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ENABLERS AND BARRIERS TO PERFORMANCE-BASED PRICING OF SOFTWARE PROJECTS

Master's Thesis

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I have written this master's thesis independently. All viewpoints of other authors, literary sources and data from elsewhere used for writing this paper have been referenced.

Kaido Koort
/signed digitally/

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Abstract

This article investigates the enablers and barriers to performance-based pricing for software projects in Estonia through qualitative interviews (N=7) conducted with software company leaders. Findings reveal time-and-materials pricing prevails due to flexibility, despite recognized incentive misalignments. Performance-based pricing adoption faces significant barriers, including difficulties in quantifying value, high perceived risks for both parties, insufficient trust, and restrictive procurement norms. Critical enablers involve strong client partnerships, clear value propositions, measurable outcomes, and structured risk-sharing agreements. The research offers empirical insights into performance-based pricing challenges specifically within project-based services, emphasizing trust and context as crucial for implementing value-aligned, often hybrid, pricing models.

Keywords: value-based pricing, performance-based pricing, outcome-based pricing, enablers and barriers, software projects

CERCS classifier: S185 - Commercial and industrial economics

Introduction

The prevalent approach to pricing information and communication technology (ICT) and software development projects involves cost-plus models, with approximately 62.7% of such projects procured on a time-and-material (T&M) basis (Kantata, 2023). Within the software industry, pricing strategies often remain fundamentally cost- or competition-based (Baur, Bühler, & Bick, 2015; Christen, 2024; Hinterhuber, 2024; Kienzler & Kowalkowski, 2017). To make an offer, a software development company (vendor) typically analyzes the information gathered from request for proposal documents, tender materials and customer meetings (Herrmann & Cobo Martín, 2024). Based on this analysis, a software project proposal is compiled, detailing how customer needs will be addressed. A typical proposal includes descriptions of the project team, estimations, a schedule, and the price offering. Estimations are commonly provided in man-hours for the major components of the proposed digital solution, often encompassing hours for analysis, design, coding, testing, and project management (Mäkinen, 2022). The final price calculation heavily relies on the hourly rates of the development team members, which vary based on role complexity and expertise. While contractual agreements often include disclaimers about the preliminary nature of estimates and specify warranty conditions (Wei, Ulziisukh, Bao, Zuo, & Wang, 2021), hourly rates in longer-term T&M contracts are also commonly subject to annual adjustments, often reflecting factors like inflation or pre-agreed escalations (Pillsbury, 2022; World Commerce & Contracting, 2024).

Despite the widespread use of T&M contracts, a significant challenge persists: a substantial majority of software projects fail to meet their original objectives. Industry reports and academic studies consistently indicate high rates of project failure concerning scope, schedule, and budget (Boston Consulting Group, 2020; Varajão, Pereira, Trigo, & Moura, 2021). Project management research highlights numerous contributing factors, including the inherent risks associated with software development (Haq, Gu, Liang, & Abdullah, 2019; Varajão et al., 2021). Common issues include inaccurate initial estimations and the challenges of assessing uncertainty (Jorgensen, 2018), difficulties in managing requirements and scope creep (Haq et al., 2019), and inadequate project governance (Haq et al., 2019). Compounding these issues, Pendo's recent standard software benchmarks reveal that only 6.4% of features generate 80% of user clicks; roughly 94% attract minimal attention, exposing a costly gap between development effort and realized value (Pendo, 2024).

T&M model can worsen these issues due to fundamental misalignment of incentives. Delays in T&M projects, while detrimental to the client's budget and timelines, can paradoxically increase the supplier's billable hours and potentially the total profit derived from that specific engagement. This structure offers little financial incentive for the vendor to proactively manage scope or optimize for rapid delivery of the most essential functionalities. Furthermore, failing to meet deadlines and the inefficiencies inherent in troubled projects can negatively impact the motivation of software development professionals, whose key drivers often include personal growth, creativity, and seeing their work deliver tangible results (Haavik, 2018). The economic impact of such delays extends beyond immediate budget overruns. Concepts like cost of delay, which quantifies the economic loss incurred due to delayed delivery, and metrics measuring the length of the software development cycle (Gurung, Shah, & Jaiswal, 2020) underscore the importance of timely value delivery. Accelerating the delivery of valuable features directly impacts the customer's return on investment (ROI) and time-to-value (Gurung et al. 2020).

The shortcomings of traditional T&M and cost-plus models, particularly the incentive misalignment and high project failure rates, suggest a need for alternative pricing strategies that reward results rather than effort. Value-based pricing (VBP), defined as an arrangement where the seller is compensated based on customer value instead of relying predominantly on cost- or competition-based approaches (Keränen, Kienzler, Salonen, Terho, & Totzek, 2023), presents a potential solution. VBP aims to shift the focus from input costs (hours worked) to the outcomes and value generated for the client (Baur, Bühler, & Bick, 2015; Kienzler & Kowalkowski, 2017). More specifically, performance-based pricing (PBP), sometimes called performance-based contracting, is an approach to operationalize broad VBP logic: the supplier is paid only when pre-agreed performance metrics (e.g., service-level KPIs, milestone acceptance criteria) are met during project execution. In other words, VBP provides the umbrella rationale, while PBP is a distinct contractual mechanism for enacting it.

Despite a decade of lively VBP scholarship, empirical insight into the adoption of PBP in project-based software development remains scarce (Herrmann & Cobo Martín, 2024). Existing work has largely examined the adoption factors in general B2B context, focusing on product or software-as-a-service subscription pricing (Kienzler & Kowalkowski, 2017; Raja, Frandsen, Kowalkowski, & Jarmatz, 2020). The software-project setting differs in three respects: extreme requirement uncertainty, short technology lifecycles, and a labor-heavy cost structure that makes the shift from paying for inputs to paying for performance

both attractive and risky (Huber, Dibbern, & Fischer, 2024). Consequently, we know little about the organizational, relational, and contextual factors that enable or hinder software firms from moving beyond T&M to PBP (Keränen et al., 2023).

Building on this gap, the present study aims to explain the enablers of, and the barriers to, the implementation of PBP in software projects in Estonia. To achieve this aim, the following research questions (RQs) are addressed in this article:

1. How do software development companies price their work?
2. What are the advantages and disadvantages of different pricing models used in software development projects?
3. What factors, and how, support/facilitate or hinder the implementation of PBP in software development projects?

By answering these questions, the article contributes to the pricing strategy and project management literatures with qualitative evidence from a digitally advanced yet under-researched context. Practically, it offers software firms and their clients a clearer view of when and how performance-linked contracts can be made to work, potentially leading to better project outcomes, improved client relationships, and enhanced value capture.

The paper proceeds as follows. Chapter 2 reviews literature on pricing models and PBP. Chapter 3 outlines the research methodology. Chapter 4 presents empirical findings on PBP in Estonia, discusses these in light of theoretical frameworks, and explores implementation implications. Chapter 5 provides overall conclusions and suggestions for future research.

