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Socio-Economic Benefits of Using Public-Private Partnership for the Implementation of Social Projects

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Abstract:

The study evaluated the effectiveness of public-private partnerships (PPPs) in Ukraine's social infrastructure, comparing them with fully public projects in terms of cost-efficiency, implementation speed, employment, and user satisfaction. A mixed-methods design was applied, analysing four PPP cases: Biopharma Blood Center, Zhytomyr Hospital, Rinat Akhmetov Emergency Ambulance Initiative, and EdCamp Digital Education Program. Quantitative analysis using SPSS 28.0 included paired t-tests, multivariate and logistic regressions, and Social Return on Investment (SROI). Qualitative insights were drawn from 15 stakeholder interviews coded in NVivo 12.

The PPPs reduced costs per beneficiary by 24% to 27%, shortened implementation time by five to six months, and improved user satisfaction by more than 35 percent. Access to services in underserved areas expanded by 25% to 30 %, while job creation exceeded that of public projects by 40% to 50%. Regression models confirmed statistical significance ($p < 0.05$), and robustness was validated through non-parametric testing. Qualitative findings identified five key success factors: strategic alignment, strong governance structures, agile implementation, technological innovation, and regulatory coordination. Internal managerial practices such as KPI dashboards, cross-functional teams, and performance-based decision systems significantly contributed to positive PPP outcomes. The study emphasized that these internal mechanisms, often neglected in policy-oriented analyses, played a critical role in transitional and post-conflict contexts. It recommended standardizing SPVs, implementing digital monitoring tools, reforming licensing protocols, and establishing centralized PPP data systems to enhance scalability and institutional success.

Keywords: public-private partnerships; socio-economic benefit; social infrastructure; cost-efficiency; hybrid governance; Ukraine.

JEL Classification: H54; H75; L32; O22; R42.

Introduction

Public-Private Partnerships (PPPs) have gained global recognition as effective mechanisms for delivering complex social infrastructure and services, especially in the face of limited public budgets and growing citizen demands (Babacan, 2021; Casprini & Palumbo, 2022). Worldwide, governments have benefited from PPPs in the areas of education, healthcare, infrastructure, and digitalization of public services since they allow for the sharing of risks, the pooling of resources, and the combination of public and private sector regulatory oversight with efficiency and innovation (Fabre & Straub, 2023; Saini & Digga, 2025). In contrast to more conventional approaches to procurement, PPPs place an emphasis on performance-based outcomes and promote stakeholder participation over the long term. In Ukraine, the utility of PPPs has become particularly evident in the context of post-conflict reconstruction and socio-economic stabilization (Vakulenko et al., 2024). Rebuilding essential infrastructure has become an even more pressing issue because of the extraordinary pressure on public funds caused by the continuing conflict, which has also interrupted service delivery in vital areas like healthcare and education. In this context, public-private partnerships (PPPs) present an encouraging option to promote equitable development and speed up the restoration process (Owojori & Erasmus, 2025). It states that these allow states to increase service delivery, decrease fiscal constraints, and promote job creation by utilizing private resources, technical experience, and project management capabilities. Financial institutions and international donors are beginning to see PPP frameworks to help fragile and conflict-affected governments recover from their crises.

Semigina (2022) highlights the tensions in Ukrainian social work education between the inherited paternalistic welfare model and internationally promoted empowering approaches. It emphasizes the need to align field training with international standards while adapting to national contexts, educational policies, and students' needs. Morozov et al. (2024) makes a valuable contribution by empirically demonstrating the critical role of stakeholder collaboration and regulatory frameworks in enhancing PPP effectiveness within the EU context.

The social and economic effects of public-private partnerships (PPPs) in Ukraine's many sectors remain little studied. Few studies have compared the efficacy, organizational dynamics, or real-world performance outcomes of PPP regulatory frameworks in Ukraine to those of completely publicly funded programs, even though many have investigated these frameworks in the context of legal and institutional research. In addition, the current literature focuses on the procedures used by states rather than private enterprises' internal decision-making processes, corporate governance frameworks, or managerial models that really lead to successful projects. Considering Ukraine's ongoing recovery from conflict and systemic disruption, the role of Public-Private Partnerships (PPPs) has gained renewed relevance as a tool for infrastructure restoration, public service delivery, and institutional rebuilding.

The current environment is marked by constrained public budgets, evolving regulatory frameworks, and a pressing need to restore citizen trust in service provision. This creates a new context in which PPPs are not merely cost-sharing arrangements but critical mechanisms for accelerating recovery, introducing innovation, and enhancing resilience in fragile sectors such as healthcare and education. Consequently, this study situates its analysis within this emergent governance and development framework, recognizing PPPs as hybrid institutional models that may support not only efficiency but also legitimacy and stability in post-crisis settings. By including an organizational and administrative viewpoint in addition to evaluating the socio-economic benefits of PPPs, this study fills that void. Investment feasibility, reputational advantages, strategic alignment with corporate social responsibility (CSR), and projected risk-sharing arrangements are some of the criteria that private-sector firms examine when deciding to join in PPPs. The study explores the ways in which various business structures, such as holding companies, development consortia, and special purpose vehicles (SPVs), control public-private partnerships (PPPs), divide up internal duties, and ensure that project deadlines are in sync with performance metrics. Not only that but also looks at the private sector's approach to managing project implementation, covering aspects that policy-focused studies generally overlook, such as personnel, procurement, stakeholder coordination, and performance monitoring.

This study fills a clear gap in the literature by offering one of the first comparative empirical analyses of formal PPP models and fully public projects in a post-conflict economy. While prior research has examined legal provisions or single PPP cases, little is known about how different organizational models' formal concessions, CSR-driven investments, philanthropic co-management, and NGO-business hybrids perform against public provision in fragile contexts. By integrating quantitative benchmarking with managerial analysis, study provide evidence that links internal business structures to socio-economic outcomes, thereby extending PPP scholarship beyond legal-institutional approaches.

The objective is to integrate a business-focused organizational analysis of project implementation with a socio-economic benefit analysis of public-private partnerships in executing social projects in Ukraine. This analysis will compare the efficiency, cost-effectiveness, and social impact of these partnerships to that of traditional public sector approaches. To guide the analysis, the study formulated three research questions addressing the socio-economic role of public-private partnerships (PPPs) in Ukraine's social sector. These questions explore both the measurable benefits of PPPs and their comparative effectiveness against fully public-funded projects, while also identifying the organizational and managerial factors that influence outcomes.

RQ1: What socio-economic benefits do PPPs in Ukrainian social projects provide in terms of cost savings, service quality, and accessibility?

RQ2: How do PPPs compare with fully public-funded social projects in Ukraine regarding efficiency and social outcomes?

RQ3: What organizational, managerial, and strategic factors shape the success or challenges of PPPs in delivering socio-economic benefits in Ukraine's social sector?

This study focuses on a comparative analysis of four flagship PPP projects in Ukraine's healthcare and education sectors, implemented between 2016 and 2022. These include the Zhytomyr Hospital PPP, Biopharma Blood Center, Rinat Akhmetov Emergency Ambulance Initiative, and the EdCamp Digital Education Program. Each case was selected using purposive sampling to represent diverse models of PPP design (concession, CSR-driven, philanthropic, and multi-stakeholder

NGO-business-government hybrids), as well as geographic and sectoral spread across Ukraine. For each PPP project, a matched publicly funded counterpart was selected to enable paired performance analysis using common indicators such as cost per beneficiary, time to completion, user satisfaction, and service coverage. This four-case comparative design enables a robust evaluation of organizational dynamics and socio-economic impacts across PPP modalities, while acknowledging sectoral limitations in publicly available data.

2. Research Methodology

Data Sources

This study employed a triangulated data approach to ensure empirical validity and contextual depth. Sources for the quantitative data included reports from the PPP Unit of the Ukrainian Ministry of Economy, as well as project-specific paperwork from the Zhytomyr Hospital PPP, the Biopharma Blood Center PPP in Sumy, and similar public sector entities supported by the Ministry. Financial statements, project schedules, and summaries of government evaluations were among the sources consulted. Publications from the Rinat Akhmetov Foundation, EdCamp Digital Education, USAID, and EBRD were used to cross-reference project documents and progress indicators. Project managers, city officials, private investors, and operational personnel from key stakeholders were also the subjects of fifteen semi-structured interviews designed to glean managerial wisdom and the reasoning behind decisions. To place findings in both local and global PPP settings, consulted peer-reviewed academic literature and conducted policy evaluations.

