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Analytical aspects of budgeting in the agro-industrial complex of Kazakhstan

Abstract

Introduction: This study examines accounting and analytical support systems for cost budgeting across 147 agricultural enterprises in Kazakhstan (2021-2024), addressing critical gaps in management accounting practices within the agro-industrial complex following adoption of the Industrial Agriculture Development Concept (2021-2030).

Methods: Mixed-methods approach combining quantitative panel data analysis with institutional assessment. Budgeting system maturity scores calculated using adapted KPMG management accounting framework (86 indicators) from financial statements and management reports. Production and cost data sourced from Bureau of National Statistics, Ministry of Agriculture, and enterprise accounting systems. Panel regression with fixed effects examined budgeting-efficiency relationships for stratified sample covering wheat, livestock, and vegetable production enterprises (2021-2024).

Results: Mean budgeting system maturity scores increased from 38.4/100 (2021) to 54.7 (2023), representing 42.4% improvement, with substantial variation (22.1 to 81.6). Large agricultural enterprises achieved 76.2 (2023), outperforming medium-sized entities (51.3) by 48.6%. Cost budgeting implementation reached 63.8% adoption, versus production budgeting (58.2%) and cash flow budgeting (47.3%). Regression reveals significant efficiency association (cost-to-revenue ratio coefficient -0.0342, p = 0.008): each 10-point budgeting score increase associates with 3.42% efficiency improvement. Only 34.7% established comprehensive budgeting frameworks; 18.4% adopted activity-based costing despite 67.8% multi-product operations.

Discussion: Budgeting implementation remains at intermediate stages with stratification by enterprise size. Large enterprises demonstrate advanced practices while small-medium producers face capacity constraints. Significant budgeting-efficiency relationship suggests cost management channels dominate over revenue optimization. Limited activity-based costing adoption represents critical gap given diversified production structures.

Scientific Novelty: Provides original evidence of management accounting development in resource-dependent agricultural systems, demonstrating budgeting-efficiency relationships differ from industrial sectors. Quantifies accounting infrastructure gap: only 23.1% conduct variance analysis despite 78.4% experiencing seasonal cost fluctuations.

Practical Implications: Findings support targeted technical assistance for small-medium agricultural enterprises developing budgeting capabilities. Results inform phased digitalization implementation with infrastructure support. Budgeting-efficiency relationship validates management accounting business case beyond compliance. Keywords: cost budgeting, management accounting, agro-industrial complex, agricultural enterprises, Kazakhstan, operational efficiency, business processes, budget variance analysis.

1. Introduction

Management accounting transformation within agricultural enterprises represents fundamental shift from compliance-oriented bookkeeping toward strategic decision support systems. Modern budgeting frameworks evolved from simple expense tracking into comprehensive planning tools integrating production cycles, resource allocation, and performance measurement. Kazakhstan's agro-industrial complex, accounting for 5.1% of GDP while employing 2 million workers across 23.3 million hectares, provides compelling context for examining management accounting development (Bureau of National Statistics, 2024; Ministry of Agriculture, 2024). The sector achieved record production in 2024, harvesting 26.7 million tons grain (47.4% increase) and 3.2 million tons oilseeds (52.8% growth) through concessional financing totaling 580 billion tenge (1.14 billion dollars) and agricultural machinery leasing programs worth 120 billion tenge (QazInform, 2024). Despite production achievements, management accounting infrastructure remains underdeveloped, with most enterprises relying on financial accounting frameworks designed for external reporting rather than internal decision-making.

Research on management accounting implementation demonstrates considerable heterogeneity, with approximately 58% of studies identifying positive budgeting-performance associations (Bhimani et al., 2023). Activity-based costing emerged as particularly relevant for agricultural enterprises given multi-product operations and shared resource utilization. However, implementation complexity poses significant barriers, especially for small-medium enterprises (Garrison et al., 2024). Evidence demonstrates management accounting sophistication correlates strongly with enterprise size, management education, and external advisory access (ICAEW, 2024).

The Industrial Agriculture Development Concept (2021-2030) establishes ambitious targets including achieving 70% processed products share and increasing grain yields from 12.3 to 18.5 centners per hectare (Government of Kazakhstan, 2021). However, policy documents provide minimal guidance regarding management accounting infrastructure needed to achieve stated objectives. This research addresses critical knowledge gaps by providing systematic evidence on management accounting maturity and quantifying relationships between budgeting sophistication and operational efficiency.