1. Literature Review on Pricing Models and Performance-Based Pricing

1.1. Overview of Major Pricing Models

Pricing of goods and services is a fundamental element of the marketing mix. When effectively implemented, it enables firms to realize potential profits (Nagle, Müller, & Gruyaert, 2023). Pasura & Ryals (2005) define price as the monetary value exchanged between the seller and buyer for a specified quantity of goods or services. Essentially, pricing represents a firm's effort to capture the value it creates, translating this into sustainable profitability (Nagle et al., 2023). Despite its critical role, the academic focus on pricing strategies has been limited, with few business schools offering specialized courses and systematic studies on their effectiveness only emerging in recent years (Hinterhuber, 2024).

There are three distinct approaches for setting prices of products or services (Christen, 2024; Liozu & Hinterhuber, 2023):

1. cost-based pricing.
2. competition-based pricing.
3. customer VBP, of which PBP is a key operationalization, especially relevant for services and projects.

Pricing in Business-to-Business (B2B) markets differs from pricing in Business-to-Consumer (B2C) domain. However, two-thirds of all recently published pricing articles focus on different aspects related to B2C pricing and only few studies investigate service pricing, participative pricing and psychological aspects of pricing (Kienzler & Kowalkowski, 2017). Thus, there is a need for further qualitative investigations into pricing strategies within the B2B context to address these gaps and enhance understanding (Christen, 2024; Kienzler & Kowalkowski, 2017). Customer VBP, and particularly its application through PBP, is generally considered an appropriate strategy for B2B sales transactions. However, PBP is rather difficult to implement and requires substantial effort from the provider (Christen, 2024; Raja et al. 2020).

Table 1 outlines the foundational concepts critical to understanding the VBP philosophy that underpins PBP, and the practicalities of implementing PBP itself. These key terms and their definitions provide clarity and context for the subsequent analysis of pricing models and strategies employed in software projects. By consolidating these concepts, the table serves as a reference point for exploring the enablers and barriers to implementing PBP in the software industry.

Table 1

Key concepts related to pricing

Concept	Definition	Reference
Value Driver	Feature or part of a product or service that translates into a benefit for the customer. Value drivers can be monetary or psychological.	(Nagle, Hogan, & Zale, 2011)
Value Quantification	The process of measuring and communicating the economic value created for customers by quantifying key dimensions, setting a baseline, projecting improvements, and calculating the overall impact, often with customer involvement.	(Töytäri, Rajala, & Alejandro, 2015).
Value Capture	Process of securing profits from value-creation and the distribution of those profits among participating actors such as providers and customers.	(Agarwal, Simonsson, Magnusson, Hald, & Johanson, 2022)
Dynamic Pricing	Practice of dynamically adjusting prices to achieve revenue gains while responding to market situations with uncertain demand.	(Seele, Dierksmeier, Hofstetter, & Schultz, 2019)
Price Discrimination	Charging different prices to different customers for the same product or services. Dynamic, personalized, and algorithmic pricing can all be considered as price discrimination.	(Seele, Dierksmeier, Hofstetter, & Schultz, 2021)
Price Elasticity of Demand	Price elasticity of demand measures the responsiveness of quantity demanded to a change in price. For example, salt has an inelastic demand (elasticity = 0.1), fresh tomatoes have an elastic demand (elasticity = 4.6). Demand for a software project is elastic.	(Anderson, McLellan, Overton, & Wolfram, 1997)
Return on Investment (ROI)	A common value communication concept describing the relation of customer gain to their investment. ROI = (customer benefit – customer price) / (customer price). Often expressed as %. ROI can be a key performance indicator (KPI) in PBP contracts.	(Christen, Hess, & Grichnik, 2024)
Digital Servitization	The integration of products, services, and software into smart, connected systems. Digital Servitization is focused on value creation and capture across the ecosystem, often including transformation of processes, capabilities, and offerings.	(Agarwal et al., 2022; Simeoni, 2021; Kohtamäki, Parida, Patel, & Gebauer, 2020)

Source: Compiled by the author

Table 1 highlights key pricing concepts, including their definitions and relevant references. It emphasizes critical ideas such as value drivers, which define customer-perceived benefits that PBP aims to deliver; value quantification, outlining methods for measuring and communicating value which form the basis of PBP metrics; and value capture,

focusing on profit realization shared according to PBP agreements. Additionally, the table includes the concepts of modern practices like dynamic pricing and price discrimination, illustrating their role in adapting to market demands.

The literature presents a wide array of pricing strategies and models that should be aligned with organizational goals, market conditions, and customer perceptions (Kienzler & Kowalkowski, 2017; Liozu & Hinterhuber, 2023; Nagle et al., 2023; Pandey & Jhamb, 2021; Pasura & Ryals, 2005). Advances in technology and data analytics create new opportunities and challenges in pricing, necessitating continuous learning and adaptation. Emerging research directions in the field of VBP focus on the use of artificial intelligence (AI) for personalized pricing, the impact of subscription models on consumer loyalty, and price transparency enabled by digital technologies (Hinterhuber, 2017; Pasura & Ryals, 2005; Pendo, 2024; Seele et al., 2021; Taghizadeh, Rahman, & Marimuthu, 2022).

Table 2 presents common pricing models, ordered based on their observed frequency in recent academic and industry literature concerning service pricing. Pricing models are adaptable to different organizational goals, customer needs, and market conditions (Agarwal et al., 2022; Raja et al., 2020; Töytäri, Keränen, & Rajala, 2017). These models, ranging from traditional approaches like subscription and cost-based pricing to more advanced methods like performance-based and customer-determined pricing, reflect evolving trends in how businesses capture and deliver value. While this thesis focuses on software development, understanding a broader range of pricing models provides context for situating PBP and appreciating its specific advantages and challenges in the ICT sector. Additionally, the table highlights emerging models driven by technological advancements, such as usage-based and dynamic pricing, which leverage data analytics and cloud technologies for real-time adaptability (Liozu & Hinterhuber, 2022; Seele et al., 2021). The following table presents the strategies available for organizations.