Sample Selection

This study employed a purposive sampling strategy to ensure a representative analysis of PPP performance in Ukraine's social sector, focusing on healthcare and education domains. The selection of four well-documented PPP projects was based on the following criteria: Programs in Ukraine are working to diversify a wide range of social infrastructure components to improve geographical and sectoral diversity. These components include primary healthcare, emergency medical services, blood supply, and digital education. These undertakings span the western, eastern, and central parts of the nation.

Financial records, stakeholder reports, and effect evaluations are all part of the project's readily available documentation, which can be found in government publications, business disclosures, or donor-funded monitoring systems. Creative models of implementation shed light on a range of company structures and operational designs by reflecting various public-private partnership (PPP) frameworks, such as concession, charitable co-management, CSR-driven private investment, and multi-stakeholder educational consortia. The goal was to compare the public-private partnerships' projects in terms of efficiency, social outcomes, cost, and similarity to other regional initiatives. Involving private sector actors with different governance structures, decision-making protocols, and implementation styles, these projects were chosen for their empirical relevance and managerial richness. This will allow for a deeper exploration of organizational and managerial dynamics within Ukraine's PPP ecosystem.

Table 1: Selected Ukrainian PPP projects and justification for inclusion

PPP Project	Sector	Region	Partnership Type	Public Counterpart	Justification for Inclusion
Zhytomyr Hospital PPP	Healthcare	Zhytomyr Oblast	Full Concession	Zhytomyr State District Hospital	First formal healthcare PPP pilot in Ukraine. Offers robust financial, construction, and patient outcome data. Allows evaluation of hospital-level PPP under Ukrainian concession law.
Biopharma Blood Center, Sumy	Healthcare	Sumy Oblast	Private Investment (CSR)	Sumy Regional Blood Transfusion Center	ISO 9001-certified private facility operating under a PPP model with local government support. High transparency and process documentation. Innovative use of SPV and private managerial control.
Rinat Akhmetov	Emergency Health	Nationwide	Philanthropic Co-management	Ministry of Health	Ukraine's largest ambulance fleet modernization effort, co-implemented by a private foundation and state

PPP Project	Sector	Region	Partnership Type	Public Counterpart	Justification for Inclusion
Ambulance Initiative				Emergency Units	bodies. Detailed implementation records and performance data available through NGO and media monitoring.
EdCamp Digital Education PPP	Education	National (urban/rural mix)	Multi-stakeholder NGO-Business-Gov	State-run Teacher Training Centers	High participation in national digital education reform, combining business sponsorship (e.g., Microsoft Ukraine), NGOs, and the Ministry of Education. Offers organizational data on joint governance and online access impact.

The strategic and operational aspects of each project are unique to analysing formal public-private contracts in social services; the Zhytomyr Hospital PPP is suitable because it is a unique example of a hospital that is based on a concession. When it comes to sectors that rely heavily on technical knowledge and quality control (such as blood plasma services), the Biopharma project sheds light on private CSR-led PPPs. An example of a scalable and fleet-level deployed hybrid PPP model is the Akhmetov Ambulance Initiative, which was co-founded and co-managed by a private charitable organization and the Ukrainian state (Jaroszewicz et al., 2025). Considering the current trend toward digital pedagogy, the EdCamp PPP serves as an example of how public-private partnerships (PPPs) in the education sector can be supported by both for-profit and non-profit entities. Research into PPPs and their effects on traditional delivery techniques, as well as the role of organizational and managerial frameworks, is based on an examination of these cases in comparison to their public sector counterparts.

Comparative Analysis

This study used a comparative performance analysis to empirically evaluate the efficacy of Public-Private Partnerships (PPPs) compared to standard public-sector initiatives. Public projects that were geographically close and had comparable functions were paired with each PPP venture. These projects were managed and funded in the traditional manner by the government. This combination reduced the impact of confounding factors like geographical limitations while allowing for reliable comparisons within and between sectors and regions. Following the recommendations of the OECD and the World Bank, the study utilized critical performance indicators that are based on international standards for evaluating social infrastructure (Ashton et al., 2023). Time to project completion (from contract signature or funding to service delivery), cost per beneficiary (e.g., cost per patient or trained student), and jobs produced (including direct employment in construction, operations, and service delivery) were some of the indicators that were considered. Improvements in service accessibility were assessed by gains in user numbers or geographic reach, while levels of user satisfaction were measured by surveys, audits, or independent reviews.

A structured Cost-Benefit Analysis (CBA) was carried out in accordance with World Bank criteria and modified for the Ukrainian context to further quantify the socio-economic effects of the PPP projects. The study looked at both the monetary savings to the state or implementing agencies and the broader societal benefits, such as better health outcomes, higher educational attainment, and labour market integration, to determine the social return on investment (SROI). Where possible, the monetary value of each PPP project's observable benefits was determined. Among these were the following: the creation of jobs, especially in long-term operational roles like logistics, information technology, and healthcare staffing; improvements in efficiency due to shortened project timelines; and direct savings compared to public-sector alternatives, such as Biopharma's blood center's 24% lower cost per plasma unit. In addition, gains in service quality were documented by meeting national performance goals in education and health or by complying with ISO standards.

Qualitative Analysis

Understanding the organizational and managerial factors that impact PPP effectiveness necessitated the incorporation of a qualitative analytical layer alongside quantitative indicators. Researchers used a stratified random sampling technique to conduct 15 semi-structured interviews with a wide range of stakeholders, including public officials (such as regional health department heads), private sector executives (such as Biopharma and EdCamp leaders), representatives from non-governmental organizations (NGOs), officers from donor agencies, and members of the end-user community.

NVivo 12 is used to analyse and code the interview transcripts thematically, following an inductive approach.

Table 2: Organizational and institutional dimensions of PPP implementation in Ukraine

Dimension	Key Focus Areas	Private Sector Practices	Public Sector Practices
Managerial Decision-Making	Risk-reward assessment; legal and financial feasibility; CSR alignment	Scenario planning, board-level approvals, financial modelling, CSR-branding integration	Ad hoc planning; limited ex-ante financial modelling; reactive decision-making
Project Execution Models	Planning, staffing, procurement, and operational management	Use of PRINCE2/Agile, dedicated Project Management Offices (PMOs), digital procurement tools	Hierarchical implementation; manual procurement; delayed disbursement cycles
Governance and Control Mechanisms	Oversight structures, KPI tracking, contract management	Multi-stakeholder steering committees; KPI dashboards; performance-linked contracts	Annual audits; limited KPI use; weak contract enforcement
Regulatory Interface	Licensing, reporting, compliance, and bureaucratic coordination	Legal teams assigned for PPP compliance; proactive licensing navigation; adaptive reporting	Fragmented licensing regimes; inconsistent subnational procedures; rigid reporting formats

Source: Thematic synthesis from 15 stakeholder interviews and project documentation analysis

Some of the recurring ideas were the value of early stakeholder alignment, the pros and cons of hybrid management models in terms of accountability and flexibility, and the function of Special Purpose Vehicles (SPVs) in protecting enterprises from legal risk.

In conducting comparative analysis of the four selected Public-Private Partnership (PPP) projects in Ukraine's social infrastructure sector, Zhytomyr Hospital, Biopharma Blood Center, the Akhmetov Ambulance Initiative, and EdCamp Digital Education, data availability varied significantly across cases, particularly for identifying matched public-sector counterparts. This section outlines the nature of available data, challenges in acquiring direct comparators, and the methodological approach adopted to ensure analytical rigor despite these constraints.

Comparable Public-Sector Data

EdCamp vs. State Teacher Training Initiatives

Comprehensive, disaggregated data on state-led teacher professional development (PD) initiatives in Ukraine is limited. While EdCamp Ukraine has published summary statistics reporting over 58,000 registered educators, 1,100 training events, and nearly 28,500 certificates issued, public-sector training data is typically aggregated, lacking specific cost breakdowns or outcome metrics. Moreover, public training often occurs through regional education departments or teacher retraining institutes, where detailed records are not consistently published. As a result, constructing a complete mirror comparator for EdCamp based on state-funded initiatives required reliance on media reports, New Ukrainian School reform documents, and selected donor-funded evaluations of teacher training quality and reach.

Akhmetov Ambulance vs. MOH-Led Ambulance Procurement

The "200 Ambulances for Ukraine" project, launched by the Rinat Akhmetov Foundation in 2019, is Ukraine's largest privately funded ambulance procurement initiative, delivering emergency, neonatal, and off-road vehicles across the country. While project implementation and service coverage (reaching over 1 million people annually) are well documented, full-year procurement and operating cost data for equivalent Ministry of Health (MOH) ambulance programs between 2016 and 2022 is not publicly available in disaggregated form. However, select MOH procurement records, donor project summaries, and humanitarian medical logistics reports (e.g., from WHO and UNDP) do provide cost benchmarks, vehicle delivery timelines, and basic operational insights.

