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CONTENTS

FINANCING OF SMALL BUSINESSES THROUGH INVESTMENT LOANS BY COMMERCIAL BANKS.....	15
Yangiboyev F.B.	
INTEGRATION OF THE TRANSPORT SECTOR INTO THE GREEN ECONOMY AND IMPACT ON SUSTAINABLE DEVELOPMENT: ECOLOGICAL TRANSFORMATION AND INNOVATIVE SOLUTIONS	20
Narziyev Umidjon Bakhriylayevich	
FOREIGN EXPERIENCE IN INCREASING THE INVESTMENT ACTIVITY OF JOINT-STOCK COMPANIES	24
Begamov. S.X.	
AN ENHANCED FINANCING MODEL FOR STARTUP PROJECTS IN HIGHER EDUCATION INSTITUTIONS OF UZBEKISTAN	27
Kasimova Nargiza Sabitdjanovna	
STRATEGIES FOR ENHANCING INVESTMENT POTENTIAL.....	32
Tillayeva Barno Ramiziddinova	
THE IMPORTANCE OF USING ARTIFICIAL INTELLIGENCE IN HOTEL MANAGEMENT.....	36
Husenova Madina Farkhodovna	
MARKETPLACES AND ECONOMIC SECURITY IN UZBEKISTAN: RISKS AND REGULATION	42
Umarkhodjayeva Zaynabkhon Nodirkhonovna	
TECHNOLOGICAL STRENGTH AND PROPERTIES OF METAL OF AUSTENITIC JOINTS DURING WELDING WITH VARIOUS FLUXES.....	47
Khudoykulov Nurilla Zikirillaevich, Khudoyorov Sardor Sadullaevich	
MODERN SYSTEMS OF PRODUCT COST CALCULATION: METHODOLOGICAL FOUNDATIONS AND DIRECTIONS OF PRACTICAL TRANSFORMATION	51
Abdumalik Abdiraximovich Tulyaganov	
SUPPORTING ECONOMIC EXPANSION AND MAXIMIZING PRODUCTION EFFICIENCY WITHIN A MARKET ECONOMY.....	56
Aytmuratov Qutlimurat Jalgasovich	
SUCCESS FACTORS OF DIFFERENTIATION STRATEGY IN A MARKET ECONOMY.....	62
Sodiqov Miraxror Abbos ugli	
THE “MISSING MIDDLE” PROBLEM IN SOCIAL PROTECTION SYSTEMS AND MECHANISMS FOR ADDRESSING IT	67
Farrukh Juraqulovich Bafoev	
IMPROVING POPULATION INVESTMENT ACTIVITY THROUGH THE DEVELOPMENT OF BANK BROKERAGE SERVICES AND FINANCIAL LITERACY IN FORMING A SECURITIES PORTFOLIO IN THE KHOREZM REGION	72
Bakhtiyorov Khudaybergan Hamdam ugli	
DEVELOPMENT OF THE SERVICE SECTOR AND ITS IMPACT ON POVERTY REDUCTION.....	79
Dauletmuratov Adilbay Mirzabaeovich	
THE ROLE AND IMPORTANCE OF A SYNERGETIC APPROACH IN DEVELOPING THE MANAGEMENT SKILLS OF SCHOOL DIRECTORS.....	84
Yusupova Dilnoza Fayzullayevna	
REGIONAL INNOVATION DEVELOPMENT INDICATORS AND THEIR EVALUATION SYSTEM	89
Xamrayev Quvvat Iskandarovich	
GADGETS AND VALUES: HOW DOES THE VIRTUAL WORLD IMPACT THE EDUCATION OF YOUTH?	97
Makhmudova Sohiba Ravshan kizi, Mirzaliyev Sanjar Makhamatjon ugli	
WAYS TO IMPROVE SERVICE QUALITY AND SAFETY IN THE HOSPITALITY INDUSTRY THROUGH DIGITAL TECHNOLOGIES.....	101
Musayeva Shoiraz Azimovna	
DIRECTIONS FOR INCREASING HOUSEHOLD INCOMES BASED ON FOREIGN EXPERIENCE.....	104
Eshbaeva Shahnoza Faxriddinovna	