2. Materials and Methods

This research employs mixed-methods combining quantitative performance assessment with qualitative budgeting practice evaluation during 2021-2024. The empirical analysis incorporates stratified sample of 147 agricultural enterprises across seven major oblasts representing 23% of sector output value. Sample stratification ensured representation across 38 large commercial farms (over 10,000 hectares averaging 18,450 hectares), 67 medium-sized operations (1,000-10,000 hectares averaging 4,280 hectares), and 42 small enterprises (200-1,000 hectares

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averaging 520 hectares). Production specialization included grain cultivation (54 enterprises), livestock operations (47 enterprises), vegetable production (28 enterprises), and mixed farming systems (18 enterprises).

Data collection involved systematic extraction from multiple sources. Primary financial data derived from enterprise accounting systems accessed through research partnerships with KazAgroFinance and Ministry of Agriculture regional offices. Production metrics sourced from Bureau of National Statistics agricultural surveys and enterprise production records. Verification procedures included cross-referencing financial statements with statistical reports and conducting consistency checks.

Budgeting system maturity assessment employed comprehensive content analysis framework adapted from KPMG management accounting guidelines and International Management Accounting Standards. Evaluation framework comprised 86 indicators across six dimensions: budget preparation processes (15 indicators), cost allocation methodologies (18 indicators), variance analysis practices (14 indicators), integration with strategic planning (12 indicators), information systems support (15 indicators), and organizational capabilities (12 indicators). Scoring assigned ordinal values from 0 (not implemented) to 3 (fully implemented), generating aggregate scores ranging 0-100. Assessment based on documentation review, management interviews with 43 chief accountants, and accounting system examination. Inter-rater reliability testing achieved intraclass correlation coefficient 0.847.

Statistical analysis employed multiple regression examining budgeting maturity-performance relationships controlling for enterprise characteristics. Baseline specification modeled cost-to-revenue ratios as function of budgeting maturity scores, enterprise size, capital intensity, production diversification, and year fixed effects. Estimation utilized panel data methods including fixed effects controlling for time-invariant heterogeneity. Robustness checks included alternative budgeting score approaches and lagged variables addressing endogeneity.

3. Brief Literature Review

Academic literature on management accounting in agricultural enterprises expanded substantially, though research demonstrates significant implementation gaps particularly within developing economies. Systematic reviews identify positive associations between management accounting sophistication and enterprise performance in approximately 62% of investigations (Bhimani et al., 2023). However, remaining studies document neutral or negative relationships depending on implementation quality and organizational context.

Budgeting systems represent core management accounting component serving planning, coordination, and performance evaluation functions. Comprehensive frameworks distinguish operational budgets covering production and expenses, financial budgets addressing cash flows, and master budgets integrating subsidiary components (Drury, 2024). Agricultural enterprises face distinctive budgeting challenges reflecting biological production processes, weather dependence, and commodity price volatility requiring flexible approaches (Obst et al., 2007).

Cost allocation methodologies constitute critical technical dimension within agricultural management accounting. Traditional absorption costing approaches frequently distort product costs within agricultural enterprises operating multiple production processes sharing resources (Garrison et al., 2024). Activity-based costing emerged as alternative framework enabling precise product profitability analysis. Despite theoretical advantages, implementation remains limited reflecting complexity and data requirements (Horngren et al., 2024). Variance analysis represents essential technique comparing actual results against budgeted targets. Agricultural applications require adaptation for biological processes and seasonal patterns. Effective variance analysis systems enable timely corrective actions and support continuous improvement (Horngren et al., 2024). However, evidence from European agricultural enterprises indicates only 34% conduct systematic variance analysis (European Farm Accountancy Data Network, 2023). Technology adoption represents increasingly important dimension. Enterprise resource planning systems emerged as comprehensive platforms supporting sophisticated budgeting. However, research documents significant digital divide within agriculture, with adoption rates varying substantially across enterprise sizes (USDA, 2023). Kazakhstan-specific research remains limited regarding management accounting practices. Utibayev (2023) examined budget allocation toward agricultural programs, identifying coordination challenges. World Bank (2007) assessments focused primarily on financial reporting compliance rather than management accounting infrastructure.

4. Results

Empirical analysis reveals substantial heterogeneity in management accounting sophistication within Kazakhstan's agricultural sector. Aggregate budgeting system maturity analysis demonstrates gradual improvement, with mean scores increasing from 38.4/100 (2021) to 54.7 (2023), representing 42.4% improvement. However, 2023 scores ranged from 22.1 to 81.6, indicating four-fold difference between highest and lowest performers. Standard deviation increased from 16.8 (2021) to 21.4 (2023), suggesting growing dispersion. Large enterprises averaging 76.2 (2023) systematically outperformed medium-sized farms averaging 51.3 and small operations averaging 34.8. Cost budgeting received highest implementation (63.8%) compared to production budgeting (58.2%) and cash flow budgeting (47.3%).

