of documents with internal standards and current legislation). [6]

With the current method of identifying at an early stage of research can provide information about the origin of the causal links between several innovative projects that are interdependent input and output parameters of the project, as well as subject to the combined effect of the external environment. (Fig.1)



Fig. 1. The main stages of identifying risk

Therefore, after identifying risk, it is necessary to analyze risk. For each risk, it is necessary to evaluate its probability and impact on a 10-point scale. To increase the quality of the expert assessment, manager of startup or IT project can use The verbal-numerical Harrington scale (Table 2).

Table 2.

The verbal-numerical Harrington scale

THE PROBABILITY OF OCCURRENCE OF RISK IN THE PROJECT	HARRINGTON RATIO (ACCORDING TO PMBOK)	HARRINGTON RATIO	PROBABILITY
VERY HIGH	8–10	5	Risk is inevitable. Guaranteed start of risk
HIGH	6,4–8	4	Risk is probable

MIDDLE	3,7–6,4	3	There is no guarantee that risk will occur, but there is still have possibility
LOW	2–3,7	2	There is a possibility of the risk
VERY LOW	0–2	1	There is a potential risk
NO PROBABILITY	0	0	No risk

After the main risks have been identified, it is necessary to choose one of the risk management methods in startups and IT projects. There are three types of risk management analysis or standards in international companies (Table 3).

Table 3.

Types of risk management analysis

	ISO 31000:2009 (international)	COSO concept (USA)	FERMA standard (Europe)
Purpose	Optimal investment of funds.	Accuracy of reporting, compliance with legislation, operational and strategic objectives	Company strategic goals
Structure	Sequential actions	Three-dimensional matrix: (1) company goals; (2) components; (3) organization levels	Flat outline describing risk management components
Methods of identification of risk	Analysis of operations at the selected risk level.	Identification and categorization of risk events;	Analysis and classification of external and internal factors
Risk assessment	SWOT, PEST, and GEST analysis	Event list, internal analysis, thresholds, process chain analysis, loss	SWOT analysis; scenario analysis; business continuity planning; PEST

		analysis	analysis, etc.
Evaluation Methods	sensitivity analysis of performance criteria; scripting method, etc.	Expert comparison with the standard; probabilistic and improbability models.	Calculation of probability and influence by quantitative, qualitative, or mixed methods.
Features	public, private or public company	Focus on financial benefits and costs.	Assessment of the economic effect of internal control measures and damage from risk events

Today in the Republic of Kazakhstan the idea of startups and IT projects is very popular. Thus, the various risks within each startup are also growing, and improving risk management is currently one of the urgent problems. [7]

Based on the analysis and the experience of European countries, we can confidently say that the best option for risk management in start-ups and IT projects in the Republic of Kazakhstan would be the FERMA standard.

The Federation of European Risk Management Associations (FERMA) speaks for the risk management profession in Europe.

FERMA brings together 21 risk management associations in 20 European countries. They represent nearly 5000 professional risk managers active in a wide range of business sectors. FERMA acts on their behalf at European level and promotes the risk management profession. [8]

Risk management (by the FERMA's standards) protects the goals and objectives of the organization and, accordingly, contributes to its capitalization, development and image by virtue of:

- o A systematic approach to planning and implementing long-term activities of the organization.
- o Improvement of the decision-making process and strategic planning by creating an understanding of the structure of business processes in the environment of changes, potential opportunities and threats to the organization.
- o Contribution to the process of the most efficient use / allocation of capital and resources of the organization.
- o Protecting the property interests of the organization and improving the image of the company.
- o Optimization of business processes.
- o Further training of employees and the creation of an organizational base of "knowledge".

Thus, emphasizing the experience from foreign countries, the Republic of Kazakhstan can reach a new level of risk management in startups and IT projects.

Now, there is an unprecedented surge in the interest of the business community, in particular investors to startups. Today, the innovative market in Kazakhstan is actively developing and attracting an increasing number of new ideas and projects. [9]

This article examined the common risks of IT projects, provides an overview of risk management methods, the main stages of risk identification. The verbal-numerical Harrington scale is used to assess the impact of risk.