IMPROVING METHODS FOR DETECTING FRAUD CASES IN CURRENT ASSET AUDITS.....	108
Mavlyanova Dilobar Makhkamovna	
GLOBAL TRENDS IN WORLD MARKETS AND THEIR IMPACT ON THE DEVELOPMENT OF INTERNATIONAL TRADE	113
Melikulov Abdulhalil Norinovich	
THEORETICAL ASPECTS OF FORMING AND APPLYING THE INTEGRATION MECHANISM OF SMALL BUSINESS	119
Rustambek Ibragimovich Israilov	
THE IMPORTANCE OF USING PERFORMANCE INDICATORS IN IMPROVING ROAD MANAGEMENT METHODS.....	125
Sirojiddin Yadgarov	
WAYS TO IMPROVE BANKING EFFICIENCY IN THE CONDITIONS OF TRANSFORMATION.....	131
Babakhanova Dildora Rustamovna	
THE ROLE OF PROGRAM-BASED BUDGETING MECHANISMS IN ENSURING STATE FINANCIAL SECURITY	137
Abduganiyev Uchkun Khabibulla ugli	
ANALYSIS OF THE IMPACT OF PUBLIC FINANCIAL MANAGEMENT EFFICIENCY ON SOCIAL JUSTICE THROUGH PEFA AND CEQ METHODOLOGIES.....	143
Zokirjonov Muhammadsodiq Ravshanbek ugli	
MANAGERIAL MECHANISMS OF CORPORATE HYBRID BUSINESS MODELS: FINTECH INTEGRATION IN E-PAYMENT SYSTEMS OF UZBEKISTAN	151
Mokhirakhon Abdullaeva	
TOKENIZATION OF REAL SECTOR ASSETS AND DEEPENING OF CAPITAL MARKETS: A NEW FINANCIAL ARCHITECTURE FOR EMERGING ECONOMIES	156
Oybek Qo'shboqov	
TECHNOLOGIES OF ARTIFICIAL INTELLIGENCE IN OPTICAL COMMUNICATION AND THEIR INTEGRATION INTO INTELLIGENT TUTORING SYSTEMS.....	162
Maxamadov Rustam Xabibullayevich, Djamatov Mustafa Xatamovich	
APPROACHES TO ENHANCING THE EFFECTIVENESS OF GOVERNMENT SUPPORT FOR SMALL BUSINESSES IN THE REGION	169
Madraimova Marxamat Raximberganovna	
INNOVATIVE WAYS TO INCREASE THE INVESTMENT CAPACITY OF REGIONS BASED ON DIGITAL TECHNOLOGIES.....	174
Qabilov Anvar Eshpulatovich	
TAXATION OF AGRICULTURAL ENTERPRISES AND THE ORGANIZATION OF THEIR ACCOUNTING SYSTEMS.....	179
Abdullayev Abdurauf	
DEVELOPMENT PROSPECTS OF THE VEGETABLE FARMING SECTOR IN THE REPUBLIC OF UZBEKISTAN	183
Sobir Xasanov	
AI FOR TEACHING ENGLISH AS A FOREIGN LANGUAGE TO UNIVERSITY STUDENTS.....	191
Nurzhanova Zhainash, Rajapova Guldona	
REVIEW OF THERMAL STRENGTHENING METHODS FOR ROLLING ROLLS MADE OF ALLOY STEELS USED IN THE PRODUCTION OF SEAMLESS PIPES	198
Saydumarov Botir Muradovich, Xasanov Kamoliddin Akmal o'g'li, Ergashev Davron Ortiq o'g'li, Saydumarov Botir Muradovich	
IMPROVING THE METHODOLOGY OF STRATEGIC MANAGEMENT IN ENHANCING THE COUNTRY'S INTERNATIONAL IMAGE: IN THE EXAMPLE OF SOUTH KOREA.....	203
Kurolov Maksud Obidovich	
SOCIO-ECONOMIC DEVELOPMENT OF TASHKENT CITY: TRENDS AND KEY INDICATORS.....	212
Karimova Shirin Zokhid qizi	
PSYCHOLOGICAL FACTORS INFLUENCING PROCRASTINATION AMONG GENERATION Z UNIVERSITY STUDENTS.....	216
Abdukaxxorova Durdona, Qadamova Rayhona, Muhammadova Shaxzoda, Salimov Ozodbek, Hojiyeva Iroda Avezovna	