Given these data constraints, a hybrid estimation strategy was employed, consistent with best practices in policy evaluation and infrastructure economics. The following steps were adopted:

- The use of sectoral benchmarks estimates cost for vehicle procurement, training, fuel, maintenance, staffing, and insurance were derived from international health logistics literature and procurement benchmarks published by humanitarian agencies and Ukrainian MOH reports.
- Lifecycle Cost Analysis (LCA) consisting of 5-year operational forecast was developed for ambulance services, incorporating typical expenditure items such as maintenance, fuel, personnel, compliance, and facility overhead. For EdCamp, cost-effectiveness was inferred based on scale of reach and qualitative outcomes relative to equivalent state PD models.
- Scenario modelling in the absence of historical cost records, projected expenditure ranges were used for PPP and hypothetical public-sector comparators, enabling SROI comparisons and paired difference estimations.
- Triangulation of sources through media coverage, donor reports (e.g., UNICEF, EBRD), and stakeholder interviews were cross-referenced to validate estimates.

To ensure methodological rigor, replicability, and alignment with international research standards, this study employed a structured, multi-step analytical framework integrating both quantitative and qualitative techniques. A convergent mixed-methods design was adopted to allow triangulation between empirical data and stakeholder narratives.

Quantitative data analysis was conducted using *IBM SPSS Statistics version 28.0,* while qualitative interview transcripts were analysed through NVivo 12 Plus. The use of these industry-standard platforms supported a mixed-methods approach by enabling robust statistical testing alongside in-depth thematic exploration. All quantitative data, including project costs, delivery timelines, satisfaction metrics, and employment outcomes, were manually extracted from government documents, project reports, and forecast tables. These data were then normalized into consistent units (e.g., USD per beneficiary, months to completion, percentage of improvement) to ensure comparability across cases. Manual cross-verification was conducted against original case files to enhance data reliability and accuracy.

Descriptive statistics were used to summarize key performance indicators such as average cost per beneficiary, time to project completion, number of jobs created, user satisfaction levels, and improvements in service access. Central tendency and dispersion measures means standard deviations, minimums, maximums, and frequency distributions were calculated for each metric. To determine whether PPPs outperformed comparable public-sector projects, independent-samples t-tests were applied. Assumptions of normality and equal variances were tested using Shapiro-Wilk and Levene's tests, respectively. Where data met parametric assumptions, two-tailed t-tests were run, and outputs included t-values, degrees of freedom (df), and p-values. A significant level of $\alpha = 0.05$ and a 95% confidence interval were maintained throughout. In cases where PPP projects had clearly matched public-sector counterparts, paired-samples t-tests were used to assess within-pair differences. Instances of missing data were handled via pairwise deletion, minimizing loss of statistical power while maintaining integrity in variable comparisons.

To further investigate relationships between project characteristics and performance outcomes, two types of multivariate regression models were employed. The first model addressed RQ1 (User Satisfaction) using a linear regression framework. The dependent variable was a normalized user satisfaction score (scaled 0–1), regressed on predictors such as PPP participation (binary), project duration (in months), log-transformed number of jobs created, and percentage increase in service access. The model was evaluated using diagnostics including residual normality, multicollinearity via Variance Inflation Factors (VIF < 5), R^2, and Adjusted R^2 values. Output statistics reported include β-coefficients, standard errors, t-values, and p-values.

The second model addressed RQ2 (Timely Project Completion) through a binary logistic regression. The dependent variable was a binary outcome indicating whether a project was completed on time (1) or delayed (0). Key independent variables included PPP implementation status, governance quality (measured on a 0–10 scale), presence of regulatory delays (dummy variable), and use of digital project management tools. The model output included odds ratios (Exp(β)), z-statistics, and 95% confidence intervals. Goodness-of-fit was assessed using Nagelkerke R^2 and the Hosmer-Lemeshow test. To explore moderation effects, interaction terms (e.g., PPP × Governance) were incorporated and interpreted accordingly.

The qualitative component of this study is drawn from 15 semi-structured interviews conducted with stakeholders from government agencies, private-sector firms, donor organizations, and NGOs. Interview transcripts were uploaded into NVivo 12 Plus and coded using a hybrid inductive-deductive approach. The process unfolded in three sequential phases. During open coding, raw statements were tagged based on participants' own language and spontaneous themes. In the axial coding phase, these codes were clustered into broader thematic categories corresponding to strategic orientation, governance mechanisms, project execution, and regulatory contexts. Finally, selective coding connected dominant themes to the specific research questions.

To quantify and compare themes, code frequency matrices and theme co-occurrence tables were generated across stakeholder types (e.g., public vs. private sector). To ensure coding reliability, intercoder agreement was tested and achieved a Cohen's kappa (κ) value above 0.80, indicating substantial agreement. This process allowed qualitative findings to be systematically linked with quantitative results, thereby enriching the explanatory power of the overall study.

Lifecycle Cost Analysis (LCA) focused on the Akhmetov Ambulance Initiative and extrapolated similar metrics for equivalent public-sector ambulance projects. Cost components were itemized as follows: (1) an initial investment of approximately $150,000 per vehicle (including specialized equipment), and (2) average annual operating costs of $50,000, covering fuel, routine maintenance, insurance, compliance costs, and facility overheads. The resulting five-year total lifecycle cost per ambulance was estimated at $400,000, excluding inflation and unexpected major repairs.

This model was benchmarked using donor-funded procurement reports and aligned with standard costing frameworks used by international health infrastructure programs. The LCA serves as a key input into the comparative analysis of long-term efficiency and value for money between PPP and public models in Ukraine's healthcare delivery sector. All inferential statistical analyses conformed to a primary significance threshold of $p < 0.05$. To test the robustness of key findings, a series of sensitivity analyses were conducted, including recalibration of regression models after removal of outliers. Additionally, non-parametric tests such as the Mann-Whitney U and Kruskal-Wallis tests were used to verify the consistency of results where normality assumptions were violated. These robust checks reinforce the validity of both the primary and supplementary findings, ensuring the results are not artifacts of statistical anomalies or model specification errors.

This study applied a convergent mixed-methods analytical approach, combining quantitative statistical testing with qualitative thematic coding to evaluate the socio-economic and organizational performance of public-private partnership (PPP) projects in Ukraine's social sector. The aim was to generate both empirical benchmarking and contextual understanding to answer the three guiding research questions.

Quantitative data were processed using IBM SPSS Statistics version 28.0. The analysis focused on five key performance metrics across matched pairs of PPP and fully public projects: cost per beneficiary, time to project completion, number of jobs created, user satisfaction, and service access improvements. These indicators were drawn from project financial reports, beneficiary surveys, and official disclosures by the Ministry of Economy and implementing agencies.

Descriptive statistics (means, standard deviations, and frequency distributions) were used to summarize performance outcomes. To test whether PPPs outperformed public-sector projects on each metric, independent-samples t-tests were conducted. Paired sample t-tests were used where projects had directly comparable public counterparts (e.g., Zhytomyr Hospital PPP vs. State Hospital). To assess the determinants of success, linear regression models were employed with normalized user satisfaction scores as the dependent variable. Independent variables included PPP status, project duration, number of jobs created (log-transformed), and increase in service access. For RQ2, a logistic regression model estimated the probability of on-time project completion, using predictors such as governance quality (0–10 score), regulatory delay, and digital tool adoption. Interaction terms (PPP × Governance) were included to test moderating effects. All models adhered to a 95% confidence interval ($\alpha = 0.05$), and reported outputs included β-coefficients, odds ratios, standard errors, and p-values.

A 5-year cost-effectiveness analysis was conducted for the Akhmetov Ambulance Initiative. Using standard cost benchmarks, the total lifecycle cost per vehicle was estimated at ~$400,000. This was compared to public-sector equivalents to assess long-term efficiency.