Table 2

Comparative Analysis of Pricing Models (sorted by prevalence in recent literature)

Pricing Model	Description	Characteristics	Examples
Subscription Pricing	Customers pay a recurring fee at regular intervals for continuous access to a product or service.	Value-based, recurring revenue model, continuous access	Netflix, Adobe Creative Cloud
Dynamic Pricing	Prices are adjusted in real-time based on market demand, supply conditions, and customer behavior.	Value-based, demand-based, real-time price adjustments	Airline tickets, ride-sharing apps like Uber
Usage-Based Pricing	Pricing is based on the amount of product or service consumed by the customer.	Cost-based, pay-per-use, scalable costs	Cloud services like AWS, utility companies, T&M
Tiered Pricing	Offers multiple pricing levels with varying features or usage limits. Freemium models provide a basic service for free.	Value-based, multiple pricing levels, feature differentiation	Spotify, LinkedIn
Bundle Pricing	Selling multiple products or services together at a lower price than if purchased separately.	Competition-based, combined offerings, discounts for packages	Cable TV packages, software suites
Penetration Pricing	Setting a low initial price to quickly gain market share and attract customers.	Competition-based, low initial price, market share focus	Free trials, introductory offers from ISPs
Psychological Pricing	Setting prices that have a psychological impact on consumers, such as pricing items at €9.99 instead of €10.	Value-based, price endings, perception influence	Retail pricing strategies
Skimming Pricing	Introducing a product at a high price and gradually lowering it over time to capture different market segments.	Value-based, high initial price, gradual reduction	Latest smartphone releases
Performance-Based Pricing (PBP)	Price is determined by the achievement of specific performance outcomes or results delivered to the customer.	Value-based, results-based, outcome-driven, incentive alignment, risk-sharing	Service Level Agreements (SLA), success fees, outcome-based contracts
Customer Determined Pricing	Buyers actively decide or influence the price, either through bidding competition or free choice.	Value-based, competitive bidding, price discovery, buyer focus	eBay auctions, online ad placements, Pay-What-You-Want

Note: LLM's were used as assistive tools (ChatGPT, Notebooklm, Gemini, Claude.ai)

Source: Compiled by the author based on Airola, 2024; Simeoni, 2021; Christen et al., 2024; Herrmann & Cobo Martín, 2024; Hinterhuber, 2017; Keränen, Kienzler, Salonen, Terho, &

Totzek, 2023; Kienzler & Kowalkowski, 2017; Knecktys, Bette, Kiesel, & Guhr, 2022; Seele et al., 2021.

Table 2 presents a spectrum of pricing models applicable across industries. In the context of software development projects, these models vary significantly in their alignment with value creation and implementation feasibility. Subscription pricing, while offering predictable revenue (Fleming, 2025), may struggle to capture the variable value delivered in custom projects. Dynamic pricing, adjusting to real-time demand (Seele et al. 2021), is less common for project work but reflects the principle of price adapting to context. Usage-based and Tiered pricing cater to scalability (Agarwal et al., 2022; Simeoni, 2021; Kienzler & Kowalkowski, 2017), linking price somewhat to consumption, but may not fully capture the strategic outcomes valued by the client. Models like PBP, which directly link compensation to measurable outcomes (Airola, 2024), are a direct operationalization of VBP principles. However, their application to software projects is particularly challenging due to the inherent difficulties in defining, measuring, and attributing value *ex ante* in complex, evolving engagements (Christen et al. 2024; Hinterhuber, 2017). This implementation gap, especially for PBP and other outcome-oriented models despite their potential for better incentive alignment, highlights the need to explore the specific enablers and barriers to PBP within the software development domain.

The order of the pricing models listed in **Table 2** indicates a potential size of research gap within the B2B domain. There are relatively many articles about subscription pricing and dynamic pricing. However, PBP, defined by its link to measurable outcomes, remain underexplored despite its potential to reshape business relationships. For example, pay-for-performance contracts used in healthcare and public-private partnerships seem to lack widespread adoption and academic focus. Service level agreements (SLAs), by contrast, provide a widely recognized example of outcome-based contracts successfully implemented in B2B contexts.

In summary, section 2.1 has reviewed various pricing models, highlighting their diverse characteristics and applications. For the context of this thesis traditional models like T&M and fixed price, while prevalent, often present incentive misalignments. PBP emerges as a compelling alternative rooted in value-based principles, aiming to directly link compensation to delivered outcomes. The challenge, however, lies in its practical implementation, which the subsequent sections will explore.

1.2. Key Factors for Implementing Performance-Based Pricing

Cost-plus and competitive pricing approaches are based on software company (seller) perspective. VBP philosophies, which PBP aims to enact contractually, have a customer (buyer) focus (Töytäri et al., 2015). Out of three main approaches, cost-based pricing models are easiest to implement (Hinterhuber, 2017; Mäkinen, 2022a; Pasura & Ryals, 2005; Töytäri et al., 2017, 2015). Information on costs is readily available for a company and adding a markup on top ensures profit. That makes the cost-plus price model a popular choice in both B2C and B2B domain.

Competition-based approaches require pricing data from the market and therefore extra effort. If data on competitors' prices is available, competitive pricing helps to ensure that the customer is willing to pay (Pasura & Ryals, 2005). In case of large B2B projects and contracts buyer discovers the price via competitive bidding, procurement, and negotiation processes. Contractual flexibility has a significant impact customer value perception (Agarwal et al., 2022).

Andreas Hinterhuber and Stephan Liozu have extensively studied VBP, highlighting its potential to enhance profitability when implemented effectively (Liozu & Hinterhuber, 2022, 2023). They explore organizational challenges in adopting VBP, such as the need for cultural change and the development of value quantification skills, all of which are critical prerequisites for successful PBP implementation. The extant studies also highlight many challenges regarding outcome-based pricing (Agarwal et al., 2022; Airola, 2024; Hinterhuber, 2017; Töytäri et al., 2015). Figure 1 illustrates how PBP, with its emphasis on risk-sharing and pay-for-performance, is a key method to enact the principles of VBP. It moves from the *ex ante* value proposition (a VBP concept) to *ex post* payment based on achieved performance (the PBP mechanism).