IMPROVING THE MANAGEMENT SYSTEM OF PRIVATE SCHOOLS BASED ON INNOVATIVE TECHNOLOGIES.....	222
Shohida Esanova	
ASSESSMENT OF TECHNICAL EFFICIENCY IN CENTRAL ASIAN TELECOMMUNICATION OPERATORS USING THE DEA-CCR MODEL: THE EXPERIENCE OF UZBEKTELEKOM AK	230
Salimova Husniya Rustamovna	
DETERMINANTS OF MUTUAL TRADE BETWEEN THE REPUBLIC OF UZBEKISTAN AND THE CIS COUNTRIES	235
Munisa Turdibaeva	
INTERNAL CONTROL SYSTEM IN THE DIGITAL ECONOMY: PROBLEMS AND SOLUTIONS	241
Mekhmonaliev Ulugbek Erkinjon ugli	
PROSPECTS FOR ENSURING SUSTAINABLE GROWTH IN INDUSTRIAL ENTERPRISES THROUGH THE USE OF GREEN TECHNOLOGIES	248
Abbosbek Jurayev	
COMPLIANCE OF BANKING AI SYSTEMS WITH EU AI ACT REQUIREMENTS AND THEIR ROLE IN RISK MANAGEMENT	253
Usmonov Faridun F., Zainalov Zh.R.	
A MODEL FOR DETECTING URBAN INFRASTRUCTURE PROBLEMS IN CITIZENS' APPEALS BASED ON GEOLOCATION FEATURES	258
Malloyev Oybek Usmankulovich, Gazatov Jamoliddin Abduvoidovich, Aliyev Jaloliddin Kokand oglu	
DETERMINATION OF THE INFORMATIVENESS OF INPUT PRINTS USING THE MULTI-CRITERIA DISPERSION METHOD	264
Turapov Ulugbek Urazkulovich, Akulbayev Musabek Islamovich, Dzhantayeva Sholpan Kalmakhanovna, Madalievna Gul'nar Urazalievna	
ANALYSIS OF MACROECONOMIC INDICATORS OF RECREATIONAL TOURISM DEVELOPMENT IN UZBEKISTAN	269
Polatova Mavluda Sanjar qizi	
OPTIMIZATION OF MANAGEMENT PROCESSES OF TOURISM INDUSTRIES THROUGH DIGITAL TRANSFORMATION AND INNOVATIVE TECHNOLOGIES.....	273
Saidova Dilfuza Abdufattohovna	
MODERNIZING AUDIT PLANNING STRATEGIES IN EMERGING ECONOMIES: CHALLENGES AND SOLUTIONS FOR ISA IMPLEMENTATION IN UZBEKISTAN	280
Saidova Sevarakhon Abdumumin kizi	
INTERNATIONAL EXPERIENCE IN ACCOUNTING FOR LONG-TERM ASSETS AND ITS APPLICATION	285
Gozieva Mokhira Rustamovna	
SCIENTIFIC BASIS FOR THE CLASSIFICATION OF TERRITORIES AND THE APPLICATION OF CORRECTION COEFFICIENTS.....	290
Dovutov Fakhridin Javliyevich	
MANAGEMENT OF THE PROCESSING TECHNOLOGY FOR COCOONS MODIFIED USING A NEW COMPOSITION BASED ON STANDARD REQUIREMENTS	296
Makhmudov Umidjon Bahodir ugli, Turdaliyev Umid Mukhtaraliyevich, Sulaymonov Sharifjon Abdumanabovich	
STUDY ON THE EFFECT OF THERMOPLASTIC DEFORMATION ON THE MICROSTRUCTURE OF XH56MBK10 ALLOY	302
Berdiyev Darob Muratovich, Saydumarov Botir Muradovich, Tashmatov Ravshan Kobilovich, Baxtiyorov Rustam Ravshan o'g'li	
THE IMPORTANCE OF PROMOTING COMPANIES' PARTICIPATION IN THE STOCK MARKET.....	306
Mamatalliev Babur Saidnazar ugli	
EFFECTIVENESS OF THE USE OF FINANCIAL LEVERS IN ATTRACTING FOREIGN INVESTMENTS IN JOINT-STOCK COMPANIES.....	312
Ibragimov Ganijon Gayratovich	
HR STRATEGIES FOR HUMAN CAPITAL DEVELOPMENT IN ORGANIZATIONS	316
Zaynutdinova Umida, Kholisakhon Nuriddinova	