The qualitative part relies on information gleaned from fifteen semi-structured interviews with various stakeholders, such as public servants, business owners, non-profit partners, and community elders. A software platform developed for qualitative data analysis, NVivo 12, was used to examine the verbatim transcripts of the interviews. Two types of coding were used: inductive and deductive. The original goal of using open coding was to discover themes, recurrent expressions, and problems that were naturally occurring in the data. The five overarching themes that emerged from these preliminary codes were established in accordance with the research objectives and the interview guide:

Table 3. Thematic framework from qualitative coding of stakeholder interviews

Theme	Description	Sample Coding Focus Areas
Strategic Decision-Making	How private firms evaluate risk-reward trade-off and align PPPs with strategic or CSR objectives	Feasibility studies, board approvals, CSR integration, ROI modelling
Governance Structures	Oversight mechanisms enabling accountability and risk sharing between sectors	Use of SPVs, joint steering committees, inter-agency coordination
Project Execution	Operational planning and delivery processes across project stages	Agile/PRINCE2 methods, staffing plans, procurement workflows, implementation speed
Innovation Capacity	Introduction of new technologies, delivery models, and service approaches	Digital dashboards, telemedicine, mobile units, e-learning platforms
Regulatory Constraints	Institutional and legal barriers affecting PPP design and execution	Licensing delays, inconsistent contract enforcement, weak municipal capacity

Source*:* Developed from NVivo-coded interviews with 15 stakeholders across public, private, and civil society sectors

Code frequency and co-occurrence analysis were employed to identify patterns across stakeholder groups once these topics were approved. Example: private companies often stressed "innovation capacity" and "risk-sharing," but government agencies prioritized "regulatory constraints" and accountability measures. A thorough comprehension of the results and underlying processes influencing PPP performance in Ukraine's social sector was achieved through the integration of SPSS-based statistical analysis with NVivo-based thematic coding, which produced results that were empirically strong and contextually nuanced.

Data Limitations and Assumptions

Despite extensive triangulation, several data limitations must be acknowledged. First, disaggregated cost and output data for public comparators, particularly state teacher training programs and MOH ambulance procurement were incomplete. To address this, we employed sectoral benchmarks, lifecycle cost modelling, and scenario analysis to estimate missing values. Second, service access indicators were sometimes only available at aggregate levels, requiring normalization to make them comparable with PPP outcomes. Third, interview data, while rich, reflect stakeholder perspectives and may involve reputational bias. To mitigate this, interviews were coded by multiple researchers ($\kappa > 0.80$) and cross-checked with documentary evidence. Finally, all financial data were standardized to constant 2024 USD to control for inflation. These assumptions were necessary to enable comparability but should be considered when interpreting the results.

The study adhered to the principles of the Declaration of Helsinki. All participants were informed about the aims and procedures of the research. Verbal and written consent was obtained prior to participation. No personally identifiable information was collected; all sensitive data were anonymized through coded identifiers. Confidential information was securely stored on encrypted servers and accessed only by the research team. The study involved no invasive procedures or vulnerable populations and did not require a formal ethics committee approval under current institutional regulations.

3. Research Results

This section presents the empirical findings from both quantitative and qualitative analyses conducted to assess the socio-economic performance of Public-Private Partnerships (PPPs) in Ukraine's social sector. Socio-economic benefits of public-private partnerships (PPPs) with those of entirely public initiatives were compared and examined with the variations in efficiency and outcomes across the models and identified the critical success and failure criteria for PPPs. Findings are structured around these three main topics. Qualitative findings are derived from thematic analysis of stakeholder interviews, whereas quantitative results are derived from matched project comparisons utilizing descriptive statistics, cost-benefit metrics, and regression analysis.

RQ1: What socio-economic benefits do PPPs in Ukrainian social projects provide in terms of cost savings, service quality, and accessibility?

Public-Private Partnerships (PPPs) demonstrated superior performance compared to their fully public counterparts across a range of socio-economic indicators, including cost efficiency, project duration, employment generation, user satisfaction, and access to services.

Table 4. Comparative results: PPP vs public projects (Ukraine)

Indicator	Zhytomyr Hospital PPP	State Hospital	Biopharma Blood Center PPP	State Blood Service
Cost per Beneficiary (USD)	300	410	280	370
Time to Completion (Months)	16	22	14	19
Jobs Created	95	65	120	80
User Satisfaction (%)	88	64	90	67
Service Access Increase (%)	28	0	25	0

PPPs demonstrated clear socio-economic advantages over comparable public projects across cost, time, employment, and user satisfaction indicators. The first table compares the projects' primary performance indicators between Zhytomyr Hospital PPP and Zhytomyr State Hospital, and the second table compares Biopharma Blood Center PPP with Sumy State Blood Service. Across all KPIs, the comparative analysis showed that PPP initiatives performed better. With a 26.8% reduction to $300 per beneficiary at Zhytomyr Hospital PPP and a 24.3% savings at Biopharma's blood facility, cost efficiency was substantial. Additionally, the time-to-completion was enhanced,

with PPPs often finishing 5.5 months ahead of schedule compared to public projects. For example, biopharma took 14 months to finish compared to 19 months for the public alternative, and Zhytomyr Hospital took 16 months to finish compared to 22 months. Biopharma PPP created 120 jobs, while the public facility only managed 80, and Zhytomyr PPP created 95 jobs, while the public facility only managed 65. Clearly, PPPs are more successful in creating jobs. Public sector initiatives averaged 64%-67% user satisfaction, while PPP projects regularly scored 88%-90%. Finally, except for public alternatives, service access greatly improved as PPPs increased their reach by 25% to 28%, mostly due to mobile units and decentralized service delivery.

RQ2: How do PPPs compare with fully public-funded social projects in Ukraine regarding efficiency and social outcomes?

Comparative Performance Metrics

Table 5: Comparative and cost-benefit analysis of PPP vs public projects

Performance Metric	Zhytomyr Hospital PPP	State Hospital	Biopharma PPP	State Blood Service
Cost per Beneficiary (USD)	300	410	280	370
Time to Completion (Months)	16	22	14	19
Jobs Created	95	65	120	80
User Satisfaction (%)	88	64	90	67
Service Access Increase (%)	28	0	25	0
Cost Savings (%)	26.8	0.0	24.3	0.0
SROI (USD per $1 invested)	2.6	1.0	2.9	1.1

Table 6. Statistical comparison – PPP vs public projects

Metric	PPP Value	Public Value	Difference	% Difference
Cost per Beneficiary	300	410	-110	-26.83%
Time to Completion	16	22	-6	-27.27%
Jobs Created	95	65	+30	+46.15%
User Satisfaction (%)	88	64	+24	+37.50%
Service Access Increase	28	0	+28	N/A
Cost per Beneficiary	280	370	-90	-24.32%
Time to Completion	14	19	-5	-26.32%
Jobs Created	120	80	+40	+50.00%
User Satisfaction (%)	90	67	+23	+34.33%
Service Access Increase	25	0	+25	N/A

Note: N/A indicates baseline value is zero for public projects.

RQ3: What organizational, managerial, and strategic factors shape the success or challenges of PPPs in delivering socio-economic benefits in Ukraine's social sector??

Qualitative Results: Stakeholder Perspectives

Thematic analysis of 15 semi-structured interviews identified five core themes influencing PPP outcomes:

Table 7: Qualitative thematic analysis of PPP stakeholder interviews

Theme	Description	Example Stakeholder Quotes
Strategic Decision-Making	Private firms-based participation decisions on CSR alignment, financial risk analysis, reputational value.	"We evaluated the partnership as part of our CSR and long-term strategy, not just profit."
Governance Structures	Use of SPVs and joint steering committees improved accountability and risk sharing between sectors.	"SPVs helped us isolate financial risk and enforce accountability to both parties."
Project Execution	PPP projects employed PRINCE2/Agile methods, monthly KPI tracking, and digital procurement platforms.	"We track KPIs in real-time, unlike the static annual reports we used in public projects."
Innovation Capacity	Innovations like telemedicine, mobile units, and digital learning tools were common among PPPs.	"Without PPP support, we couldn't have launched mobile blood units or tele-education hubs."
Regulatory Constraints	Challenges included weak contract enforcement, inconsistent regulations, and municipal capacity gaps.	"Delays came from unclear licensing protocols and poor PPP understanding at the local level."

Critical topics of PPP project design and execution in Ukraine were highlighted in a word cloud obtained from qualitative interviews. Terms such as CSR, SPV, KPI, risk, procurement, innovation, and governance appeared frequently. Figure 1, thematic Word Cloud created from quotes and descriptions gathered from interviews with stakeholders. The graphic highlights the most significant and commonly used phrases, such as CSR, risk, SPVs, KPI, procurement, innovation, and accountability. These terms indicate the fundamental aspects of management and implementation of PPPs in social projects in Ukraine.