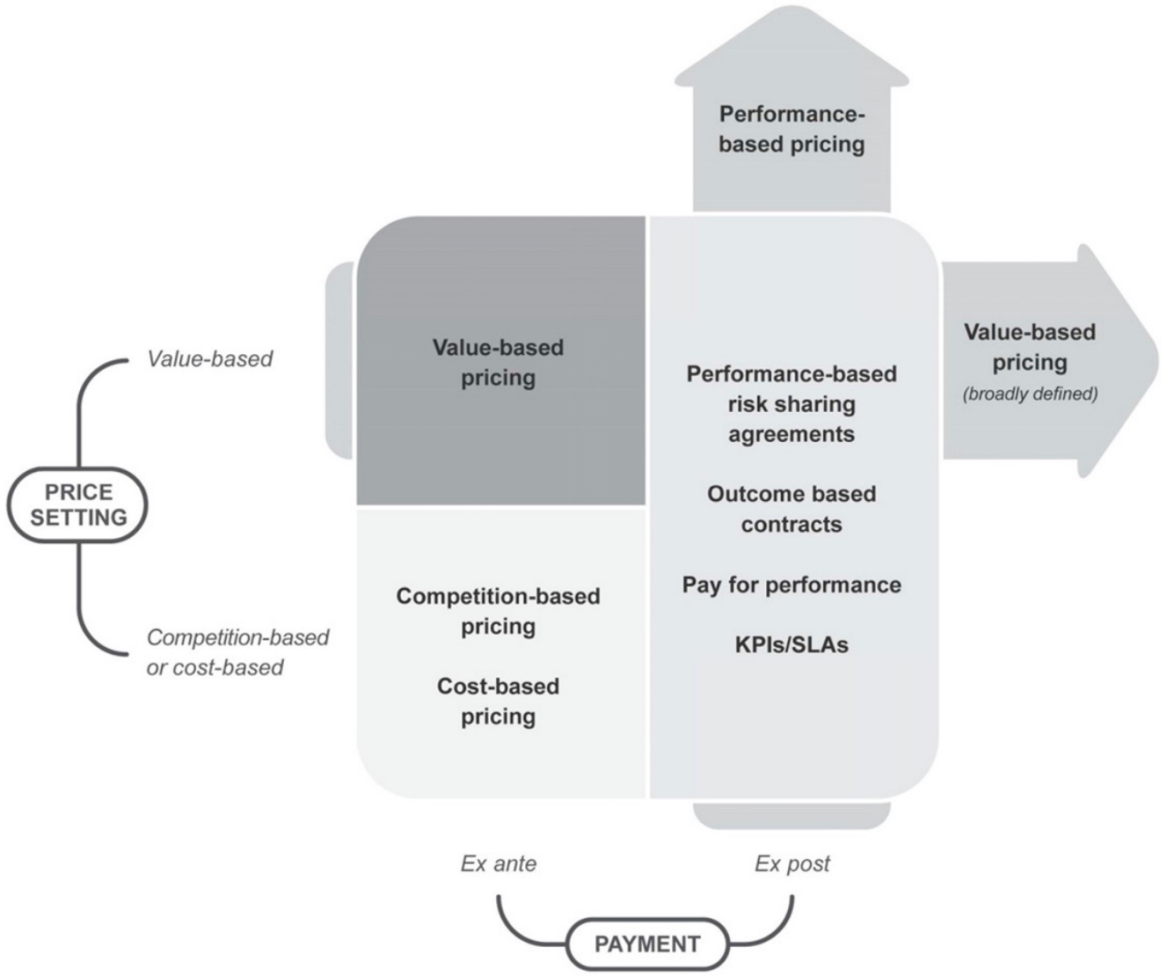

Figure 1. Relationships around VBP and PBP
Source: (Hinterhuber, 2017)

ROI calculation is a popular method for value communication (Christen et al., 2024; Hinterhuber, 2017; Hinterhuber & Snelgrove, 2020). Customer involvement in value quantification is crucial for shaping value perception. Pricing model data and algorithms should be clear to all stakeholders to foster trust and address fairness concerns (Agarwal et al., 2022; Kienzler & Kowalkowski, 2017; Seele et al., 2021). The complexity of value quantification and linking it to attributable performance metrics is a key barrier for implementing PBP.

Second hinderer for PBP is the requirement that seller must deeply understand customer needs, processes, and key stakeholders to craft compelling value propositions. A lack of customer insight and value-selling skills hampers the successful adoption of PBP (Airola, 2024; Herrmann & Cobo Martín, 2024; Keränen, Kienzler, Salonen, Terho, & Totzek, 2023; Mäkinen, 2022).

Thirdly, insufficient *ex post* performance data and lack of transparency hinder trust and accurate pricing. When performance data is available and shared readily, it simplifies follow-ups and strengthens customer confidence in outcome-based agreements (Airola, 2024; Huber, Dibbern, & Fischer, 2024). Parties also need to have the digital and analytical capabilities needed for sustaining dynamic pricing frameworks.

Organizational inertia frequently leads to a reliance on traditional cost-plus or competition-based pricing models, even when value-based alternatives could deliver better results (Christen, 2024; Raja et al., 2020). Additionally, trust deficits in buyer-seller relationships, whether stemming from complex interactions or insufficient performance guarantees, further hinder the adoption of more advanced pricing strategies like PBP (Keränen et al., 2023; Raja et al., 2020). The ability to effectively assess and manage risks also plays a critical role in choosing pricing models, as dynamic pricing inherently involves uncertainties for both parties (Taghizadeh et al., 2022).

The above affect the adoption and effectiveness of pricing strategies in business transactions, summarized in Table 3.

Table 3

Key factors affecting the choice and use of pricing models

Factor	Description	Impact	Reference
VBP/PBP Knowledge	Awareness, understanding, and support of VBP principles and PBP mechanisms among leadership.	Enables firms to price strategically using PBP if expertise is high; acts as a barrier if lacking, leading to reliance on traditional cost-based methods.	(Hinterhuber, 2017, 2024; Liozu & Hinterhuber, 2022)
Customer Perceived Value	The extent to which customers recognize the value of a service/product and are willing to pay a premium.	High perceived value enables premium pricing and makes clients more receptive to PBP's risk/reward structure; low perceived value limits pricing flexibility and may necessitate discounts, making PBP less attractive.	(Christen, 2024; Pasura & Ryals, 2005)
Digital and Analytical Capabilities	Availability of data and the ability to use digital tools for quantifying value and drive pricing decisions.	Enables dynamic and real-time pricing; acts as a barrier for companies without digital capabilities, limiting adaptive pricing models.	(Seele et al., 2021)
Nature of Customer Relationship	Degree of trust and collaboration with customers (company sizes, payment	Strong relationships enable flexible pricing agreements, including the negotiation of PBP terms; lack of trust can	(Raja et al., 2020)

	deadlines, negotiation practices, etc)	create a barrier, favoring rigid or proven pricing models.	
Risk Assessment Capability	The firm's ability to assess and manage risks in business transactions, especially in long-term contracts.	Enables confidence in PBP; a lack of capability can lead to preference for fixed pricing or simpler T&M models.	(Taghizadeh et al., 2022)

Note: LLM's were used as assistive tools (ChatGPT, Notebooklm, Gemini)

Source: Compiled by the author

Successful PBP implementation hinges on factors such as robust value quantification, clear risk assessment, strong client relationships, and supportive organizational capabilities. The absence of these can create significant barriers, pushing firms towards more traditional pricing structures that are less value-aligned. The next section will delve into the specifics of these challenges within the software project context.

1.3. Core Features in Software Procurement & Pricing

For an organization there are three general ways for obtaining software. First and most common way is to acquire off-the-shelf software solution that address common business needs. The prepackaged software solutions, often referred to as Software as a Service (SaaS), are cloud-based applications provided by third-party software vendors to meet common business needs (Christen et al., 2024). These solutions offer significant benefits, including affordability, rapid deployment, and established functionality (Fleming, 2025). Pricing models of SaaS solutions are shifting from subscriptions to consumption-/usage-based pricing models, and, in the future and in B2B, from usage-based pricing to performance-based, risk-sharing pricing models (Liozu & Hinterhuber, 2023). However, the level of customization available for SaaS solutions may be limited.

In contrast, custom software development often involves commissioning an external vendor to build a bespoke software solution. This approach offers the advantage of specialized expertise, as companies can leverage the experience of dedicated software development teams. However, managing the complexities of outsourcing, including contract negotiations, communication, and quality control, can be challenging (see Barbosa & Carvalho, 2024; Gomes, 2023; Haq, Gu, Liang, & Abdullah, 2019; Iriarte & Bayona, 2020; Varajão et al., 2021).