LEGAL FOUNDATIONS OF CONDUCTING IPOs BY JOINT-STOCK COMPANIES IN UZBEKISTAN AND WAYS TO IMPROVE THEM: A FORMAL-LEGAL AND COMPARATIVE LEGAL ANALYSIS	328
Mamatmurodov Alisher Saparboyevich	
TAX REVENUE REDISTRIBUTION, HARD BUDGET CONSTRAINTS AND LOCAL FISCAL STABILITY IN UZBEKISTAN	341
Sharipov Abror Komilovich	
CULTURAL DIFFERENCES AND THE EDUCATION SYSTEM: ANALYSIS OF FACTORS INFLUENCING INSTITUTIONAL CHANGE	346
Abdulmajeed Nabeel Azouz	
MODERN STATISTICAL METHODS FOR MEASURING REGIONAL DEVELOPMENT	352
Sattorov Sanjar Abdumurodovich	
THE NECESSITY AND PROSPECTS OF IMPROVING COMPULSORY ENFORCEMENT MEASURES	359
Annazarov Abdulla Shakarimovich	
SPECIFIC ASPECTS OF GATHERING EVIDENCE IN AN ESG AUDIT	363
Sayfullayev Mekhroj Sayfullayevich	
FINANCIAL ISSUES IN REGULATING SOCIAL SECURITY OF THE POPULATION UNDER CONDITIONS OF SOCIALLY ORIENTED BUDGET EXPENDITURES	368
Bakhodir Sheraliyevich Khusanov	
IMPROVING THE METHODOLOGICAL FOUNDATIONS OF STATE SUPPORT FOR AGRICULTURAL ENTERPRISES BASED ON THE PRINCIPLES OF INNOVATION MANAGEMENT	371
Shaniyazova Zamira	
THE ROLE OF COMMERCIAL BANKS IN THE DEVELOPMENT OF INDUSTRIAL ENTERPRISES	377
Mirzokirov Mirramizjon Mirkhashim ugli	
IMPROVING SERVICE QUALITY MONITORING IN SERVICE ENTERPRISES BASED ON DIGITAL TECHNOLOGIES	383
Xudoyorov Lochinbek Bahromovich	
ENSURING FINANCIAL SUSTAINABILITY OF INDUSTRIAL ENTERPRISES: EVIDENCE FROM THE GAS SECTOR OF UZBEKISTAN	388
Ergashev Muhibbek Aslamovich	
ASSESSMENT OF PRICING STRATEGIES APPLIED BY LEADING RETAIL CHAINS IN UZBEKISTAN	392
Anvar Deberdiyev	
SUBSTANTIATION OF THE PARAMETERS OF THE WORKING BODIES OF A COMBINED MACHINE FOR RIDGE FORMATION AND FILM LAYING IN MELON CROP PLANTING	397
Nigmatjonov Sardor Abdumannobovich	
ПРАВОВЫЕ ПРОБЛЕМЫ РАЗДЕЛА ПРЕДПРИНИМАТЕЛЬСКИХ АКТИВОВ СУПРУГОВ ПРИ РАСТОРЖЕНИИ БРАКА	401
Рашидова Зилола Жавлонбековна	
UZOQ MUDDATLI AKTIVLAR BILAN BOG'LIQ XARAJATLARNI STRATEGIK BOSHQARUV HISOBIDA AKS ETTIRISH: NAZARIY ASOSLAR VA TASNIF TIZIMI	406
Qahharov Zuhridin Zafarbek o'g'li	
COMPARATIVE ASSESSMENT OF MESO-LEVEL TOURISM ATTRACTIVENESS ACROSS UZBEKISTAN'S ADMINISTRATIVE REGIONS: EXPERT SURVEY EVIDENCE ACROSS SEVEN TOURISM-TYPE DIMENSIONS	411
B. B. Sobirov	
FOREIGN EXPERIENCES IN ASSESSING DIGITAL TRANSFORMATION PROCESSES IN REGIONAL ECONOMIC SYSTEMS	419
Kurbonova Malika Akhmad kizi	
PRIORITY DIRECTIONS FOR ORGANIZING MANAGEMENT ACCOUNTING AND INTERNAL CONTROL SYSTEMS IN FISHERY CLUSTERS	424
Shodiev Aslam Rahmatilloevich	

