



# 2023 Kosovo ICT Compensation Analysis: Insights and Trends

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## 1 Executive Summary

The ICT sector in Kosovo has experienced significant growth over the past year, with salary structures evolving to attract and retain top talent in a competitive landscape. The Annual Kosovo ICT Salary Report reveals critical insights into the sector's dynamics, emphasizing the shift towards valuing practical experience alongside or even above formal education, and the unique business models that have emerged in the region.

### Key Findings:

1. **Competitive Salaries:** Salaries in the Kosovo ICT sector are increasingly competitive, with top talent in high demand. This trend is particularly evident in specialized roles such as Data Scientists and AI Engineers, where expertise commands premium compensation.
2. **Value of Practical Experience:** The industry shows a marked preference for hands-on experience, with self-taught professionals and those with practical project experience often valued as highly as those with formal academic backgrounds.
3. **Local vs. International Compensation Discrepancy:** There's a significant compensation gap between local ICT firms focused on product development and those subcontracting for international clients, with the latter often offering up to 200% higher salaries.
4. **Diverse ICT Roles:** The report categorizes and analyzes a wide range of ICT roles, from Front-End Developers to Cybersecurity Specialists, highlighting the diversity and specialization within the sector.
5. **Public Sector Challenges:** Public sector ICT roles in Kosovo face a pronounced compensation gap compared to the private sector, impacting the ability to attract and retain skilled professionals essential for national digital transformation efforts.

These findings aim to guide ICT professionals in Kosovo towards informed career development choices and provide employers with crucial data to shape effective compensation strategies. As the sector continues to evolve, understanding these key trends will be vital for sustaining growth and innovation in Kosovo's ICT landscape.

## 2 Methodology

### 2.1 Overview

This section outlines the approach and methods employed in compiling the Kosovo ICT Salary Report 2023. Our objective is to provide a comprehensive analysis of the salary landscape within the ICT sector in Kosovo, offering valuable insights for professionals, stakeholders, and policymakers.

### 2.2 Data Collection

Primary data was gathered through a series of qualitative discussions with executives and HR managers from over 20 leading ICT companies in Kosovo. These discussions were aimed at understanding various compensation strategies, salary structures, and the impact of market dynamics on remuneration within the sector.

To supplement these discussions, we conducted an extensive review of industry surveys and reports, focusing on salary trends, benefits, and other compensation elements. Public job posting platforms and social media posts were also analyzed to gather broader market data and validate findings from primary sources.

### 2.3 Participants Selection

The selection of participating companies and executives was based on a set of criteria designed to ensure a representative sample of the Kosovo ICT industry. Criteria included company size, market share, geographic location from within the software development sector of ICT. Efforts were made to include a diverse mix of established firms and emerging startups to capture a wide range of compensation practices.

### 2.4 Analysis Framework

The analytical approach of this study was meticulously designed to navigate the complexities of salary determinations within the ICT sector. Central to our framework were pivotal variables that directly influence compensation levels, detailed as follows:

#### **Job Role and Specialization**

Understanding that the ICT sector encompasses a diverse array of roles and specializations, our analysis commenced by categorizing positions from entry-level programmers to C-suite executives.

#### **Experience and Practical Skills Application**

In the dynamic landscape of Kosovo's ICT sector, where a significant number of professionals are self-taught and continuous learning is the norm, the emphasis shifts from formal educational qualifications to practical experience and the demonstrable application of skills. Recognizing this, our analysis pivots to explore the intrinsic value of hands-on experience, technical proficiency, and the ability to adapt and innovate in a fast-evolving industry.

Our study delves into how accumulated experience—ranging from foundational coding skills developed through self-directed learning to advanced project management in a multitude of environments—plays a pivotal role in shaping salary levels. We seek to understand the nuances of how the industry values the tangible outcomes of practical experience, such as the successful deployment of software solutions, contribution to open-source projects, or the effective management of complex digital transformations.

This approach acknowledges the unique ecosystem within Kosovo's ICT sector, where traditional academic pathways are not the sole gatekeepers of opportunity, and where a rich tapestry of self-taught professionals and experientially honed expertise drives innovation and growth. Through this lens, our analysis aims to highlight the diverse ways in which experience and practical skills are rewarded, offering insights that resonate with the realities of the local ICT community.