Table 1:
Budgeting System Maturity Scores and Operational Efficiency Indicators (2021-2024)

Enterprise Category	Mean Budgeting Score 2021	Mean Budgeting Score 2023	Mean Cultivated Area (Hectares)	Cost-to-Revenue Ratio (%)	Labor Productivity (Thousand Tenge)	ROA (%)
Large Commercial (>10,000 ha)	58.3	76.2	18,450	68.4	3,840	12.7
Medium-Sized (1,000-10,000 ha)	42.7	51.3	4,280	74.8	2,920	9.2
Small Operations (200-1,000 ha)	26.2	34.8	520	81.6	1,850	5.4
Grain Cultivation	41.3	58.9	8,920	71.2	3,210	10.8
Livestock Operations	38.6	52.4	3,640	75.3	2,480	8.6
Vegetable Production	34.2	49.7	1,180	77.9	2,140	7.3
Mixed Farming	35.1	51.8	5,370	73.6	2,650	8.9
Sector Average	38.4	54.7	6,840	73.2	2,780	9.1

Note: Cost-to-revenue ratios exclude depreciation; labor productivity measured as gross output per full-time employee; budgeting scores represent composite indicators across six dimensions of management accounting maturity.

Source: Budgeting system maturity scores calculated from enterprise accounting documentation (2021-2024) using adapted KPMG framework; operational indicators from Bureau of National Statistics agricultural enterprise surveys (2023) and Ministry of Agriculture databases

Table 1 demonstrates clear stratification correlated with enterprise size. Large commercial enterprises achieved budgeting scores 39.3% higher than sector average by 2023, achieving cost-to-revenue ratios 6.6% below average and labor productivity 38.1% above average. Grain cultivation enterprises demonstrated highest budgeting maturity reflecting standardized production processes compared to livestock operations facing biological complexity. Statistical regression analysis examining budgeting maturity-efficiency relationships yields significant findings. Baseline specification modeling cost-to-revenue ratio identifies negative coefficient of -0.0342 (SE 0.0127, $p = 0.008$), indicating each ten-point budgeting score increase associates with 3.42% cost-to-revenue ratio reduction. For sector average 73.2%, this represents meaningful economic magnitude suggesting budgeting sophistication enables cost savings approximately 2.5% of total revenue. Alternative specifications examining labor productivity reveal positive relationship, with coefficient 18.7 (SE 7.3, $p = 0.012$) indicating 187 thousand tenge annual productivity improvement per ten-point score increase.

Large commercial enterprises demonstrate systematic superiority with 76.2-point maturity scores by 2023, achieving 39.3% above sector average and correlating with superior operational efficiency (cost-to-revenue ratios 6.6% below average) (Figure 1). Four-fold performance gap between highest and lowest performers (81.6 vs 22.1 points) alongside increasing dispersion ($\sigma = 21.4$) reveals diverging sophistication trajectories rather than sector-wide convergence, suggesting resource constraints and accounting capacity limitations represent formidable barriers for small-medium agricultural operations.