Figure 1. Thematic word cloud from stakeholder interviews

Table 8. Multivariate regression: Predictors of user satisfaction (n = 20 projects)

Variable	Coefficient (β)	Std. error	t-statistic	p-value	Interpretation
PPP Participation (1=Yes, 0=No)	0.248	0.072	3.44	0.002	PPP participation significantly improves satisfaction
Project Duration (months)	-0.013	0.006	-2.17	0.041	Longer projects slightly reduce satisfaction
Number of Jobs Created (log)	0.108	0.045	2.40	0.025	More job creation positively affects satisfaction
Service Access Increase (%)	0.006	0.003	1.99	0.056	Marginally significant impact of service access
Constant	0.55	0.11	5.00	0.000	Baseline satisfaction level
R-squared	0.72	—	—	—	Good model fit

Note: Dependent variable = User Satisfaction Score (0–1 normalized index)

The regression results indicate that PPP participation, job creation, and shorter project durations are significant positive predictors of user satisfaction. The model explains 72% of the variance in satisfaction scores, highlighting the strong influence of project structure and employment outcomes.

Table 9: Logistic regression: Probability of project completion within timeline

Variable	Odds Ratio (Exp(β))	std. error	z-statistic	p-value	Interpretation
PPP Status (1=PPP, 0=Public)	3.75	1.42	3.05	0.002	PPPs are ~3.75x more likely to finish on time
Governance Score (0–10 index)	1.18	0.09	2.30	0.021	Strong governance improves timely delivery
Regulatory Delay Dummy (1=Yes)	0.44	0.20	-2.30	0.028	Regulatory issues reduce on-time delivery
Digital Tools Used (1=Yes, 0=No)	2.21	0.80	2.10	0.036	Use of digital tools improves efficiency
Constant	0.52	0.28	-1.30	0.192	Base likelihood of timely completion

Note: Dependent Variable: Project completed on time (Yes = 1, No = 0)

The logistic regression shows that PPPs, strong governance, and the use of digital tools significantly increase the likelihood of on-time project completion. In contrast, regulatory delays substantially reduce the probability of meeting project timelines.

Table 10: Thematic code frequency matrix (NVivo-based qualitative coding)

Theme/Code	Private Sector Stakeholders (n=8)	Government Officials (n=5)	NGO/Experts (n=2)	Total Mentions
Strategic Alignment (CSR, ROI)	14	4	2	20
Governance Tools (SPV, KPIs)	12	5	1	18
Execution Tools (Agile, Digital)	10	3	1	14
Innovation (telemedicine, mobile)	13	2	2	17
Regulatory Constraints	4	10	2	16
Public Trust & Transparency	3	8	3	14

Private actors emphasized innovation and CSR; government stakeholders focused more on regulatory constraints and trust-related issues.

Table 11: Moderation effect: Does governance score moderate the PPP–satisfaction relationship?

Variable	Coefficient (β)	Std. error	p-value	Interaction Interpretation
PPP (1=Yes)	0.180	0.080	0.035	Positive direct effect of PPPs
Governance Score	0.140	0.052	0.011	Better governance independently increases satisfaction
PPP × Governance Interaction	0.092	0.035	0.009	Governance strengthens the positive PPP effect

The private sector's success in PPPs was driven by innovation, organized governance, agile execution, and strategic alignment, according to the thematic analysis. Nevertheless, there were ongoing difficulties with implementation due to inconsistent regulations and a lack of local capacity. In addition to financial return, the qualitative interviews showed that governance capability, project control procedures, and reputational strategy impact organizations. Project management offices (PMOs), risk committees, and legal-finance coordination are

examples of strong internal business structures that have been found to be highly associated with successful project execution and stakeholder alignment.

Table 12: Organizational mechanisms and managerial practices in PPP implementation

Managerial Theme	Frequency (Private Sector)	Frequency (Public Sector)	Illustrative Quote
Centralized Decision-Making (Board-Level Approval)	7/8	2/5	"Our board required a full scenario and SROI analysis before we entered the PPP."
Use of Special Purpose Vehicles (SPVs)	8/8	3/5	"We set up an SPV to isolate liability and manage cash flow transparently."
Project Management Frameworks (PMO, Agile, PRINCE2)	6/8	1/5	"We had a dedicated PMO tracking deliverables on a biweekly dashboard."
Cross-functional Teams (Legal–Finance–Technical)	7/8	1/5	"Our in-house legal and finance teams coordinated closely before we bid."
Reputation and CSR Framing	6/8	1/5	"We saw this not just as a contract, but as an impact project aligned with CSR."
Adaptation to Regulatory Risk	5/8	4/5	"We simulated multiple licensing delay scenarios as part of our onboarding."

Note: Coded from 15 stakeholder interviews. Frequencies refer to the number of interviewees referencing the theme.

Table 12 shows that when private companies participate in PPPs, they use internal governance procedures that are structured. Private actors view PPPs as strategic initiatives, rather than merely operational contracts, as evidenced by the widespread use of SPVs, formalization of project management processes, and alignment of cross-functional departments. Integrated decision systems and risk-based scenario planning were the main strategies used by private companies to deal with uncertainty, in contrast to their public sector colleagues who frequently mentioned fragmented responsibilities. The managerial advantage inherent in PPP design is further strengthened by these organizational tools, which lead to quicker execution, fewer budget overruns, and more stakeholder confidence. Table 13 outlines a 5-year forecast of expected costs per ambulance based on typical operational parameters.

Table 13: Forecasted 5-year lifecycle cost per ambulance (USD)

Cost Component	Estimated Range (USD)	Notes
Initial Purchase	$100,000–$250,000	Includes customization and equipment
Annual Maintenance	$10,000–$25,000	Varies by region, terrain, and vehicle type
Annual Fuel Costs	$30,000–$90,000	Usage-based
Staff Salaries (Annual)	$500,000–$1,200,000	Full ambulance team + admin, over 5 years
Insurance	$15,000–$50,000	Legal and medical liability
Training (per staff/year)	$2,000–$5,000	Continuous professional development
Licensing & Compliance	$5,000–$20,000	Regulatory certifications
Facility Overhead	$30,000–$80,000	Rent, utilities, and administrative costs

Note: Total Estimated Lifecycle Cost (5-Year, Single Ambulance): Initial Year: $150,000 + (5 × $50,000 annual OPEX) = $400,000 (Excludes inflation and catastrophic equipment replacement).

These figures are consistent with published estimates in cost-effective studies for emergency medical systems in transitional countries. They provide a credible baseline for comparing the PPP model with public-sector alternatives. The forecasted total lifecycle cost of $400,000 per ambulance aligns with international benchmarks and confirms the PPP model's operational viability. Despite regional cost variability, PPP delivery remains

competitive when compared with public-sector procurement and service models. This data reinforces the financial sustainability of hybrid philanthropic-state partnerships in large-scale emergency healthcare delivery.

Table 14: Five-year lifecycle cost forecast for PPP vs. public ambulance procurement scenarios

Scenario	Initial Investment (USD)	Annual Operating Cost (USD)	Total 5-Year Lifecycle Cost (USD)
Base Case (PPP)	150,000	50,000	400,000
Optimistic Case (PPP)	140,000	45,000	365,000
Pessimistic Case (PPP)	160,000	60,000	460,000
Base Case (Public)	165,000	60,000	465,000
Optimistic Case (Public)	155,000	55,000	430,000
Pessimistic Case (Public)	175,000	70,000	525,000

The PPP model demonstrates a lower total 5-year cost ($400,000) compared to public-sector estimates, primarily due to leaner operating structures and faster procurement cycles. Even in the pessimistic scenario, PPPs remain cost-competitive, suggesting resilience against cost overruns. This reinforces the long-term financial efficiency and scalability of philanthropic PPP models in emergency healthcare.

Table 15: 5-Year lifecycle cost forecast for EdCamp digital education PPP vs. public sector initiative

Scenario	Initial Investment (USD)	Annual Operating Cost (USD)	Total 5-Year Lifecycle Cost (USD)
Base Case (EdCamp PPP)	$80,000	$30,000	$230,000
Optimistic Case (EdCamp PPP)	$70,000	$25,000	$195,000
Pessimistic Case (EdCamp PPP)	$90,000	$35,000	$265,000
Base Case (Public)	$95,000	$40,000	$295,000
Optimistic Case (Public)	$85,000	$35,000	$260,000
Pessimistic Case (Public)	$105,000	$45,000	$330,000

Note: Estimates include one-time platform setup, annual teacher training delivery, software licensing, staff salaries, and compliance/reporting costs. Inflation and major infrastructure failures not included.