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PRIORITY DIRECTIONS FOR ORGANIZING MANAGEMENT ACCOUNTING AND INTERNAL CONTROL SYSTEMS IN FISHERY CLUSTERS

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Abstract. The article examines priority directions for organizing management accounting and internal control systems in fishery clusters. The research is based on the 2019–2024 practice of fishery clusters within the “O‘zbekbaliqsanoat” Association. The author developed proposals in three main areas: (1) organizational and methodological aspects of the management accounting policy; (2) a mixed transfer pricing model based either on market price or on cost plus a 15–25% margin; and (3) a segment reporting template for five operating segments in accordance with IFRS 8 requirements. In addition, five components of the internal control system for fishery clusters are proposed based on the COSO Internal Control — Integrated Framework. The research results have practical significance for improving the efficiency, transparency, and controllability of fishery clusters.

Keywords: fishery clusters, management accounting, internal control, COSO, transfer pricing, segment reporting, IFRS 8, agroclusters, Uzbekistan.

Annotatsiya. Maqolada baliqchilik klasterlarida boshqaruv hisobi va ichki nazorat tizimini tashkil etishning ustuvor yo‘nalishlari ko‘rib chiqiladi. Tadqiqotda «O‘zbekbaliqsanoat» uyushmasi tarkibidagi baliqchilik klasterlarining 2019–2024-yillardagi amaliyoti o‘rganildi. Muallif tomonidan uchta asosiy yo‘nalish bo‘yicha takliflar ishlab chiqildi: (1) boshqaruv hisobi bo‘yicha “Hisob siyosati”ning tashkiliy-uslubiy jihatlari; (2) transfert bahoni shakllantirishning aralash modeli — bozor narxi asosida yoki tannarxga 15–25 foizlik marja qo‘shish asosida; (3) IFRS 8 talablariga mos ravishda beshta operatsion segment bo‘yicha segmentar hisobot shakli. Shu bilan birga, COSO Internal Control — Integrated Framework asosida baliqchilik klasterlari uchun ichki nazorat tizimining beshta komponenti taklif etildi. Tadqiqot natijalari baliqchilik klasterlari samaradorligi, shaffofligi va boshqaruvchanligini oshirishda amaliy ahamiyatga ega.

Kalit so‘zlar: baliqchilik klasterlari, boshqaruv hisobi, ichki nazorat, COSO, transfert baho, segmentar hisobot, IFRS 8, agroklastlarlar, O‘zbekiston.