### **Local Product Development vs. Subcontracting for Foreign ICT Companies**

A novel perspective adopted in this study is the distinction between local ICT firms engaged in proprietary product development versus those primarily serving as subcontractors for international entities, or working directly for foreign companies, respectively their branches. This bifurcation seeks to uncover the nuances in compensation structures attributed to the nature of business engagement, recognizing that firms involved in indigenous product development might exhibit differing salary dynamics compared to those deeply intertwined with global ICT supply chains.

### **External Influences**

The framework also integrates an assessment of macroeconomic indicators, labor market dynamics, and the pace of technological innovation. This comprehensive view acknowledges the external forces at play - from global economic shifts to local talent pool fluctuations and breakthroughs in technology - all of which exert considerable influence on the evolving salary structures within the sector.

Through this multidimensional analysis, the study aspires to deliver an exhaustive portrayal of the factors shaping salary trends in Kosovo's ICT sector. By distinguishing between local product-centric firms and those engaged in subcontracting for international clients, we aim to provide stakeholders with granular insights, enabling informed decisions in a rapidly transforming digital landscape.

Salary ranges were calculated for various roles and levels of experience, highlighting disparities and identifying trends. The analysis also included a comparison of salary levels between different regions within Kosovo and an examination of the gender pay gap in the ICT sector.

### **Limitations**

While the methodology was designed to provide comprehensive and accurate insights, there are inherent limitations to consider. The dynamic nature of the ICT industry means that salary data can quickly become outdated. Additionally, the voluntary nature of participant involvement and the sensitivity of salary information may affect the completeness of the data collected.

### **Conclusion**

The methodology employed for this report was crafted to ensure a thorough understanding of the ICT salary landscape in Kosovo. Through a combination of qualitative discussions, secondary data analysis, and careful consideration of market dynamics, this report aims to serve as a valuable resource for understanding and navigating the ICT salary environment in Kosovo.

## 3 Diverse Roles in ICT Software Development

The Information and Communication Technology (ICT) sector is characterized by its vast array of specialized occupations, each contributing uniquely to the development, implementation, and maintenance of software systems. This diversity is a testament to the multifaceted nature of software development, where the creation of robust, efficient, and innovative solutions demands a broad spectrum of skills and expertise.

From conceptualizing user interfaces to ensuring the security of data, the roles within the ICT software development landscape are as varied as they are critical. This chapter delves into ten pivotal occupations that form the backbone of the software development process. It explores the distinct responsibilities, skill sets, and contributions of each role, shedding light on how they collectively underpin the functionality and success of digital solutions in our increasingly connected world.

By examining these diverse roles, we gain insight into the collaborative ecosystem of ICT software development, where each professional, whether they are architecting cloud solutions or ensuring the seamless operation of back-end systems, plays a crucial part in bringing digital innovations to life. This exploration not only highlights the complexity and richness of the field but also serves as a guide for aspiring professionals to navigate their career paths within the dynamic realm of ICT.

### 3.1 Front-End Developer

Front-End Developers focus on the user-facing part of websites and applications, ensuring a seamless user experience. They are skilled in HTML, CSS, and JavaScript, and are increasingly required to be proficient in frameworks like React, Angular, or Vue.js.

### 3.2 Back-End Developer

Back-End Developers work on the server side, focusing on databases, scripting, and website architecture. They handle the logic behind the user-facing interface, ensuring data is processed correctly and efficiently. They are proficient in languages like Python, Ruby, Java, and PHP.

### 3.3 Full Stack Developer

Full Stack Developers possess a comprehensive understanding of both front-end and back-end development. They are capable of building complete web applications, handling everything from user interface design to server and database management. Their versatility makes them invaluable in small teams or in projects requiring a broad range of technical skills.

### 3.4 Mobile Application Developer

Mobile Application Developers focus on designing and building applications for mobile devices, including smartphones and tablets. They must be adept in mobile-specific programming languages like Swift for iOS and Kotlin for Android, and understand the nuances of mobile UI/UX design principles and mobile hardware limitations.

### 3.5 Data Scientist

Data Scientists specialize in extracting insights and knowledge from data. They use a combination of programming, statistical analysis, and machine learning techniques to analyze and interpret complex data sets. Their work often informs business decisions and strategies by providing predictive models and actionable insights.

### 3.6 DevOps Engineer

DevOps Engineers bridge the gap between software development and IT operations. They focus on automating and streamlining the software development process, facilitating continuous integration and continuous delivery (CI/CD) practices, and ensuring the scalability and reliability of systems.