The third option is to create software in-house, utilizing a company's own ICT or R&D unit to develop software tailored to companies' specific needs. Such approach might

not be viable for SME as it is time-consuming and expensive to set up. Determining the true cost and value of internally produced software is difficult (Jorgensen, 2018; Zwikael, 2024). Research highlights the need to calculate a "shadow price" for such software, considering the cost of inputs and developer productivity, as there is no readily available market price for comparison (Fleming, 2025).

Table 4 summarizes the three main options of software procurement discussed above along with their relevant pricing and value quantification considerations.

Table 4

Features of the main software procurement options for the customer

Feature	Off-the-Shelf Software Purchase	Custom Software Development (external)	In-House Development
Description	Prepackaged software that addresses common business needs, available commercially (as a service).	Commissioning an external vendor to build software tailored to specific requirements.	Utilizing internal ICT or R&D teams to develop software specifically for organizational needs.
Advantages	Affordable, rapid deployment, established functionality.	Specialized expertise, high customization level, access to external skillsets.	Full control over features and development, tailored to exact requirements.
Challenges	Limited customization, may not fit specific business needs fully.	Complexity in managing contracts, communication issues, quality control challenges, vendor dependance.	Significant time investment to set up, fixed resource needs, complex productivity assessments.
Pricing models	Subscription, usage-based or value-based.	T&M based contracts, fix price contracts, potential milestone-based payments & PBP.	Internal costing (e.g., shadow pricing), complex cost/value calculation required.

Note: various LLM's were used (ChatGPT, Notebooklm, Gemini)

Source: Compiled by the author based on Barbosa & Carvalho, 2024; Christen et al., 2024; Fleming, 2024; Gomes, 2023; Haq, Gu, Liang, & Abdullah, 2019; Iriarte & Bayona, 2020; Jorgensen, 2018; Liozu & Hinterhuber, 2023; Varajão et al., 2021; Zwikael, 2024.

Implementing PBP poses several challenges in the context of software services procurement. A significant barrier is the difficulty of accurately quantifying the value delivered and establishing clear, attributable performance metrics for PBP contracts, especially for complex software solutions with multiple benefits (Ranjan & Nayak, 2023; Töytäri et al., 2015). This complexity can make it difficult to develop robust PBP models that

clearly articulate the benefits or ROI linked to performance for customers (Christen et al., 2024; Zwikael, 2024). Moreover, even when value can be quantified, effectively communicating it to customers can be challenging. Despite these challenges, the specific application of PBP in software projects remains practically unexplored, representing a significant gap in both academic research and industry practices.

Emerging digital servitization trend presents challenges and opportunities. This transition toward providing digital services and solutions often entails ongoing support, maintenance, and updates, making it more difficult to define clear boundaries for pricing compared to traditional one-time software purchases (Agarwal et al., 2022; Fleming, 2024; Kohtamäki et al., 2020). Studies indicate that existing pricing mechanisms for software may not adequately capture the value delivered by digital services, particularly those involving ongoing support and evolving functionality.

The increasing adoption of agile development methodologies in software projects has often led to a reliance on T&M contracts due to their inherent flexibility in accommodating evolving requirements (Alshammari, 2022; Gomes, 2023). However, this flexibility comes at a cost. T&M models, while adaptable, make it notoriously difficult to accurately estimate overall project costs and timelines upfront (Gomes, 2023; Mäkinen, 2022), leading to budget uncertainty for the client. Since software development is predominantly labor-intensive, T&M contracts naturally gravitate towards cost-plus or competition-based pricing. This approach in the context of outsourcing carries a fundamental shortcoming: a potential misalignment of incentives. The supplier may be incentivized by billable hours rather than rapid delivery of value or efficient problem-solving, while the client bears the risk of escalating costs and scope creep (Mäkinen, 2022). This misalignment can be particularly acute in tender situations where traditional pricing models may not effectively capture or reward the true value delivered (Herrmann & Cobo Martín, 2024).

PBP models, as an operationalization of VBP principles, offer a compelling alternative to address these misaligned incentives inherent in traditional approaches. PBP, by directly linking compensation to pre-defined, measurable performance outcomes or achieved value (Cao & Wang, 2022; Knecktys, Bette, Kiesel & Guhr, 2022), aims to create a mutually beneficial scenario for both client and vendor. This can be particularly powerful in public-private partnerships (PPPs) where pay-for-performance can foster digitalization and improve service delivery (Visconti & Morea, 2020). For software projects, a shift towards PBP has the potential to streamline project execution by incentivizing faster delivery of high-impact features, promoting efficiency, and ensuring that development efforts are sharply focused on

activities that generate demonstrable value for the customer. This alignment, as explored by Keränen et al. (2023) in gain-sharing contexts, seeks to ensure that both parties are invested in the project's success, moving beyond a simple exchange of hours for payment to a partnership geared towards achieving shared objectives and tangible results.

2. Research Methodology

Given the scarce empirical evidence on the enablers and obstacles to performance-based pricing (PBP) in project-based software development (see Chapter 2) and the inherently complex, context-bound nature of the related decision-making, a qualitative, exploratory design was the most appropriate choice. Semi-structured interviews were selected to capture rich, situation-specific insights that structured surveys, or purely quantitative techniques might overlook. This decision echoes prior quantitative work in adjacent B2B service-pricing domains, where the authors themselves call for follow-up, in-depth qualitative inquiry to surface subtleties masked by aggregate data (e.g., Kienzler & Kowalkowski 2017; Herrmann & Cobo Martín 2024). This empirical study investigates the enablers and barriers to the implementation of PBP in software development projects, focusing specifically on the Estonian context. Estonia was deemed a particularly suitable setting for this research due to its advanced digital infrastructure, vibrant technology adoption, and active startup ecosystem (Trade Commissioner Service, 2025). Furthermore, the Estonian software development market, with its mix of project types (public sector, private sector, startups) and company sizes, offered a rich diversity of pricing approaches. The relatively small size of the Estonian market and the close-knit nature of its IT community also facilitated access to key decision-makers.

The primary data were gathered through semi-structured interviews with founders and/or CEOs of seven Estonian software development companies, conducted in January and February 2025. A convenience sample was used, drawing upon the researcher's existing network and the participants' willingness to engage. Theoretical saturation was deemed to have been reached as new interviews ceased to yield significantly new insights. The participating companies represented a spectrum from small and medium-sized enterprises (SMEs) to large corporations, as detailed in Table 5:

Table 5

Overview of Interviewed Companies and Participants

#	Date	Role	Software Vendor Size	Duration
1	09.01.2025	Founder & CEO	<50 Employees, €0.5-1M Revenue	60 minutes
2	09.01.2025	Founder & CEO	<50 Employees, €0.5-1M Revenue	65 minutes
3	10.01.2025	Founder & CEO	<50 Employees, €0.5-1M Revenue	70 minutes
4	15.01.2025	Founder & CEO	50-100 Employees, €5-10M Revenue	60 minutes
5	16.01.2025	Founder & CEO	<50 Employees, €0.5-1M Revenue	60 minutes
6	16.01.2025	Founder & CEO	<50 Employees, €1-5M Revenue	60 minutes
7	27.01.2025	CEO	500-1000 Employees, €100-500M Revenue	60 minutes

Note: Company names are anonymized for confidentiality.