Аннотация. В статье рассматриваются приоритетные направления организации управленческого учёта и системы внутреннего контроля в рыболовческих кластерах. Исследование основано на практике рыболовческих кластеров ассоциации «O‘zbekbaliqsanoat» за 2019–2024 годы. Автором разработаны предложения по трём основным направлениям: (1) организационно-методологические аспекты управленческой учётной политики; (2) смешанная модель формирования трансфертных цен на основе рыночной цены либо себестоимости с добавлением маржи 15–25%; (3) форма сегментарной отчётности по пяти операционным сегментам в соответствии с требованиями IFRS 8. Кроме того, на основе COSO Internal Control — Integrated Framework предложены пять компонентов системы внутреннего контроля для рыболовческих кластеров. Результаты исследования имеют практическое значение для повышения эффективности, прозрачности и управляемости рыболовческих кластеров.

Ключевые слова: рыболовческие кластеры, управленческий учёт, внутренний контроль, COSO, трансфертные цены, сегментарная отчётность, IFRS 8, агрокластеры, Узбекистан.

INTRODUCTION

The strategy for clustering the agricultural sector in the Republic of Uzbekistan was established within the framework of the Action Strategy approved by Presidential Decree No. PF-4947 of February 7, 2017 [3]. This policy is being actively implemented in the fishery sector. Between 2017 and 2024, fish production increased from 83.9 thousand tons to 199.4 thousand tons [1], while the number of full-cycle fishery clusters grew from 5 to 13 [2].

Clusters are organizational structures that unite business entities engaged in the production, storage,

processing, transportation, and sale of agricultural products. The specific feature of a fishery cluster lies in its multi-stage value chain: incubation → fry production → commercial fish farming → processing → compound feed production → trade. Such a complex structure requires the systematic organization of management accounting and internal control.

In international practice, the methodology of management accounting for such structures has been developed by Kaplan and Atkinson [5], as well as Horngren et al. [6]. Local scholars, including Alikulov A. I. [7] and Khasanov B. A. [8], have developed the theoretical foundations of management accounting, while Fayzullaev N. K. and Rasulov B. S. [15] examined the issues of organizing management accounting in cluster-type enterprises.

However, key elements of management accounting, such as transfer pricing, segment reporting, and internal control systems, have not yet been fully established in the fishery clusters of Uzbekistan. Therefore, the purpose of this article is to scientifically substantiate the priority directions for organizing management accounting and internal control systems in fishery clusters and to develop practical recommendations for their implementation.

LITERATURE REVIEW

In the theory and practice of management accounting, Kaplan and Atkinson [5] established modern management accounting as a strategic management tool and highlighted the complex nature of cost accounting in cluster structures. Horngren et al. [6] developed a methodology for the comprehensive application of transfer pricing and segmental analysis in cost accounting. In her textbook on management accounting, Vahrushina M. A. [9] described in detail the principles of forming internal accounting policies for multi-unit structures.

In his foundational article, Hirschleifer J. [14] was among the first scholars to analyse the economic basis of transfer pricing. The OECD Guidelines [12] regulate transfer pricing methods for multinational enterprises and define methodological approaches to the cost-plus method, including its application in agricultural activities. Selan B. and Aliqulov A. [16] proposed an approach to transfer pricing in fishery clusters adapted to local conditions.

In the international literature on segment reporting and IFRS 8, the methodology for identifying operating segments based on the “management approach” has been extensively studied [11]. In the field of internal control systems, the COSO Framework [13] is applied as a widely recognised standard and defines the principles of internal control based on five interrelated components.

In local literature, Alikulov A. I. [7] addressed theoretical and practical issues of cost accounting and proposed specific methodological approaches for agricultural enterprises. In their textbook on management accounting, Khasanov B. A. and Khoshimov A. A. [8] outlined the fundamentals of developing internal accounting policies within the context of Uzbekistan.

Overall, the analysis of the existing scientific literature shows that a comprehensive methodology for organizing management accounting and internal control systems in fishery clusters has not yet been fully developed for the conditions of Uzbekistan. Therefore, this research is aimed at filling this scientific gap.

RESEARCH METHODOLOGY

The study employed scientific methods of analysis and synthesis. In particular, systematic analysis, comparative analysis, modelling, and a normative-methodological approach were used. The object of the research is the fishery clusters within the “O‘zbekbaliqsanoat” Association, while the subject of the research is the methodological and practical issues of establishing management accounting and internal control systems in these clusters.