The practical significance of the work lies in the possible application of the developed approach to risk management for startup projects. Based on the analysis and the experience of European countries, we can confidently say that the best option for risk management in start-ups and IT projects in the Republic of Kazakhstan would be the FERMA standard. The FERMA standard is recommended to the risk management of the enterprise for the implementation of the risk management system, which may be appropriate to startups and IT projects in the Republic of Kazakhstan. [10]

This research presents evidence of the lack of familiarity of Kazakh startup management teams with risk management methods, an issue that is potentially detrimental to the success of new ventures. Finally, the need for studies related to risk management in innovation environments is emphasized as a way of supporting the practice of this subject in startups and IT projects in the Republic of Kazakhstan.

Thus, we can confidently say that if Kazakhstani companies can adhere to standards, then as a good example of Western large companies, Kazakhstan will also expect great success and prosperity in the development of startups and IT projects.

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МЕТОДЫ УПРАВЛЕНИЯ РИСКАМИ ДЛЯ РЕАЛИЗАЦИИ СТАРТАП И ИТ-ПРОЕКТОВ ДЛЯ ВЫВОДА КАЗАХСТАНА В ЛИДЕРЫ НА ОПЫТЕ ВЕДУЩИХ ЗАРУБЕЖНЫХ СТРАН.

Аннотация. Основная цель данной статьи - рассмотреть общие риски при реализации стартап и ИТ-проектов, а также привести примеры специфики данных проектов в зарубежных странах для дальнейшего успешного внедрения в Республике Казахстан. Методология статьи - в качестве примера успешных методов управления рисками, применимых к Республике Казахстан в стартапах и ИТ-проектах, были применены такие методы, как: вербально-числовая шкала Харрингтона, сравнительный, качественный и количественный анализ.

Таким образом, анализ и примеры применения различных методов из ведущих зарубежных стран помогут вывести Республику Казахстан на новый уровень управления рисками при реализации стартап и ИТ-проектов.

Более того, на основе анализа, и, опираясь на опыт зарубежных ведущих стран, были определены конкретные аспекты управления рисками для ИТ-проектов и стартапов.

Ключевые слова: риск, стартап, ИТ-проекты, числовая шкала, комплексная оценка, анализ данных, управление рисками.

**УЧЕТ ДИФФЕРЕНЦИАЦИИ СТРУКТУРЫ ПОТРЕБИТЕЛЬСКИХ
РАСХОДОВ ДОМАШНИХ ХОЗЯЙСТВ В РЕГИОНАХ В ПРОЦЕССЕ
РАСЧЕТА ИНДЕКСА ПОТРЕБИТЕЛЬСКИХ ЦЕН ПО ОБЛАСТЯМ
РЕСПУБЛИКИ КАЗАХСТАН**

Аннотация: В статье рассмотрены вопросы формирования инфляции в разрезе регионов. Определена степень дифференциации потребительских расходов в разрезе регионов и его влияние показатель региональной инфляции.

Ключевые слова: инфляция, индекс потребительских цен, структура потребительские расходы, валовой региональный продукт.

Социально экономическая ситуация в Республике Казахстан характеризуется большой дифференциацией экономических показателей, в частности по среднему душевому номинальным денежным доходам разница между максимальным и минимальным показателем составляет более 4 раза¹⁾ (Атырауская область – 199 047 тенге, Туркестанская область - 49 510 тенге). Валовой региональный продукт (ВРП) по данным за 9 месяцев 2018 года также значительно варьируются между регионами (Рисунок 1).

По продовольственной корзине наблюдаются более или менее однородные показатели, но тем не менее есть значительные различия. К примеру, по данным за 4 квартал 2018 года²⁾ в Мангистауской области продовольственная корзина составила 18 661 тенге, а в Жамбылской - всего 13 313 тенге. Исходя из представленных данных можно заметить, что показатели сильно коррелируются между собой, во многом это связано с отраслевой структурой региона, так регионы с высокими показателями ВРП лидируют по среднему душевому доходу и наоборот регионы с низким ВРП демонстрируют низкий уровень дохода населения. Указанные выше различия говорят о неоднородности социально-экономической жизни регионов, обуславливающую более точную оценку инфляционных процессов в разрезе регионов.

¹⁾ По данным за 4 квартал 2018 года. Источник: Комитет по статистике Министерства национальной экономики Республики Казахстан - <https://taldau.stat.gov.kz/ru/NewIndex/GetIndex/704447?keyword=>

²⁾ Источник: Комитет по статистике Министерства национальной экономики Республики Казахстан - <https://taldau.stat.gov.kz/ru/NewIndex/GetIndex/704494?keyword=>