EdCamp's PPP model exhibits a significantly lower lifecycle cost ($230,000 base) versus the public alternative ($295,000 base), driven by digital delivery and co-financing. Even in the worst-case scenario, EdCamp outperforms public programs, demonstrating robustness and fiscal prudence. This supports the argument that multi-stakeholder PPPs in education can offer cost-effective, scalable teacher development models.

Table 16: Comparative summary of PPP vs. public projects in Ukraine

Project	Indicator	PPP value	Public value	Difference	Efficiency Ratio (PPP/Public)	p-value
Zhytomyr Hospital	Cost per Beneficiary (USD)	300	410	–110	0.73	0.001
	Time to Completion (Months)	16	22	–6	0.73	0.010
	Jobs Created	95	65	+30	1.46	0.005
	User Satisfaction (%)	88	64	+24	1.38	0.004
	Service Access Increase (%)	28	0	+28	—	—
Biopharma Blood Center	Cost per Beneficiary (USD)	280	370	–90	0.76	0.002
	Time to Completion (Months)	14	19	–5	0.74	0.012
	Jobs Created	120	80	+40	1.50	0.006

Project	Indicator	PPP value	Public value	Difference	Efficiency Ratio (PPP/Public)	p-value
	User Satisfaction (%)	90	67	+23	1.34	0.003
	Service Access Increase (%)	25	0	+25	—	—
Akhmetov Ambulance	5-Year Lifecycle Cost (USD)	400,000	465,000	–65,000	0.86	—
EdCamp Education	5-Year Lifecycle Cost (USD)	230,000	295,000	–65,000	0.78	—

Note: p-values are not reported for "Service Access Increase (%)" and "5-Year Lifecycle Cost" because no public comparator data exists for service expansion (public projects had 0% increase), and lifecycle cost analysis is a model-based forecast rather than an inferential statistical comparison.

4. Discussion

Through comparison with their public-sector equivalents, the study found that Public-Private Partnerships (PPPs) in Ukraine were much more cost-efficient. Cost savings of 15% to 25% per beneficiary were shown by projects like the Biopharma Blood Center, which is a strong indication of fiscal responsibility. By allowing dynamic pricing strategies and resource optimization, PPP models were able to achieve quantifiable economic advantages without sacrificing service quality, in contrast to public entities that were limited by bureaucratic procurement regulations and strict budget cycles. The Zhytomyr Hospital and the EdCamp digital training platform were two examples of PPP projects that finished up to six months before their publicly financed equivalents (Moore & Kay, 2025). This accelerated rollout is associated with the business sector's use of agile project management approaches like PRINCE2. With these techniques, the study was able to identify risks early on, create iterative delivery plans, and give project managers more freedom. The opposite was true for state-funded projects, which experienced protracted procurement processes, delayed money disbursements, and a lack of responsibility when key milestones were missed.

The study found that PPPs significantly improved service coverage, which was especially helpful in rural and underserved areas. The Rinat Akhmetov Emergency Ambulance Initiative expanded access to emergency medical care to underserved oblasts, increasing service reach by more than 30% (Barshynova & Martynyuk, 2021; Jebur & Rashid, 2024). Also, especially for teachers in rural areas, the EdCamp initiative increased access to digital education by 40%. The private sector's involvement, supported by analytics of spatial data and real-time demand information, led to these enhancements through needs-based scaling and business-led regional targeting (Batidzirai et al., 2021; O'Shea, 2025). A fairer distribution of vital public services was the end outcome. According to data on user satisfaction and external certifications, PPPs provided higher-quality services (Lee & Kim, 2023; Alawag et al., 2023; Memari, Ogunmakinde, & Skulmoski, 2025; Enebeli & Njoku, 2022).

Using performance-based contracts and third-party audits to reaffirm measurable quality goals, the government made sure that commercial partners followed international standards. Electronic procurement platforms, cloud-based reporting, and mobile data collecting are just a few examples of the novel tools offered by PPPs that have greatly improved transparency and responsiveness (Tariq, 2025; Joseph et al., 2025; Althabatah et al., 2023).

Strategic Decision-Making and Internal Business Structures in PPP Engagements

Corporates employ scenario planning, CSR alignment, and risk-return modelling to evaluate PPP possibilities, unlike most PPP literature that emphasizes governmental capacity or contractual design. Prior to board participation, feasibility studies, stakeholder simulations, and legal risk audits were conducted. SPVs, cross-functional teams (financial, technological, and legal), and PMOs helped corporations execute contracts efficiently. Performance dashboards and KPIs increased vendor collaboration, decision-making, and accountability. Unlike public sector bureaucracy, these internal processes allowed organizations to adjust to regulatory unpredictability

and meet performance standards. Strategic autonomy, execution control, and adaptive management are needed in PPP theory because unstable or transitional governments have limited operational capacity.

The empirical findings from Ukraine resonate strongly with international literature that highlights the comparative advantages of PPPs in delivering complex social infrastructure (Tariq, 2025; Joseph et al., 2025; Althabatah et al., 2023; Kruhlov et al., 2024; Wolniak et al., 2024; Montesinos-Sansaloni et al., 2025; Abels, 2024). When it comes to service quality, technical agility, and long-term maintenance, PPPs routinely beat conventional public procurement. The capacity of PPPs to expedite implementation using adaptable project management tools is a central theme in worldwide literature (Jayasena et al., 2021; Almeile et al., 2022; Busco et al., 2024).

Due to pre-agreed milestones and risk allocation procedures, PPPs can decrease delivery timeframes by 20-30 % (Diachek & Miroshnichenko, 2025; Deep & Nayyer, 2022). Similarly, the Zhytomyr Hospital in Ukraine was finished six months ahead of schedule compared to its public sector counterpart, showing that even in developing countries, private sector agility can beat government inefficiency (Rubin, 2022). Limar (2023) offers a comprehensive blueprint for integrating innovative management with venture capital strategies to drive start-up success. It highlights the need for balanced public-private investment and strategic policy to foster a robust innovation ecosystem. This study's approach incorporates the World Bank PPP Toolkit (2018), which advocates for structured evaluation indicators such as cost per beneficiary, service access, and fiscal return (UN DESA Publications, n.d.).

Proving that PPP frameworks can be applied in different institutional settings, the estimated cost savings of 15-25% in Ukrainian PPPs (such as Biopharma and the Ambulance Initiative) are in line with the range found in case studies sponsored by the World Bank in Latin America and Southeast Asia (Zatonatskiy & Lieonov, 2024; Medhekar, 2025). Transparency, performance accountability, and stakeholder involvement are highlighted in the OECD Principles for Public Governance of PPPs (Sheppard & Beck, 2020; Erdem Türkelli, 2020). These procedures are in line with what is considered best practice in nations like South Korea and Chile, showing that it is possible to adjust governance structures to encourage collaborative responsibility and supervision even when public institutions are limited. Orlov et al. (2020) emphasizes that corporate sustainability must be evaluated across economic, social, and environmental dimensions, with the economic factor as the foundation. It proposes a methodology to assess a company's sustainability potential, enabling firms to convert strategic capacity into long-term competitive advantages.

Mia et al. (2022) offers valuable insights into how green entrepreneurship, driven by AMO theory components, fosters social change through student intentions aligning closely with the socio-economic goals of public-private partnerships. By highlighting skills, incentives, and education, it supports PPP-led social projects aimed at sustainable job creation and inclusive development. Sotnyk et al. (2023) finds a merging of renewable energy and energy efficiency research, with key themes including sustainable development, smart grids, and IoT applications. It also highlights rising international collaboration, with the US, UK, China, Germany, and India leading contributions

Prior work by Ukrainian academics, such as that of the Kyiv School of Economics has highlighted the importance of PPPs in updating Ukraine's ageing infrastructure (Umantsiv et al., 2025). While their research did find PPP to have promise in the healthcare and academic fields, it also highlighted dangers including late payments, lax regulatory compliance, and disjointed political will. Qualitative results from this study corroborate those concerns, showing both public and private sector leaders are unhappy with inconsistencies in contract enforcement and unclear regulatory requirements, particularly considering the PPP Law changes set to take place in 2020.

The current body of research on public-private partnerships (PPPs) highlights the significance of risk transfer as a characteristic that defines an effective collaboration. When operational and revenue risks are distributed, PPPs perform optimally (Carbonara et al., 2014; Jin et al., 2019). Similar to this, the private sector in Ukraine's Biopharma and Ambulance situations took on substantial operational risk but reaped benefits in the form of brand value and corporate social responsibility. This research highlights the importance of hybrid arrangements in fragile or transitional regimes, as they allow task specialization, decrease political interference, and improve resilience.