Primary data were collected from the financial and economic activity reports of five clusters that are members of the “O‘zbekbaliqsanoat” Association for 2019–2024 [2]. Secondary data were obtained from official sources of the Statistics Agency [1], international standards, including IFRS 8 and the COSO Framework, as well as scientific literature.

The methodological framework consists of three components: (1) the stages of formulating the management accounting policy; (2) a transfer pricing model; and (3) a segment reporting form compliant with IFRS 8 [11]. The COSO Internal Control — Integrated Framework [13] was applied as the primary methodological basis for designing the internal control system. The formulation of the management accounting policy was structured as a five-stage process, taking into account the requirements of the Law of the Republic of Uzbekistan “On Accounting” [4].

ANALYSIS AND RESULTS

The current state of management accounting and internal control systems in Uzbekistan's fishery clusters reveals a number of systemic issues. The multi-link value chain of fishery clusters — incubation → fry production → commercial fish farming → processing → compound feed production → sales — requires specific management accounting solutions for each stage. For this purpose, methodological solutions were developed in three main areas.

First area: formulation of the management accounting policy. The management accounting policy is a crucial internal document that establishes the procedures and principles of management accounting within a cluster. Unlike the financial accounting policy, it defines the internal accounting and reporting procedures required for managerial decision-making [7; 8]. The formulation of the management accounting policy includes five stages:

- Grouping the factors that influence the accounting policy, including industry characteristics, scale of activity, operating segments, and external requirements;
- Defining principles and methods, including the cost calculation method and allocation base;
- Preparing a draft accounting policy within the management accounting system;
- Discussing and formalizing the draft;
- Approving and implementing the policy by the Cluster Council.

Second area: transfer pricing formation. A transfer price is an internal price applied when one division of a cluster transfers or sells its products to another division [14]. In international practice, three main methods are used to establish transfer prices: cost-based, market-based, and negotiated methods [12]. For fishery clusters, a hybrid model is proposed: for products with an active market, such as finished feed and filleted fish, the market price method should be applied; for products without an active market, such as larvae and fry, the cost-plus method with a 15–25% profitability margin is recommended. This range corresponds to the median indicators for agricultural sectors recommended under the cost-plus method in the OECD Transfer Pricing Guidelines [12] and is consistent with the research of Selan B. and Alikulov A. [16].

Third area: segment reporting format. IFRS 8 “Operating Segments” requires large enterprises and clusters to prepare separate reports for each operating segment [11]. The standard defines operating segments based on the “management approach”. For fishery clusters, five main operating segments have been identified: (1) fish farming; (2) processing; (3) compound feed production; (4) sales; and (5) other activities.

A sample segment reporting format for these segments is presented in Table 1.

Table 1
Segmental Reporting Format for a Fishery Cluster (sample, in million UZS)

Indicator	Farming	Processing	Feed	Sales	Other	Elim.	Total
Revenue from external customers	0	0	0	1,500	120	0	1,620
Inter-segment (transfer)	800	200	400	0	0	-1,400	0
Total revenue	800	200	400	1,500	120	-1,400	1,620
Production costs	550	150	320	0	80	0	1,100
Inter-segment costs	0	0	0	1,400	0	-1,400	0
Segment profit	250	50	80	-50	40	0	370
Segment assets	1,200	350	450	200	100	0	2,300

Note: The “Elim.” column represents the elimination of inter-segment transactions, in accordance with the requirements of IFRS 8.

Source: Developed by the author based on practical data from the “Uzbekbaliqsanoat” (Uzbekistan Fishery Industry) Association.[2; 11]

As shown in Table 1, inter-segment transfer turnover amounting to UZS 1,400 million is eliminated from the consolidated total through the “Elim.” column. This approach complies with IFRS 8 requirements and reflects the cluster's actual transactions with external customers.

Although the sales segment shows a negative segment profit of UZS 50 million, this indicates that transfer prices for deliveries to other segments may be understated. This situation should therefore be carefully considered when making management decisions.

The internal control system was designed based on the COSO Framework (Table 2).