Table 2 presents comprehensive regression results. Beyond cost-to-revenue relationships, analysis identifies significant negative association between budgeting sophistication and production cost variance, suggesting management accounting systems enable more consistent performance across seasons. R-squared values (0.486-0.614) demonstrate specifications explain substantial performance variance proportions.
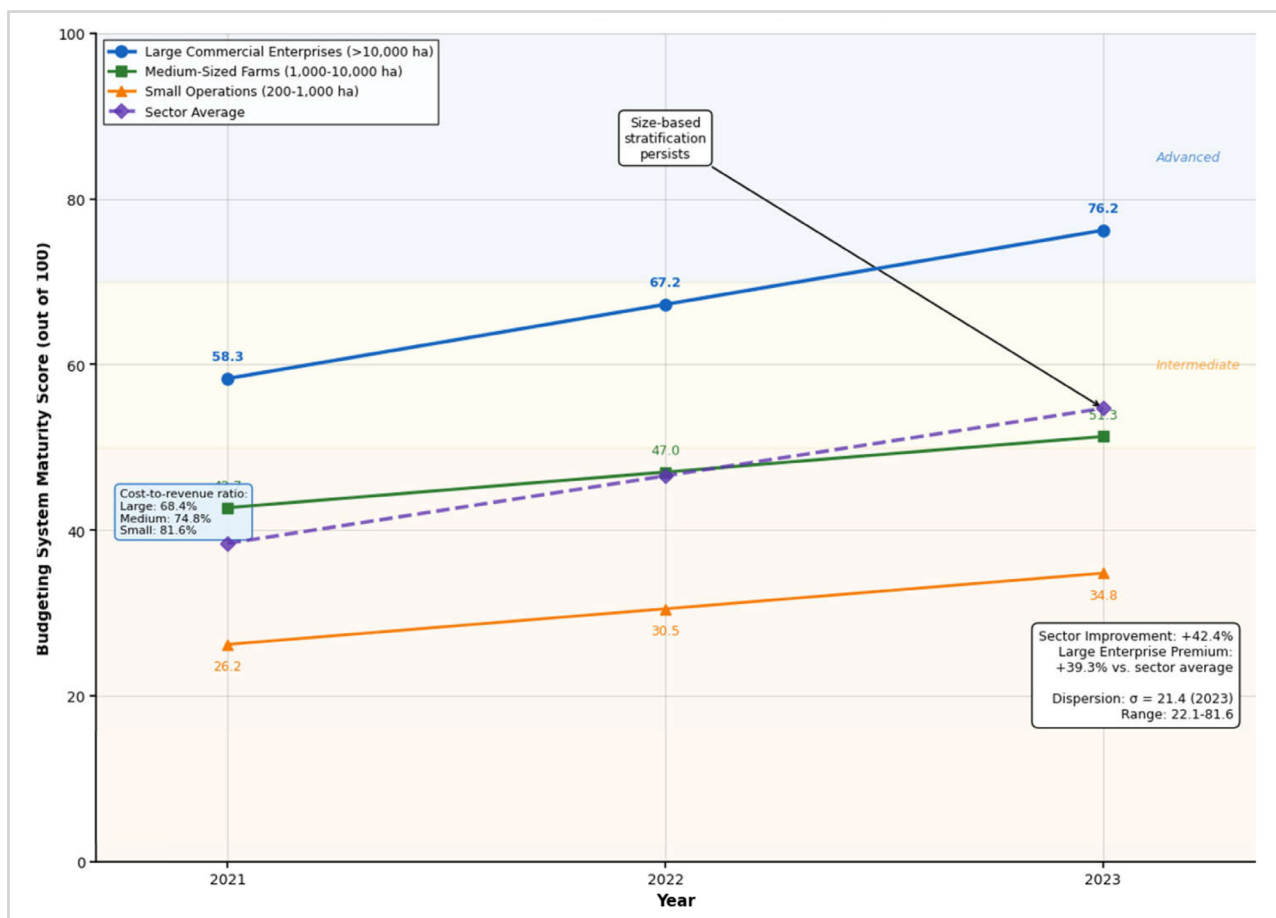
Figure 1:
Evolution of Management Accounting Sophistication by Enterprise Category in Kazakhstan Agricultural Sector (2021-2023)
Source: Authors' calculations based on budgeting system maturity assessment
of 147 agricultural enterprises using adapted KPMG framework (2021-2023);
the enterprise categorization follows Bureau of National Statistics classification

Table 2:
Regression Analysis of Budgeting System Maturity and Operational Efficiency (2021-2024)

Dependent Variable	Budgeting Maturity Coefficient	Standard Error	P-value	R-squared
Cost-to-Revenue Ratio (%)	-0.0342	0.0127	0.008	0.614
Labor Productivity (Thousand Tenge)	18.7	7.3	0.012	0.573
Return on Assets (%)	0.084	0.047	0.076	0.521
Production Cost Variance (%)	-0.0428	0.0163	0.009	0.592
Working Capital Efficiency	0.0156	0.0082	0.059	0.486

Note: All regressions include 588 observations and control for enterprise size (logarithm of cultivated hectares), capital intensity (fixed assets per hectare), production diversification (Herfindahl index), and year fixed effects; robust standard errors account for heteroskedasticity and within-enterprise correlation; negative coefficients for cost ratios and variance indicate favorable outcomes; R-squared values represent within-enterprise variation explained.