Source: Compiled by the author

This range allowed for an examination of how company size and resources might influence PBP perspectives and adoption. Each interview, lasting approximately 60 minutes, followed a semi-structured interview guide (see Appendix A), originally developed in Estonian. The guide focused on identifying perceived enablers and barriers to PBP, covering topics such as current pricing models, factors influencing pricing decisions, perceived advantages and disadvantages of PBP, necessary resources for PBP implementation, and experiences with PBP or related value-based approaches.

The data set comprised audio recordings, verbatim transcriptions, interview sketches/diagrams, and researcher field notes. Transcriptions were manually reviewed for accuracy, particularly concerning industry-specific terminology (e.g., "time-and-material," "fixed-price," "value proposition," "ROI"). This study employed a qualitative, interpretive approach grounded in social constructionism (Burr, 2015), recognizing that understandings of pricing are socially constructed. Given the research's exploratory nature, focusing on the "how" and "why" of pricing, an abductive analytical method was adopted, iteratively linking empirical data with existing theory (Lukka & Vinnari, 2014).

Thematic analysis was conducted in several stages:

- **Data Familiarization and Initial Coding.** Thorough review of all data, with open coding to identify key themes related to PBP practices, value, challenges, and context, guided by research questions and literature.
- **Focused Coding and Theme Development.** Grouping initial codes into broader categories (e.g., "Barriers to PBP," "Enablers of PBP/Relationship Building") and exploring relationships through constant comparison.

- **Pattern Identification and Interpretation.** Analyzing coded data to identify patterns in PBP use, the influence of value/risk perceptions, and the interaction of enablers/barriers.
- **Triangulation.** Cross-verifying insights across interviews, sketches, and notes.
- **Iterative Process**. The analysis was inherently iterative, revisiting data and themes as understanding evolved.

To ensure confidentiality, all company and individual names were anonymized, and informed consent was obtained prior to interviews.

Large language models (LLMs) were used as assistive tools for tasks like summarizing transcripts and suggesting potential thematic relationships, but all LLM outputs were critically evaluated against original data and modified by the researcher, who retained full control over coding and interpretation (see Appendix B). While convenience sampling and the sample size (N=7) limit generalizability, the qualitative data provide rich, in-depth insights into PBP complexities. The use of LLMs, though beneficial, introduces a potential for bias, which was mitigated through careful researcher oversight and verification.

3. Empirical Study of Performance-Based Pricing in Estonia

3.1. Pricing Practices in Estonian Software Companies

The interviews showed varied pricing practices among Estonian software companies, reflecting their differences in size, clients, and services. T&M contracts were the most common, especially for ongoing projects and public sector clients. However, companies also used fixed-price contracts, VBP (mainly for specialized services or products), and hybrid approaches.

Prevalence of T&M was attributed to several factors. Interviewees consistently highlighted its flexibility, which is crucial in the context of Agile development methodologies and evolving client needs. As one founder (Interviewee 3 abbreviated as I3) stated:

With T&M, we can adjust as we go. It's much harder to do that with a fixed price.

This flexibility was particularly valued when dealing with complex projects or clients with less mature internal processes. Several interviewees (I4, I5, I6) also noted the strong preference for T&M in public sector procurements, often driven by established procurement

processes and regulations. However, the inherent misalignment of incentives in T&M contracts was also acknowledged. I5 summarized this concern:

The problem with T&M is that the incentives are not aligned. The vendor is incentivized to sell more hours, not necessarily to deliver value quickly.

I2 echoed this, stating that the entire sector is learning to lie systematically under T&M, referencing the potential for inflated hour reporting. This highlights a potential tension between the flexibility of T&M and its potential to incentivize inefficient resource utilization.

Fixed-Price Contracts were utilized in specific situations, primarily when mandated by the client or when the project scope was exceptionally well-defined. I3 noted that fixed price was more common 10 years ago but now is seen rarely. I6 mentioned that customers do not generally want to use fixed-price contracts. I4 indicated that fixed-price contracts are more frequent in the public sector and constitute a significant, though not dominant, portion of their business (around 20-30%), also stating that they would prefer to execute more fixed-price contracts. These instances often involved smaller, well-defined projects or the initial phases of larger engagements where a proof-of-concept or prototype was required.

This widespread reliance on T&M (Interviewee I5), despite its acknowledged incentive misalignments (Christen, 2024), sets the stage for exploring alternative models like PBP that aim for better value alignment. VBP/PBP was employed less frequently than T&M, often in specific contexts or as components of hybrid models. Several distinct applications emerged:

- **Productized Services:** One interviewee (I2) reported using PBP for a commercial software-as-a-service (SaaS) product, where value could be linked to quantifiable metrics like transaction volume. This suggests PBP is more readily applicable when a service is standardized, and its impact is directly measurable.
- **Specialized Expertise/Intellectual Property (IP):** Another interviewee (I5) described a case where a significant portion (80%) of the project price was attributed to unique intellectual property, highlighting VBP's relevance when offering highly specialized, non-replicable knowledge.
- **Success Fees and Hybrid Models:** Multiple interviewees (I2, I5) indicated the use of "success fees" or bonus structures tied to achieving pre-defined project milestones or outcomes. These were typically incorporated as additions to T&M or fixed-price base agreements, creating hybrid models that blend risk-sharing with more traditional pricing.

A common practice was to combine a fixed-price element for initial project phases (e.g., proof-of-concept) with a T&M model for subsequent development (I3).

- **Equity-Based Compensation:** A unique approach was described by one interviewee (I7), involving the acceptance of equity stakes in client startups as partial compensation for development services. This model, however, was acknowledged as specific to the startup ecosystem and not representative of typical client-vendor relationships.
- **Public-Private Partnerships:** One interviewee (I4) mentioned that risk sharing is applied in some of the Public-Private Partnership agreements.

The selection of a pricing model by software vendors emerged as a multifactorial process, influenced by a variety of internal and external conditions. *Client characteristics and sector norms* exerted significant influence; public sector entities often defaulted to T&M or fixed-price models due to regulatory and budgetary constraints, whereas private sector clients with mature processes or a strong innovation focus showed greater openness to PBP approaches. *Project size and complexity* were also key determinants, with larger, less defined projects naturally favoring the flexibility of T&M, while smaller, clearly scoped initiatives were deemed more suitable for fixed-price arrangements. Underscoring the viability of more advanced models, interviewees consistently highlighted the importance of *client relationships and trust*; as I3 noted, the collaborative partnership needed for value-based discussions requires a strong foundation, a sentiment echoed by I4 who linked trust directly to the ability to manage complex pricing structures. Furthermore, a company's *internal capabilities* — including project management maturity, estimation accuracy, and overall risk appetite — dictated their comfort level with adopting fixed-price or PBP. External *market competition*, as noted by I1 and I2, could significantly constrain pricing power, making ambitious PBP implementations difficult. Strategic choices, such as a *company's deliberate focus* on specific customer segments (mentioned by I4 and I5), also shaped their preferred pricing methods. Lastly, while various models were used, the *hourly rate* remained a fundamental pricing component, with several interviewees (I5, I7) confirming they benchmarked these rates against market competitors. Thus, while traditional models are dominant, strategic, often hybrid, applications of performance-linked elements indicate an underlying recognition of PBP's potential, although constrained by various factors discussed next.