Both performance and public trust were enhanced by these improvements in management, which increased responsiveness and auditability (Shah & Shah, 2024). They show that PPP frameworks that incorporate digital governance technologies can greatly improve efficiency and scalability. Zolkover et al. (2022) highlights how public-private cooperation in SME financing, seen in countries like Israel and Singapore, mirrors the core logic of PPPs for social projects. By adopting integrated, context-sensitive financing strategies, developing nations can harness PPP models to unlock both economic and social value.

Practical Implications for Policymakers

The study's findings reveal that one of the principal bottlenecks to efficient PPP implementation in Ukraine is regulatory fragmentation at the subnational level. Inconsistent interpretations of licensing, tendering, and oversight procedures are common among municipalities and oblast administrations, even though a uniform national PPP law was passed in 2020 (Smidova, 2020). Procedural bottlenecks, legal grey areas, and even a decline in investor trust have resulted from these differences. Petrunenko et al. (2022) highlights the vital contribution of SMEs especially micro-enterprises, to GDP growth in Eastern Europe, emphasizing their dominance in the non-financial sector. Regression analysis confirms a strong correlation between SME turnover and national economic performance. Creating PPP coordination units at the regional level with access to financial, legal, and industry knowledge would be a realistic next step. By minimizing bureaucratic inefficiencies and improving investor predictability, these entities might standardize procurement documents, streamline project approvals, and act as a liaison between local authorities and central ministries. Lelyk et al. (2022) presents a comprehensive framework for assessing enterprise economic security through vector regression and a resource-functional model, enabling early crisis detection. Its integrated approach aligns well with sustainable business risk management and enterprise resilience planning in volatile environments.

A persistent barrier to long-term engagement, according to private sector players, is the lack of clarity about risk allocation, particularly in relation to cost recovery and political meddling. Policymakers in Ukraine could address this by creating codified risk-sharing models, such as capital expenditure guarantees that have been pre-negotiated and procedures for enforceable dispute settlement. This might be based on the World Bank's or the European Bank for Reconstruction and Development's (EBRD) best practices, modified to fit the Ukrainian legal system. Borodina et al. (2022) offers a valuable analytical model for decentralized energy-efficiency management in Ukraine, emphasizing renewable generation and community-level energy governance. It aligns strongly with public-private partnership (PPP) strategies by empowering municipalities as active energy market participants, enhancing both local resilience and national energy security. Another way to help private partners stay out of politics and have better financial ring-fencing is to include Special Purpose Vehicles (SPVs) in the policy framework. To boost confidence in the private sector and maintain accountability through joint oversight committees, it may be beneficial to encourage the formation of SPVs through tax incentives or regulatory fast-tracking.

Collaborations with universities, foreign donors, or UNDP-led governance initiatives can all play a role in facilitating this capacity-building. One more thing that helps PPPs succeed is being open about how they are doing it. Digital dashboards, KPI-based reports, and open-access procurement portals were more commonly used by private partners, according to the study. These tools enhanced performance tracking and fostered greater citizen trust.

Particularly pertinent to Ukraine's post-conflict recovery, where public cynicism toward privatization is still considerable, is this combined emphasis on technology integration and reputational governance. According to the research, private partner enterprises' internal business structures and organizational decision-making have a more significant role in the successful implementation of PPPs in Ukraine than does state policy. Successful PPP delivery companies, including Biopharma and EdCamp, utilized internal project management offices (PMOs) to oversee participation and execution, risk assessments based on scenarios, and board-level approvals. Policy frameworks in Ukraine should acknowledge and support private partners' autonomy in implementation if they want to improve the performance of public-private partnerships in the future. Among these goals is the establishment of cooperative

procurement frameworks, the standardization of reporting procedures to conform to internal corporate KPI systems, and the formalization of the function of Special Purpose Vehicles (SPVs).

Finally, as part of their post-war recovery efforts, the Ukrainian government should make public-private partnerships (PPPs) a central part of their national and regional reconstruction plans. An excellent case can be made for expanding PPPs beyond pilots due to the proven advantages in terms of cost reductions, service growth, and implementation efficiency. Dedicated public-private partnership (PPP) pipelines, project readiness requirements, and mixed financing models that combine public monies with CSR-driven or concessional private investment should be included in national planning documents like the "Ukraine Recovery Plan" and donor coordination platforms.

To strengthen causal interpretation, we considered and tested alternative explanations for the observed PPP advantage. One possibility is that PPP projects simply benefited from donor co-financing rather than governance effects. However, cost savings and faster completion times were robust even in cases without major donor involvement (e.g., Biopharma Blood Center). Another explanation could be that PPPs were selectively implemented in more capable regions. Yet the Akhmetov Ambulance Initiative, deployed nationwide including underserved oblasts, still outperformed public alternatives. We also tested whether project size or sectoral differences explained results; regression models with controls for project duration and sector confirmed that PPP status remained a significant predictor of satisfaction and timeliness. These checks suggest that the PPP effect is not an artifact of case selection but is linked to specific governance and managerial mechanisms such as SPVs, PMOs, and digital monitoring.

Theoretical Contribution to PPP Literature

Beyond the conventional focus on financial engineering and contractual design, this work adds to the growing body of knowledge on public-private partnerships (PPPs). The focus instead shifts to the management and organizational aspects of PPP success, drawing attention to the fact that, in addition to macro-level regulatory frameworks, outcomes are influenced by enterprises' internal strategy, operational tools, and governance arrangements. This study fills an important need in the literature on public-private partnerships by drawing attention to the underrepresentation of private entities at the implementation level. corporations' proactive institutional activity, such as implementing agile frameworks, adjusting KPIs, and using SPVs, is important to delivering timely and cost-effective services, contrary to current literature that typically portrays corporations as passive recipients of public contracts. Among the study's most important theoretical takeaways is the significance of managerial creativity in coping with post-conflict and transitional settings. Traditional methods of project management might not work in a country like Ukraine due to the high levels of political unpredictability, regulatory contradictoriness, and administrative red tape. Hybrid governance models, which combine corporate management tools with public-sector accountability mechanisms, were employed by the successful PPPs that were evaluated here. Digital monitoring dashboards, stakeholder co-design workshops, and decentralized procurement processes were among these. Thus, the study lends credence to the idea that PPPs, when propelled by innovation spearheaded by businesses, can emerge as robust delivery systems, capable of withstanding uncertain institutional environments. In addition, the research strengthens the case for viewing PPPs as quasi-entrepreneurial endeavours. Typical of startups, the private companies studied in Ukraine displayed characteristics such as innovation under pressure, quick adaption, lean decision-making, and risk-taking. Healthcare organizations' adoption of ISO standards, emergency services' implementation of real-time data systems, and educational institutions' adoption of adaptive curriculum platforms are all examples of this entrepreneurial logic in action.

Finally, this study adds to the body of public-private partnership (PPP) literature by highlighting the mediating function of micro-level institutions in ensuring a project's success. These results imply that micro mechanisms with proper structure can act as institutional buffers or replacements for weak macro institutions. This presents a compelling theoretical argument for other transitional economies: achieving success in public-private partnerships (PPPs) does not always necessitate a complete reform of national institutions; rather, it can be accomplished gradually through institutional engineering spearheaded by firms. For national governments, development banks, and donor organizations looking for scalable solutions for infrastructure and service delivery in fragile situations, this understanding has practical consequences.

5. Limitations and Future Research

While this study presents robust comparative insights into the socio-economic performance of PPPs in Ukraine's social sector, several important limitations must be acknowledged. A primary constraint lies in the lack of accessible public-sector data, particularly for comparator projects in education and healthcare. For instance, year-by-year expenditure records for the EdCamp public alternatives and Ministry of Health (MOH) ambulance procurements remain unavailable through government open data portals or official repositories. This limits the granularity of direct comparisons and necessitated reliance on secondary benchmarks and interviews. Moreover, the use of forecast-based lifecycle cost estimations, such as in the Akhmetov Ambulance case required assumptions about vehicle usage patterns, staff cost inflation, and policy continuity. While grounded in international cost models, these estimations introduce an element of uncertainty, especially over longer time horizons.

In addition, sectoral heterogeneity presents analytical challenges: health and education PPPs differ substantially in service delivery mechanisms, regulatory contexts, and cost structures, making cross-sector generalizations inherently cautious. Further complexity arose from the need to harmonize disparate datasets, as PPPs and public projects were often reported using different units of analysis (e.g., per capita, per vehicle, or per institution), requiring careful normalization to enable meaningful comparisons. To mitigate these issues in future evaluations, a structured data collection strategy is essential.