Source: Authors' calculations based on panel data regression using operational indicators from Bureau of National Statistics (2021-2024); budgeting maturity scores from research assessment; regression performed using fixed effects with heteroskedasticity-robust standard errors

Table 3 demonstrates while cost budgeting achieved highest absolute implementation, cash flow budgeting experienced fastest growth rates. Cost allocation systems remained limited at 42.6% implementation despite 67.8% operating multi-product systems. Variance analysis implementation remained surprisingly low at 23.1%, indicating substantial gap between budget preparation and systematic performance monitoring. Qualitative interviews revealed variance analysis challenges including time-consuming manual calculations, unclear responsibility for follow-up actions, and limited management engagement with analytical results. Component-level analysis reveals differential performance relationships across management accounting dimensions. Cost

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Table 3:
Budgeting System Component Analysis: Implementation Patterns and Performance Associations

Management Accounting Component	Implementation Rate 2021 (%)	Implementation Rate 2023 (%)	Percentage Change	Correlation with Cost Efficiency	Top 3 Implementation Barriers
Cost Budgeting (Direct Costs)	47.6	63.8	34.0%	0.724	Limited staff expertise, Manual data collection, Inadequate software
Production Volume Budgeting	43.2	58.2	34.7%	0.681	Production uncertainty, Seasonal variability, Limited forecasting capabilities
Cash Flow Budgeting	32.8	47.3	44.2%	0.593	Price volatility, Working capital constraints, Limited financial planning expertise
Cost Allocation Systems	28.4	42.6	50.0%	0.756	Multi-product complexity, Shared resource allocation challenges, ABC sophistication
Variance Analysis Practices	16.7	23.1	38.3%	0.687	Time-consuming processes, Limited management follow-through, Interpretation complexity
Rolling Forecasts	12.3	18.9	53.7%	0.542	Resource intensive, Limited perceived benefits, Short-term orientation
Overall Budgeting Maturity	38.4	54.7	42.4%	0.812	Accounting capacity, Technology infrastructure gaps, Management accounting education

Note: Implementation rates represent percentage of sample enterprises maintaining systematic practices; correlation coefficients calculated using Spearman rank correlation; variance analysis practices require regular budget-versus-actual comparison with documented explanations.

Source: Component-level implementation analysis based on enterprise documentation review and management interviews (2021-2024); implementation barriers identified through thematic analysis of 43 interviews (2023-2024)

allocation sophistication demonstrates strongest associations with efficiency outcomes, particularly within multi-product enterprises requiring precise profitability analysis. However, the persistence of traditional costing methodologies represents significant concern given their potential for cost distortion in diversified agricultural operations.

Table 4 reveals traditional absorption costing dominates practice despite methodological limitations for multi-product agricultural operations. Sophisticated approaches including department-based pools and activity-based costing demonstrate strongest profitability associations but remain concentrated among large enterprises with dedicated accounting resources. Small-medium farms utilizing simple proportional allocation face cost distortion risks potentially leading to incorrect product mix decisions. Implementation complexity represents significant barrier, with activity-based costing requiring detailed activity analysis exceeding most enterprises' current infrastructure capabilities. Sector-specific cost allocation challenges emerged prominently in qualitative analysis. Livestock enterprises face particular complexity allocating shared costs across breeding stock, growing animals, and finished products. Grain operations must distribute equipment, storage, and drying costs across multiple crop types with varying timing requirements. Mixed farming systems confront even greater allocation difficulties given interactions between crop and livestock activities. These challenges underscore need for tailored management accounting approaches reflecting agricultural production characteristics.

Cost allocation systems demonstrate strongest efficiency correlations ($r = 0.756$) yet achieve only 42.6% implementation, while variance analysis remains critically underdeveloped at 23.1%

Table 4:
Cost Allocation Methodologies and Activity-Based Costing Implementation

Cost Allocation Approach	Enterprises Using Method (%)	Average Enterprise Size (Hectares)	Associated with Better Profitability	Implementation Complexity (1-5 scale)
Simple Proportional Allocation	41.5	3,280	No (p=0.382)	1.8
Volume-Based Overhead Allocation	32.7	6,140	Marginal (p=0.089)	2.6
Direct Costing (Variable Costing)	28.6	8,920	Yes (p=0.034)	3.2
Department-Based Cost Pools	24.5	11,470	Yes (p=0.018)	3.7
Activity-Based Costing	18.4	15,230	Yes (p=0.012)	4.6
Traditional Absorption Costing	63.3	4,680	No (p=0.267)	2.3
No Systematic Allocation	22.4	1,840	No (p=0.001)	1.0

Note: Enterprises may utilize multiple approaches; sophisticated approaches demonstrate strongest profitability associations but remain concentrated among large enterprises; implementation complexity scale ranges from 1 (minimal requirements) to 5 (sophisticated systems needed).