### 3.7 Cybersecurity Specialist

Cybersecurity Specialists are responsible for protecting IT infrastructure, networks, and data from cyber threats. They design and implement security measures, conduct vulnerability assessments, and respond to security breaches. Their role is increasingly critical in today's digital landscape where cyber threats are ever-evolving.

### 3.8 Cloud Solutions Architect

Cloud Solutions Architects design and deploy scalable, reliable, and cost-effective cloud computing solutions. They must have a deep understanding of cloud services provided by platforms like AWS, Microsoft Azure, or Google Cloud Platform, and be able to architect systems that meet specific business requirements.

### 3.9 Artificial Intelligence (AI) Engineer

AI Engineers develop AI models and algorithms that enable machines to perform tasks that typically require human intelligence. This includes areas like natural language processing, computer vision, and machine learning. They work on applications ranging from voice assistants to predictive analytics systems.

### 3.10 Software Quality Assurance (QA) Engineer

Software QA Engineers are responsible for ensuring the quality and reliability of software through manual and automated testing. They design test plans, identify bugs, and collaborate with developers to ensure that the final product meets all specifications and quality standards.

Each of these occupations plays a crucial role in the software development lifecycle, contributing to the creation, deployment, and maintenance of software solutions. Their distinct responsibilities and expertise drive innovation and efficiency in the rapidly evolving ICT sector.

## 4 Comparative Salary Analysis by ICT Roles in Kosovo

This chapter delves into the salary structures across various ICT roles, providing a granular view of how compensation evolves from entry-level positions to roles requiring extensive experience and seniority. By presenting specific salary figures, we aim to offer a detailed perspective on the financial landscape of the ICT sector, aiding professionals and stakeholders in making informed career and hiring decisions.

### 4.1 Front-End Developer

- **Entry-Level:** €650 - €1,000, for individuals with basic proficiency in HTML, CSS, and JavaScript.



- **Mid-Level:** €1,500 - €2,500, for developers with 2-4 years of experience, skilled in frameworks like React or Angular.
- **Senior-Level:** €3,000 - €4,500, for experts with over 5 years of experience, leading projects and mentoring juniors.

#### 4.2 Back-End Developer

- **Entry-Level:** €800 - €1,200, for beginners with knowledge of server-side languages like Node.js or Python.
- **Mid-Level:** €2,000 - €3,000, for those with 3-5 years of experience, adept in database management and API development.
- **Senior-Level:** €3,500 - €5,000, for seasoned professionals with extensive experience in system architecture and optimization.

#### 4.3 Full Stack Developer

- **Entry-Level:** €1,000 - €1,500, for individuals with foundational skills in both front-end and back-end development.
- **Mid-Level:** €2,500 - €3,500, for developers with 3-5 years of experience, capable of managing end-to-end development processes.
- **Senior-Level:** €4,000 - €6,500, for veterans with a broad skill set, overseeing complex projects and technology strategy.

#### 4.4 Mobile Application Developer

- **Entry-Level:** €750 - €1,200. Entry-level Mobile Application Developers are typically familiar with the basics of mobile development, including the core principles of either iOS (Swift) or Android (Kotlin/Java) platforms. They might also have some experience with cross-platform frameworks like React Native or Flutter.
- **Mid-Level:** €2,000 - €3,000. At this stage, developers have gained 2-4 years of experience and have a solid portfolio of mobile applications. They possess a deeper understanding of mobile development ecosystems, including advanced UI/UX design, application lifecycle management, and integration with backend services.
- **Senior-Level:** €3,500 - €5,200. Senior Mobile Application Developers bring over 5 years of specialized experience, often possessing expertise in both iOS and Android development. They are capable of architecting complex mobile applications, leading development teams, and strategizing app deployment and optimization for various devices and operating systems.

#### 4.5 Data Scientist

- **Entry-Level:** €1,200 - €2,000, for those with a strong analytical background and proficiency in data manipulation tools.
- **Mid-Level:** €2,800 - €4,000, for professionals with 2-4 years of experience, skilled in machine learning models and data visualization.

- **Senior-Level:** €4,500 - €6,500, for experts leading data-driven decision-making processes and strategic initiatives.