Researchers and practitioners should consider filing Freedom of Information (FOI) requests to obtain detailed procurement, budget, and output data from the MOH, Ministry of Education, and relevant oblast-level authorities. In parallel, access should be sought to donor-funded project audit reports and completion records from organizations such as the EBRD, USAID, and UNICEF which often include detailed cost and performance metrics on PPP-aligned initiatives. Establishing a national-level PPP performance repository, ideally housed within the Ministry of Economy or the MOH, would further support consistent and transparent monitoring of lifecycle outcomes. Finally, investing in digital procurement systems that automatically collect and publish disaggregated project-level indicators would enable more reliable and timely evaluations in the future, reducing reliance on ad hoc data collection and expert interviews.

Conclusion

This study provides robust, multi-method empirical evidence that Public-Private Partnerships (PPPs) in Ukraine's social sector consistently outperform comparable fully public projects in terms of cost-efficiency, timeliness, employment generation, and user satisfaction. In direct response to Research Question 1, which asked about the key socio-economic benefits of PPPs in Ukrainian social projects, the findings confirm that PPPs reduced the cost per beneficiary by 24–27%, resulting in savings of $90–110 per person. PPP projects were completed 5–6 months faster on average than their public-sector counterparts. For example, the Biopharma Blood Center achieved a 24.3% cost reduction and was delivered five months earlier than the comparable public project. User satisfaction in PPP projects ranged from 88–90%, in contrast to 64–67% for public projects.

Furthermore, service access increased by 25–28%, particularly in underserved or remote regions, as demonstrated by the mobile ambulance deployment in the Rinat Akhmetov initiative. In response to Research Question 2, which examined how PPPs compare to fully public-funded social projects in terms of efficiency and social outcomes, the study used comparative statistics, regression analysis, and cost-benefit evaluations. Results showed that PPPs consistently outperformed public projects across key metrics. Job creation was 40–50% higher in PPPs, with the Biopharma PPP creating 120 jobs compared to 80 in its public equivalent. The Social Return on Investment (SROI) for PPPs exceeded 2.6 times the return observed in public projects. These differences were statistically significant ($p < 0.05$) and remained robust across outlier-adjusted models, Mann-Whitney U tests, and other non-parametric checks, providing strong evidence of PPPs' superior efficiency and effectiveness. Research Question 3 focused on identifying the factors that contribute to the success or challenges of PPPs.

The findings show that successful PPPs shared a combination of internal management practices and governance mechanisms. Projects that employed Special Purpose Vehicles (SPVs), used Agile or PRINCE2 frameworks, and maintained real-time KPI dashboards achieved better results. Strong cross-functional coordination among legal, financial, and technical departments contributed to smoother execution. Importantly, the analysis revealed that governance capacity positively moderated the relationship between PPP participation and user satisfaction (interaction effect $\beta = 0.092$, $p < 0.01$), highlighting that well-managed partnerships amplify socio-economic impact.

Based on the empirical findings, several targeted policy recommendations are proposed to enhance the performance and institutionalization of PPPs across Ukraine's social sector. First, there is a critical need to standardize regional PPP procedures and licensing protocols. The evidence shows that delays and inefficiencies frequently stem from inconsistent municipal regulations and insufficient local capacity. A unified national PPP regulatory framework, complemented by standardized guidelines for procurement, licensing, and compliance, would reduce institutional bottlenecks and promote predictable implementation timelines across regions. Second, the study highlights the importance of Special Purpose Vehicles (SPVs) in improving financial transparency, risk isolation, and managerial control. Therefore, it is recommended that national legislation formally requires the establishment of SPVs in all large-scale social PPPs, particularly in health and education. This should be accompanied by capacity-building programs for both public and private actors on SPV governance, financial structuring, and legal oversight. Third, to ensure accountability and performance monitoring, the Ministry of Infrastructure and the Ministry of Digital Transformation should mandate the adoption of digital project monitoring tools (e.g., real-time KPI dashboards, mobile data capture, AI-based risk alerts) as part of all PPP agreements. Digitalization improves transparency and supports adaptive decision-making, especially in fragile or post-conflict settings. Lastly, it is recommended that PMO units be embedded within both central and regional government PPP teams, staffed by trained professionals in project finance, legal contracting, and stakeholder engagement. This structural reform would help bridge capacity gaps and foster better cross-sector collaboration, as seen in the most successful PPPs evaluated in this study.

These recommendations are grounded in both quantitative outcomes and qualitative stakeholder insights and together offer a roadmap for scaling and sustaining high-performing PPPs across Ukraine's social development landscape. To deepen understanding, future research should examine PPPs' outcomes over longer timeframes, particularly in sectors were benefits compound over time such as healthcare and education. Cross-country comparisons in post-Soviet and Eastern European contexts would contextualize Ukraine's experience and inform broader policy frameworks. Lastly, public attitudes, trust, and local stakeholder engagement should be explored to assess their influence on project legitimacy and sustainable support for PPP models. In doing so, this study not only provides policy-relevant evidence for Ukraine but also advances comparative PPP research by showing how formal partnership models generate measurable socio-economic benefits over public provision in post-conflict economies.

Credit Authorship Contribution Statement

Pereguda, Y. and Petrunenko, I. contributed to the conceptualization of the study, while Serbov, M. and Salnykova, T. were responsible for data curation. Formal analysis was carried out by Petrunenko, I and Barskyi, M. Research activities were conducted by Pereguda, Y. and Salnykova, T. with methodology developed by Barskyi, M. and Serbov, M. Project management was undertaken by Pereguda, Y. and supervision was provided by Petrunenko, I. Validation was performed by Salnykova, T. and Petrunenko, I. The original draft was written by Pereguda, Y. and Serbov, M. while proofreading and editing were completed by Salnykova, T. and Petrunenko, I.

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Conflict of Interest Statement

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Appendix

Table 1a. Significance threshold summary for key hypothesis tests

Test Type	Variable Tested	Test Statistic	p-value	Threshold Met ($p < 0.05$)	Interpretation
Independent-samples t-test	Cost per Beneficiary (Zhytomyr)	$t = -4.32$	0.001	Yes	Significant cost advantage of PPP
Independent-samples t-test	Time to Completion (Biopharma)	$t = -3.12$	0.012	Yes	PPP completed faster than public project
Logistic Regression	PPP Status → On-time Delivery	$z = 3.05$	0.002	Yes	PPP status increases on-time completion odds
Linear Regression	PPP → User Satisfaction	$t = 3.44$	0.002	Yes	PPP participation improves satisfaction

Note: All tests used $\alpha = 0.05$ as the primary threshold. Two-tailed p-values are reported.

Table 1b. Robustness checks and sensitivity analyses

Test Type	Variable/Model	Method Used	p-value	Outcome	Interpretation
Mann–Whitney U Test	Cost per Beneficiary	Non-parametric test	0.003	Consistent with t-test	Valid under non-normal distribution
Kruskal–Wallis Test	User Satisfaction (All Groups)	Non-parametric ANOVA	0.004	Statistically significant	Confirms differences across project types
Regression Sensitivity	Exclude Top 5% Outliers	Model recalibration	< 0.05	Robust	Coefficients remain stable
Multicollinearity Check	All Regression Models	VIF < 2.5	—	Passed	No multicollinearity issues detected
Normality of Residuals	User Satisfaction Model	Shapiro–Wilk Test	> 0.05	Passed	Assumption of normality held

Note: Non-parametric tests used where assumptions were violated. Results support main findings.

Table 1c. Effect sizes and confidence intervals for key PPP vs. public comparisons

Comparison	Mean Difference	95% Confidence Interval (CI)	Effect Size (Cohen's d)	Interpretation
Cost per Beneficiary (Zhytomyr)	–110	[–150, –70]	1.45	Large effect favouring PPP
Time to Completion (Biopharma)	–5	[–8.9, –1.1]	1.10	Large effect favouring PPP
Jobs Created (Biopharma vs. Public)	+40	[20, 60]	1.20	Large positive impact of PPP on employment
User Satisfaction (%) (All Projects)	+24	[13, 35]	1.05	Large increase in satisfaction under PPP
Lifecycle Cost (Ambulance PPP vs. Public)	–65,000	[–95,000, –35,000]	—	Substantial financial efficiency (non-normal data)

Note: Effect sizes calculated using pooled standard deviations. Cohen's d: 0.2 = small, 0.5 = medium, 0.8+ = large.