3.2. Identified Enablers and Barriers to Performance-Based Pricing

The interviews revealed a mix of factors dynamically influencing the adoption and implementation of PBP in the Estonian SWD landscape. While T&M remains prevalent due to its perceived flexibility, particularly in agile contexts and public procurement (I3, I4, I6), its inherent incentive misalignments were widely acknowledged (I2, I5, I7). PBP models, though recognized for their potential to align interests and drive value, face significant barriers. Interviews identified a range of fundamental difficulties in defining and measuring value to market constraints and organizational factors, summarized in the following table.

Table 6

Identified Barriers to the adoption of PBP

Barrier Category	Description & Examples	Supporting Interviewees
Value Definition & Measurement	Difficulty quantifying value, especially *ex post* (I4, I2). Subjectivity in value perception. Determining *who* created the value (vendor input vs. client actions/market changes) (I4). Difficulty measuring value in the public sector (I4). Complexity of mapping specific features to overall business value (I2).	I2, I4
Risk & Uncertainty	Vendor risk of investing resources without guaranteed return (I2, I1). Long feedback loops and uncertainty of outcome realization (I5, I7). Client risk aversion, preferring predictable costs over potential upside/risk (I1, I4). Vendor cash flow constraints / difficulty financing upfront investment needed for PBP (I2). Risk of client changing strategy mid-stream, invalidating the value premise (I2).	I1, I2, I4, I5, I7
Trust & Relationships	Lack of deep trust and transparency required for open discussions about value and risk (I2, I1, I3). Fear of being exploited (client fearing overpayment, vendor fearing non-payment or scope creep) (I2). Difficulty building the necessary partnership level for true PBP (I2, I3).	I1, I2, I3, I4
Client & Market Constraints	Client budget limitations or structures favoring traditional models (I1, I4). Public procurement processes often mandating T&M or Fix price, hindering PBP (I3, I2, I4). Competitive pressure driving focus towards cost/price rather than value (I2). Client lack of maturity or understanding of PBP (I4, I3). Need for vendor uniqueness; difficult to apply PBP for 'commodity' services (I1, I5).	I1, I2, I3, I4, I5
Vendor Capabilities & Strategy	Lack of internal skills (value quantification, complex negotiation) or entrepreneurial mindset needed to drive PBP (I2). Strategic focus on long-term relationships might prioritize avoiding PBP risks (I2). Difficulty scaling PBP approaches across diverse clients vs. focusing on productization (I2).	I2
Process & Complexity	Complexity of structuring, negotiating, and managing PBP contracts (I2). Difficulty defining clear, measurable, attributable KPIs (I5). Lack of vendor control over the entire value chain affecting the outcome (I1). Time value of money bias hindering acceptance of deferred compensation (equity model) (I7).	I1, I2, I5, I7

Note: LLM's were used as assistive tools (ChatGPT, Notebooklm, Gemini)

Source: Compiled by the author based on interviews (I1-I7)

The most frequently cited barriers revolved around the difficulty in quantifying value objectively and the high degree of risk and uncertainty involved for both parties. As I4 said, it's often challenging to isolate the vendor's contribution to a business outcome from the client's own actions or external market factors. This ambiguity makes agreeing on fair compensation difficult. Furthermore, the investment required from the vendor in PBP models (in terms of upfront work or deferred revenue) clashes with the typical cash flow realities and financing challenges of service companies (I2). Trust emerged as a critical, often missing, ingredient (I1, I2, I3). Without a strong, transparent partnership, neither party feels comfortable sharing the necessary information or taking the required risks. Finally, market and client constraints, particularly rigid procurement rules in the public sector (I3, I2, I4) and intense price competition (I2), often force companies back into traditional T&M or fixed-price models, even if PBP might theoretically offer better alignment.

The interviews also highlighted factors and contexts that enable the use of PBP. These enablers often focus on establishing the right kind of relationship, identifying specific contexts where value is clearer, and structuring agreements appropriately. **Figure 2** depicts the key enablers and their relationships as a pyramid surrounded by contextual factors.

Figure 2. A pyramidal framework for successful performance-based pricing

Note: LLM's were used as assistive tools (ChatGPT, Notebooklm, Gemini)

Source: Compiled by the author based on interviews (I1-I7)

As illustrated by the pyramid in **Figure 2**, trust and partnership form the bedrock upon which PBP can be built (I1, I2, I3, I4). Without mutual trust and a collaborative mindset, attempting complex performance-based arrangements is likely to fail. This foundation allows for the necessary transparency and open communication. Building upon this trust, there can be distinguished two key prerequisites for defining the value:

1. Clear Value Proposition / Uniqueness: PBP is significantly easier when the vendor offers something unique or highly specialized, such as specific intellectual property or a well-defined productized service (I5, I2, I1). This uniqueness makes the value contribution clearer and reduces direct price competition.
2. Measurable Outcomes / KPIs: The ability to define, agree upon, and track clear, objective metrics like project ROI for success is crucial (I5, I4). Vague goals make performance-based compensation impossible to implement fairly.

When these two prerequisites are met, the deal can be structured as follows:

3. Structured Risk Sharing: Explicitly agreeing on how risks and potential rewards are distributed. This acknowledges that PBP involves risks for both sides and requires a mechanism to manage them fairly, often through hybrid models (I5, I6, I4).
4. Aligned Incentives: Structuring the agreement so that both vendor and client benefit from achieving the desired outcome. This can range from success fees and bonuses added to T&M (I5, I4, I6) to equity sharing in the startup context (I7). Internal alignment within the vendor company (sharing gains with employees) is also key (I5).

Finally, the functioning of this entire framework is influenced by crucial Contextual Factors:

5. Vendor Capabilities & Mindset: The vendor needs to have the expertise to understand the client's business, quantify value, manage complex projects and risks, and potentially the financial capacity to invest upfront (I2). An entrepreneurial mindset within the vendor team is beneficial (I2, I7).
6. Client Context & Maturity: Client sophistication, their own risk appetite, the strategic importance of the project (PBP often easier for non-core functions - I2), and their procurement flexibility heavily influence feasibility. Mature clients with clear goals are better PBP partners (I5, I4). Startups seeking to de-risk development are another specific context (I7).