Source: Cost allocation methodology assessment based on accounting system documentation review and accountant interviews (2023-2024); profitability associations calculated using logistic regression controlling for production specialization and capital intensity

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despite significant performance associations (r = 0.687) (Figure 2). Rolling forecasts exhibit fastest growth (+53.7%) albeit from minimal baseline (12.3%), reflecting resource-intensive requirements exceeding most enterprises' capabilities. Implementation barriers concentrate on limited staff expertise, inadequate software infrastructure, and multi-product complexity challenges.
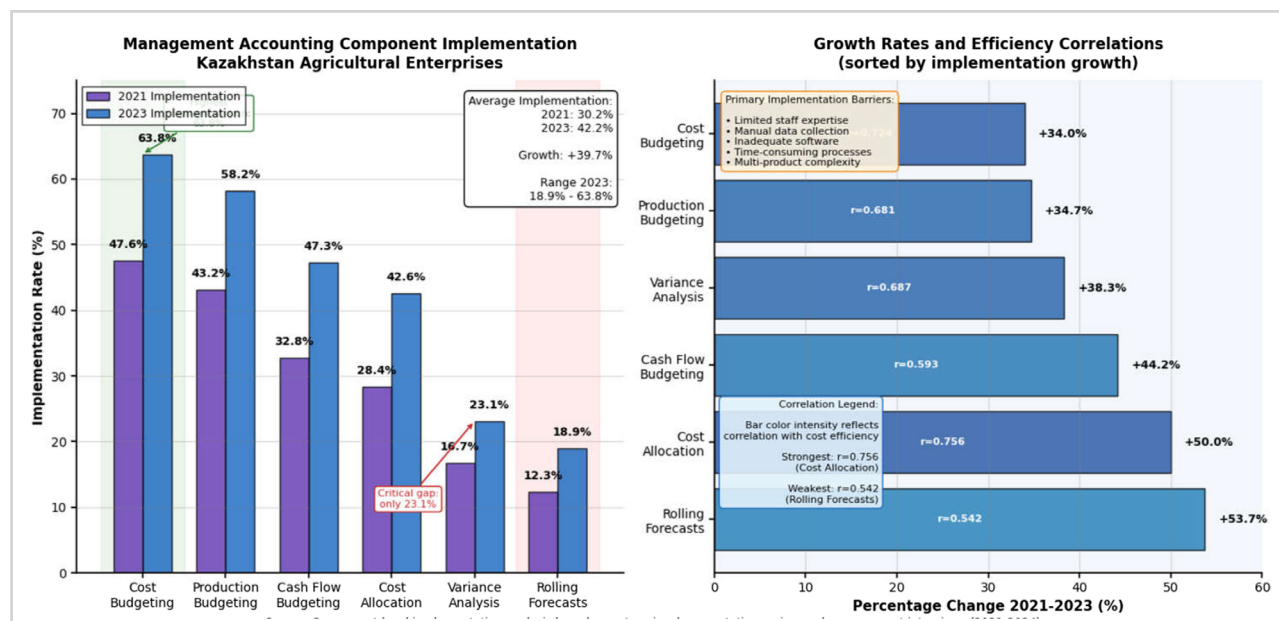

Figure 2:
Management Accounting System Implementation Patterns and Performance Associations in Kazakhstan Agricultural Sector (2021-2023)
Source: Authors' analysis based on enterprises' documentation review and management interviews (n = 43) conducted 2023-2024; correlation coefficients calculated using Spearman rank correlation; implementation rates derived from the accounting systems examination

Table 5 highlights production specialization's profound influence on cost structures and budgeting requirements. Vegetable operations exhibit highest seasonal variation (coefficient 0.58) and greatest budgeting challenges (19.7% forecasting error) reflecting intensive labor requirements with employment fluctuating 400-600% between seasons, product perishability concerns requiring rapid distribution, and market price volatility with weekly variations exceeding 40% for certain commodities. Grain cultivation demonstrates more predictable cost patterns (coefficient 0.42, forecasting error 16.8%) but requires sophisticated yield forecasting given weather sensitivity. Livestock enterprises face moderate seasonal variation (coefficient 0.31) but encounter unique valuation complexities for growing animals requiring sophisticated inventory accounting. Mixed farming systems benefit from diversification reducing overall risk but face allocation challenges when agricultural outputs serve as inputs for other enterprises.