Table 2
Components of the Internal Control System in the Fishery Cluster

Component	Fishery-Specific Characteristics	Implementation Measures
Control Environment	Cluster's code of ethics and employee qualification requirements	Approval of the code of ethics, professional development courses
Risk Assessment	Biological risks (diseases), market risks	Creating a risk matrix and updating it twice a year
Control Activities	Feed consumption limits, pond parameters, FCR control	Daily monitoring logs, delegation of authority
Information & Communication	Pond–management–cluster information system	ERP system implementation, weekly reports
Monitoring Activities	Auditing the movement of biological assets, feed consumption, and transfer prices	Quarterly and annual internal audit service

Source: Developed by the author based on the COSO Internal Control — Integrated Framework.[13]

The COSO-based internal control system presented in Table 2 has been adapted to reflect the specific characteristics of fishery clusters. These include control over the movement of biological assets, such as fish quantity, mortality, and survival rate; control over feed consumption and warehouse operations, including the FCR coefficient and the risk of misappropriation; and monitoring of water quality and basin parameters. Although such a system is widely used in international practice, it has not yet been systematically applied in local practice [13; 15].

It should also be noted that, in the segment report, the negative profit of the sales segment, amounting to UZS 50 million, and the high profit of the fish farming segment, amounting to UZS 250 million, may indicate that transfer prices have been set incorrectly. This situation highlights the need to conduct a transfer pricing audit for managerial decision-making, a point also emphasized by Selan B. and Alikulov A. [16].

CONCLUSION AND RECOMMENDATIONS

This study identifies the priority directions for organizing management accounting and internal control systems in fishery clusters. Table 1 presents a segment reporting format, while Table 2 provides a practical model of an internal control system based on the COSO Framework. The research findings create a systematic foundation for improving management accounting practices in the fishery clusters of Uzbekistan.

Based on the research findings, the following conclusions were drawn:

For fishery clusters, the formulation of the management accounting policy is a five-stage process developed with consideration of the industry's multi-link structure, seasonality, and biological risks.

The mixed transfer pricing model is based on two principles: for products with an active market, such as finished feed and sliced fish, the market price method is applied; for products without an active market, such as larvae and fry, the cost-plus model with a 15–25% margin is used. This range is consistent with the OECD Guidelines [12].

A segment reporting format compliant with IFRS 8 requirements has been developed for five operating segments: fish farming, processing, compound feed production, sales, and other activities. Inter-segment turnover is eliminated through the "Elim." column, ensuring that the consolidated final result is accurately reflected.

Based on the COSO Framework [13], five components of the internal control system for fishery clusters — the control environment, risk assessment, control activities, information and communication, and monitoring — have been adapted to the specific features of the fishery industry.

Based on the above conclusions, the following scientific and practical recommendations are proposed:

First, the "O'zbekbaliqsanoat" Association and the Ministry of Economy and Finance should jointly develop and standardize a model management accounting policy specifically designed for fishery clusters across the industry.

Second, the transfer pricing model should be empirically tested in pilot clusters, such as A-Cluster and B-Cluster, and the 15–25% margin range should be refined by adapting it to local economic conditions.

Third, the implementation of segment reporting in accordance with IFRS 8 should begin with large clusters in order to ensure financial transparency for foreign investors.

Fourth, the COSO-based internal control system should be integrated with ERP systems, IoT sensors, and artificial intelligence technologies, particularly for real-time monitoring of feed consumption and biological asset movements.

The research findings may be implemented by the “O‘zbekbaliqsanoat” Association, the Ministry of Economy and Finance, the Ministry of Agriculture of the Republic of Uzbekistan, and the National Association of Accountants and Auditors. Future research directions include the integration of digital technologies, such as ERP, IoT, and AI, the incorporation of ESG indicators into segment reporting, and the empirical evaluation of pilot projects.

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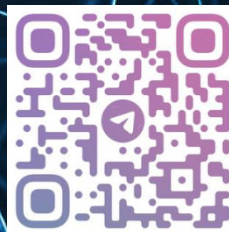
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