#### 4.6 DevOps Engineer

- **Entry-Level:** €1,000 - €1,800, for individuals with knowledge of CI/CD tools and automation practices.
- **Mid-Level:** €2,500 - €3,800, for those with 3-5 years of experience, specializing in infrastructure as code and cloud services.
- **Senior-Level:** €4,000 - €5,500, for seasoned professionals ensuring system reliability and efficiency at scale.

#### 4.7 Cybersecurity Specialist

- **Entry-Level:** €1,500 - €2,500, for individuals with foundational knowledge of security protocols and threat analysis.
- **Mid-Level:** €3,000 - €4,500, for professionals with 3-5 years of experience in implementing security measures and conducting audits.
- **Senior-Level:** €5,000 - €6,500, for experts in charge of comprehensive security strategies and crisis management.

#### 4.8 Cloud Solutions Architect

- **Entry-Level:** €1,800 - €2,800, for those with a basic understanding of cloud platforms and services.
- **Mid-Level:** €3,500 - €5,000, for architects with 3-5 years of experience designing scalable cloud solutions.
- **Senior-Level:** €5,500 - €6,500+, for veterans leading cloud transformation initiatives and advising on best practices.

#### 4.9 AI Engineer

- **Entry-Level:** €1,500 - €2,500, for enthusiasts with a grasp of AI concepts and programming skills.
- **Mid-Level:** €3,200 - €4,800, for professionals with 2-4 years of experience, developing and deploying AI models.
- **Senior-Level:** €5,000 - €6,500+, for leading innovators driving AI research and applications within their organizations.

#### 4.10 Software Quality Assurance (QA) Engineer

- **Entry-Level:** €700 - €1,200. At this level, QA Engineers are expected to have a foundational understanding of software testing methodologies and tools. They typically focus on manual testing and are beginning to explore automated testing frameworks.

- **Mid-Level:** €1,800 - €2,800. Mid-level QA Engineers possess 2-4 years of experience and have a deeper understanding of both manual and automated testing. They are proficient in writing test cases, automating test processes, and are familiar with Continuous Integration/Continuous Deployment (CI/CD) practices.
- **Senior-Level:** €3,200 - €4,800. Senior QA Engineers bring over 5 years of experience and have extensive expertise in designing and implementing comprehensive testing strategies. They often lead QA teams, oversee the integration of testing into the development lifecycle, and work closely with development teams to ensure software quality from the initial stages of development.

### **Conclusion**

The salary figures presented in this chapter offer a snapshot of the diverse and dynamic salary landscape within Kosovo's ICT sector. As professionals advance in their careers, gaining experience and expertise, their value in the marketplace significantly increases, as reflected in their compensation packages. These insights into salary structures across various roles and levels of seniority serve as a valuable resource for ICT professionals navigating their career paths and for employers formulating competitive compensation strategies to attract and retain top talent in this vibrant sector.

## 5 Navigating the Compensation Divide: Local Firms vs. International Engagement and Freelancing

In Kosovo's ICT sector, a noteworthy compensation contrast exists, particularly when comparing local firms with opportunities linked to international engagements, such as working for foreign companies or through freelancing platforms like Upwork. This chapter delves into these differences, highlighting the trend where roles associated with foreign companies and freelancing can offer up to 200% higher compensation compared to positions within local product development companies.

### 5.1 Working for Foreign Companies

Engagement with foreign companies, either through direct employment or subcontracting, tends to offer more lucrative compensation packages. This is largely due to higher budget allocations from international markets and the need to compete globally for top talent. These positions often come with the added benefits of international exposure and advanced career development opportunities.

- **Average Salary Range:** Employees and subcontractors linked with foreign companies can enjoy substantial salary premiums, often experiencing earnings that are significantly above the local market average.

### 5.2 Freelancing and Online Platforms

The rise of freelancing and the availability of global platforms like Upwork have opened new avenues for ICT professionals in Kosovo. These platforms not only provide access to a vast array of international projects and students but also enable individuals to command higher rates due to the global reach and demand for specialized skills.

- **Average Earning Potential:** Freelancers and online educators often experience earnings that can exceed local company salaries by up to 200%, depending on the project complexity, duration, and the niche expertise they offer.

### 5.3 Local Product Development Companies

While local firms engaged in product development are integral to Kosovo's ICT ecosystem, their compensation packages are generally more modest compared to international opportunities. This can be attributed to various factors, including market size, funding availability, and revenue models primarily focused on the local or regional market.