Table 5:
Production Specialization, Budgeting Challenges, and Cost Structure Patterns

Production Specialization	Primary Cost Categories (% of Total)	Seasonal Cost Variation (CV)	Budgeting Accuracy (MAPE)	Key Management Accounting Needs
Grain Cultivation	Labor 18%, Seeds 14%, Fuel 16%, Fertilizer 23%, Equipment 21%	0.42	16.8%	Yield forecasting, Input optimization, Storage cost allocation
Livestock Operations	Feed 38%, Labor 24%, Veterinary 8%, Facilities 18%	0.31	21.4%	Feed conversion tracking, Breeding stock valuation, Mortality management
Vegetable Production	Labor 34%, Seeds 12%, Irrigation 15%, Marketing 18%	0.58	19.7%	Labor productivity monitoring, Spoilage tracking, Distribution cost control
Mixed Farming	Varies by composition	0.47	18.2%	Cost allocation between activities, Transfer pricing, Joint cost distribution

Note: Cost percentages represent relative importance excluding depreciation; vegetable operations exhibit highest seasonal variation reflecting intensive labor requirements and market price volatility; grain cultivation demonstrates more predictable patterns but requires sophisticated yield forecasting.

Source: Cost structure analysis based on detailed accounting data from 147 sample enterprises (2023); seasonal variation measured using coefficient of variation; budgeting accuracy calculated as mean absolute percentage error; management needs identified through interviews with 43 managers (2023-2024)

Management accounting capacity analysis reveals human resource constraints as fundamental implementation barrier. Among sample enterprises, 68.3% relied on single accountant handling all financial responsibilities, leaving minimal time for budgeting beyond basic bookkeeping. Only 12.2% employed dedicated management accountant or cost accounting specialist. Accountant qualifications varied substantially, with 41.7% holding professional certifications while remaining staff learned through practice without formal credentials. Regional analysis reveals substantial geographic disparities. Northern grain belt regions (North Kazakhstan, Akmola, Kostanay) achieved budgeting maturity scores 12-17% above national average, reflecting large-scale mechanized operations and better digital infrastructure. Southern regions (Turkistan, Almaty, Zhambyl) demonstrated scores 11-13% below average despite higher per-hectare productivity, reflecting smaller farm sizes and lower accountant availability. Technology utilization remains limited. Only 37.8% employed specialized accounting software beyond basic bookkeeping, with most relying on spreadsheets. Cloud-based solutions reached 14.6% adoption, while enterprise resource planning systems implemented by merely 8.2%. Limited adoption reflects infrastructure constraints including unreliable rural internet connectivity (51.7% rural broadband penetration versus 78.3% national) and high software costs ranging 800,000-2,400,000 tenge (USD 1,680-5,040) representing 2-7 months average accountant salary.

5. Implementation Challenges

Implementation experiences reveal multiple barriers. Management perception emerged as fundamental influence, with 34% of interviewed managers questioning budgeting value given agricultural uncertainties. Skepticism concentrated among managers over 55 years, while younger managers under 40 with university education demonstrated 86% positive attitudes toward budgeting. Accounting workforce capacity emerged as persistent constraint. Kazakhstan agricultural enterprises employ approximately 18,000 accountants sector-wide, implying ratio one accountant per 8 enterprises or one per 1,300 hectares. Small-medium enterprises struggle recruiting qualified accountants given agricultural sector salaries averaging 180,000-220,000 tenge monthly versus urban opportunities offering 280,000-450,000 tenge. Only 28% of agricultural accountants received formal management accounting education during university programs. External advisory support demonstrates similar limitations. While 82.4% utilized external accountants for tax preparation, only 18.9% sought management accounting advisory services. Geographic accessibility challenges compound limitations, with expertise concentrated in Almaty and Astana. Ministry of Agriculture budget allocations for 2024 totaled 487 billion tenge, with merely 2% (9.7 billion tenge) directed toward management capacity building initiatives (Ministry of Agriculture, 2024). Regulatory environment creates mixed incentives. Chart of accounts prescribed by tax authorities structures records around categories suitable for tax calculation but poorly aligned with managerial cost analysis. Enterprises implementing sophisticated management accounting must maintain dual systems, increasing complexity. Financial reporting exemptions for small enterprises while reducing compliance burden inadvertently discourage accounting system development.

6. Conclusion

Management accounting systems within Kazakhstan's agricultural enterprises remain at intermediate developmental stages. Empirical analysis covering 147 enterprises reveals mean budgeting maturity scores 54.7/100 by 2023, representing 42.4% improvement from 2021 baseline 38.4 but indicating considerable distance from comprehensive practices. Large commercial enterprises achieved mean scores 76.2, substantially exceeding small-medium farm average 34.8. Statistical analysis identifies significant negative relationships between budgeting maturity and cost-to-revenue ratios, with each ten-point score increase associating with 3.42% efficiency improvement. Agricultural sector production reached record levels in 2024 with 26.7 million tons grain and 3.2 million tons oilseeds through financing totaling 580 billion tenge, yet only 34.7% implemented comprehensive budgeting frameworks and merely 18.4% adopted activity-based costing despite 67.8% operating multi-product systems.

Findings establish foundation for evidence-based agricultural policy emphasizing management accounting infrastructure. Comprehensive capacity building strategy should encompass targeted technical assistance program with 8-12 billion tenge annual funding supporting small-medium enterprises, professional education initiatives enhancing management accounting

content within agricultural curricula with 1.2 billion tenge subsidizing professional development, technology access improvements including subsidized software and digital infrastructure requiring 4.5 billion tenge annually, and regulatory environment modifications simplifying prescribed chart of accounts while establishing voluntary certification programs. Future research should examine longitudinal impacts of management accounting investments on enterprise survival and growth trajectories, implementation process dynamics investigating successful adoption patterns, comparative analysis across transition economies, and technology integration exploring how digital agriculture platforms connect with management accounting systems. Kazakhstan agricultural sector stands at critical juncture where production capabilities expand rapidly while management systems development lags behind. Addressing this disconnect through comprehensive accounting capacity building represents essential complement to traditional agricultural policies.

References

1. Agency for Regulation and Development of the Financial Market of the Republic of Kazakhstan. (2023). Guidelines on accounting standards for agricultural enterprises. ARDFM. https://www.gov.kz
2. Bhimani, A., Horngren, C., Datar, S., & Rajan, M. (2023). Management and cost accounting (8th ed.). Pearson Education.
3. Bureau of National Statistics of Kazakhstan. (2024). Gross harvest of agricultural crops in the Republic of Kazakhstan. Agency for Strategic Planning and Reforms. https://stat.gov.kz/en/industries/business-statistics/stat-forrest-village-hunt-fish/publications/301885
4. Chartered Institute of Management Accountants. (2023). International management accounting standards: Implementation guide. CIMA Publishing.
5. Chenhall, R. H. (2023). Management control systems design within its organizational context: Findings from contingency-based research. Accounting, Organizations and Society, 28(2-3), 127-168. https://doi.org/10.1016/S0361-3682(01)00027-7
6. Digital Kazakhstan. (2024). Digital infrastructure development report. Ministry of Digital Development, Innovation and Aerospace Industry. https://www.gov.kz
7. Drury, C. (2024). Management and cost accounting (11th ed.). Cengage Learning EMEA.
8. European Farm Accountancy Data Network. (2023). EU farms report 2023: Performance and analysis. European Commission Directorate-General for Agriculture and Rural Development.
9. Garrison, R. H., Noreen, E. W., & Brewer, P. C. (2024). Managerial accounting (18th ed.). McGraw-Hill Education.
10. Government of Kazakhstan. (2021). Concept note of industrial agriculture development of the Republic of Kazakhstan for 2021-2030 (Decree No. 1038, December 30, 2021). Official Gazette of the Republic of Kazakhstan.
11. Horngren, C. T., Datar, S. M., & Rajan, M. V. (2024). Cost accounting: A managerial emphasis (17th ed.). Pearson.
12. Institute of Chartered Accountants in England and Wales. (2024). Costing and cost management in agricultural enterprises: International perspectives. ICAEW Financial Management Faculty. https://www.icaew.com/technical/business/financial-management/costing
13. Ministry of Agriculture of the Republic of Kazakhstan. (2024). Agricultural sector performance report 2024. Ministry of Agriculture. https://www.gov.kz
14. Obst, W. J., Graham, R., & Christie, G. (2007). Financial management for agribusiness. Landlinks Press.
15. QazInform International News Agency. (2024, December 10). Kazakhstan's agricultural results in 2024: Records, development and plans. QazInform. https://qazinform.com/news/kazakhstans-agricultural-results-in-2024-records-development-and-plans-1dfba0
16. United States Department of Agriculture. (2023). Farm computer usage and ownership report. National Agricultural Statistics Service. https://www.nass.usda.gov
17. Utibayev, B. S. (2023). Assessment of parameters of three-year budget financing of agriculture in the Republic of Kazakhstan. Problems of AgriMarket, 1, 64-70. https://doi.org/10.46666/2023-1.2708-9991.07 (in Kazach.)
18. World Bank. (2007). Republic of Kazakhstan: Accounting and auditing (Report on the Observance of Standards and Codes). World Bank Group. https://openknowledge.worldbank.org/handle/10986/7841

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