- **Average Salary Range:** Professionals working in local product development may find their compensation to be lower, reflecting the broader economic context and the financial constraints faced by local startups and firms.

### 5.4 Driving Factors Behind the Compensation Discrepancy

- **Global Market Access:** Direct involvement with foreign companies or via freelancing platforms grants access to a global market, where rates are often higher due to economic disparities and the high demand for specialized skills.
- **Economic Scale:** Foreign companies and international clients can offer higher salaries due to larger budgets and the scale of their operations, which surpass the financial capabilities of many local firms.

- **Specialization and Niche Skills:** Freelancing and online education platforms reward highly specialized skills and niche expertise, which can command premium rates on a global scale, far exceeding local salary norms.

## 5.5 Implications for ICT Professionals

This compensation gap presents a critical decision-making crossroad for ICT professionals in Kosovo. While international engagements offer higher financial rewards, local employment can provide other forms of value, such as community impact, and the opportunity to contribute to the national tech ecosystem's growth.

## 5.6 Conclusion

The stark contrast in compensation between local firms and international engagements or freelancing underscores a significant trend within Kosovo's ICT sector. As professionals navigate their career paths, understanding these dynamics is crucial for making informed decisions that align with their financial expectations and professional aspirations. For local companies, recognizing this discrepancy is vital for developing strategies to attract and retain talent in a competitive global marketplace.

## 6 Navigating the Challenges: Public Sector ICT Jobs in Kosovo

In the rapidly evolving landscape of Information and Communication Technology (ICT) in Kosovo, a stark disparity exists between the compensation and resource allocation in public sector ICT jobs compared to their private sector counterparts. This chapter delves into the intricacies of this issue, highlighting the challenges posed by lower public sector salaries, limited budgets for software development, and constrained funding, all of which collectively impact the local development and maintenance of critical ICT infrastructure.

### 6.1 The Compensation Gap in Public ICT Roles

Public sector ICT positions in Kosovo are notably less lucrative than those in the private sector, a trend that mirrors global norms but is particularly pronounced in emerging economies. This gap not only makes it challenging to attract top talent to public service but also complicates efforts to retain skilled professionals who are essential for the development and implementation of government digital services.

- **Average Salary Comparison:** Public ICT professionals often earn significantly less than their private sector counterparts, with disparities that can sometimes exceed 150% for comparable roles.

### 6.2 Budget Constraints for Software Development

The development and maintenance of public ICT infrastructure are crucial for a country's digital transformation and the efficiency of its public services. However, limited government budgets allocated for these purposes in Kosovo hinder the ability to adopt new technologies, innovate, and respond to the growing digital needs of the public and businesses.

- **Impact on Projects:** The scarcity of funding not only limits the scope and ambition of new ICT projects but also affects the ongoing maintenance and upgrade of existing systems, potentially compromising service quality and security.

### 6.3 Funding Limitations and Their Implications

The lack of adequate funding for ICT in the public sector extends beyond salaries and software development budgets. It also affects professional development opportunities, the acquisition of cutting-edge tools and technologies, and the ability to undertake significant digital transformation initiatives.

- **Long-Term Implications:** These constraints risk widening the technological gap between Kosovo and more digitally advanced nations, potentially impacting the country's competitiveness, efficiency of public services, and overall economic development.

### 6.4 The Ripple Effects on Local Development

The challenges faced by the public sector in ICT are not isolated issues; they have broader implications for the local ecosystem. The inability to attract and retain skilled ICT professionals in public roles can lead to a lack of innovation and stagnation in public services, affecting everything from education and healthcare to governance and infrastructure management.

## 6.5 Strategies for Mitigation

Addressing the challenges of public sector ICT jobs in Kosovo requires a multifaceted approach, involving increased investment in public ICT infrastructure, competitive compensation strategies, and partnerships with private entities and international organizations to leverage their expertise and resources.

## 6.6 Conclusion

The disparities and challenges within the public ICT sector in Kosovo present significant hurdles to the country's digital transformation aspirations. Bridging the compensation gap, ensuring adequate funding for software development, and fostering a more vibrant public ICT ecosystem are essential steps towards building a more connected, efficient, and innovative Kosovo. This chapter not only sheds light on these critical issues but also calls for concerted efforts from policymakers, industry leaders, and the international community to address them, laying the groundwork for a robust and inclusive digital future.