Therefore, the adoption of PBP in Estonia appears to be a balancing act, where specific enabling conditions, particularly strong relational factors and clear contexts for value measurement, are essential to overcome significant inherent and market-driven barriers.

3.3. Implications for Implementing Performance-Based Pricing

In essence, while pure PBP models remain challenging to implement broadly in the project-based software service industry, certain elements of value-based thinking are being typically incorporated in practice. Hybrid models, success fees, and focusing on specific niches or productized offerings represent pragmatic ways Estonian software companies are balancing the flexibility of T&M with the better incentive alignment offered by PBP. The key appears to be finding specific contexts and relationships where the necessary trust, clarity, and willingness to share risk exist.

Contrasting these empirical results with the literature reveals significant alignment between them on the prevalence of T&M (Christen, 2024; Hinterhuber, 2024) and common VBP barriers like value quantification challenges and the necessity of trust (Keränen et al., 2023; Kienzler & Kowalkowski, 2017; Raja et al., 2020). The findings of the empirical study also support the arguments of VBP's easier application to productized services (Liozu & Hinterhuber, 2023), as seen in Interviewee 2's experience. However, this study's findings refine and extend current understanding in the specific context of project-based software services. The strong emphasis placed by interviewees (I3, I4) on achieving a true partnership level before VBP becomes feasible highlights the importance of a deeper relational prerequisite than often emphasized in general B2B VBP literature (cf. Raja et al., 2020). Furthermore, viewing VBP fundamentally as "pricing risk" (I4), this study introduces a practical risk management lens vital for uncertain project settings, complementing the typical focus on value quantification (cf. Hinterhuber, 2017).

These insights highlight several practical implications for successfully implementing PBP strategies. Effective PBP requires trust and transparency, extending beyond merely detailed contracts. Vendors should focus on adopting PBP in contexts where their unique expertise, intellectual property (IP), or productized services clearly provide quantifiable value. Using ROI explicitly as a core performance indicator can significantly reduce ambiguity in measuring performance, if companies define measurable customer benefits, establish clear baselines, and agree upon transparent measurement methods prior to the project’s start. Conducting structured interim ROI assessments further supports trust-building, enables timely adjustments, and strengthens the viability of performance-based pricing. Conversely, it is advisable to avoid employing PBP in low-trust environments or when dealing with commodity-like services where clear value differentiation is challenging.

Hybrid models, which blend T&M with performance bonuses or success fees, offer a pragmatic pathway to introduce value-based elements and share risk incrementally. This approach allows both clients and vendors to gradually adapt to performance-linked compensation. Furthermore, leveraging emerging technologies, such as AI, for improved risk assessment, project scoping, and potentially value tracking, could significantly strengthen the case for PBP. Such technologies can reduce uncertainty and enhance transparency, thereby helping to align incentives more effectively and cater better to the diverse risk appetites of both client and vendor. For software projects, a shift towards PBP has the potential to streamline project execution by incentivizing faster delivery of high-impact features, promoting efficiency, and ensuring that development efforts are sharply focused on activities

that generate demonstrable value for the customer. This alignment, as explored by Keränen et al. (2023) in gain-sharing contexts, seeks to ensure that both parties are invested in the project's success, moving beyond a simple exchange of hours for payment to a partnership geared towards achieving shared objectives and tangible results.

Conclusions

This article explored the complexities surrounding the use of pricing strategies in the Estonian software development sector, focusing on the enablers of, and barriers to, implementing PBP. The findings reveal a landscape dominated by T&M and cost-plus approaches, yet with strategic applications of value-driven elements and a clear acknowledgment of the limitations inherent in these conventional models.

Answering the research questions (**RQ1**), this study found that Estonian software companies primarily price their work using T&M, particularly for ongoing engagements and public sector clients, supplemented by fixed-price contracts for well-defined, smaller scopes. Hybrid models incorporating PBP elements like success fees, IP licensing, or equity swaps are used opportunistically, contingent on trust and value clarity. As an answer to the second research question (**RQ2**) T&M's main advantage is flexibility, while its core disadvantage is misaligned incentives. Fixed price offers predictability but lacks flexibility and carries vendor risk. PBP models offer superior incentive alignment but face significant disadvantages regarding complexity, risk, and the difficulty of value quantification. Answering the third research question (**RQ3**), key barriers hindering PBP adoption include challenges in value definition and measurement, high perceived risks, insufficient trust, restrictive procurement norms, and implementation complexity. Conversely, critical enablers include strong trust-based partnerships, unique value propositions, measurable outcomes, and appropriate client/vendor contexts.

Theoretically, this study contributes by providing rich qualitative insights into the PBP implementation gap within the B2B software project context, thus addressing the need for further qualitative investigation as identified by Kienzler & Kowalkowski (2017), Herrmann & Cobo Martín (2024) and Christen (2024). The widespread reliance on T&M despite its known flaws can be interpreted as a manifestation of inadequate equilibria (Yudkowsky, 2017), where industry actors may remain locked into suboptimal practices due to coordination challenges and ingrained misaligned incentives. The conceptual model presented in **Figure 2** further refines the understanding of PBP enablers by illustrating the

interdependent layers (trust, value definition, structuring mechanisms, and context) necessary for successful implementation.

This study also has its limitations, primarily the small sample size (N=7) and convenience sampling within the Estonian context, which limits generalizability. The focus was largely on the vendor perspective, and the qualitative analysis, though carefully conducted and mitigating LLM bias through researcher oversight, remains interpretive.

Future research could incorporate the client perspective on PBP barriers and enablers to provide a more complete picture. Comparative studies across different national or industry contexts could reveal cultural or structural influences. Further investigation into practical methods and tools for value quantification specifically for software projects is warranted. Finally, longitudinal studies tracking how companies evolve their pricing strategies, potentially influenced by factors like AI adoption, would be valuable.

In conclusion, while the Estonian software development sector mostly relies on traditional pricing models, there is a clear understanding of their limitations and an appetite for value-based approaches in specific contexts. Overcoming the significant barriers related to value definition, risk, and trust requires strategic focus, strong partnerships, and potentially innovative hybrid models, paving the way for arrangements that better align incentives and capture the true value created by software development.

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Appendix A – Interview Guide

Translated from Estonian

- **Purpose of the study:** To examine the enablers and barriers to implementing value-based pricing in Estonian software development projects by collecting qualitative data from representatives of Estonian software companies
- **Interview duration:** Approximately 60 minutes
- **Interview format:** Semi-structured
- **Interviewees:** Founders and CEOs of Estonian software companies
- **Interviewer:** Kaido Koort

Introduction (5 minutes)

- Greeting and words of thanks
- Brief introduction of myself, my research background, and objectives

Pricing models ordered by customer-centricity

- Confirm confidentiality and anonymity to the interviewee
- Obtain verbal consent to record the interview
- Create an open and informal conversation atmosphere

Opening questions (10 minutes)

- Please describe your company's main software development activities and target market.
    - What are your projects, products and services? Who are your main customers? How many customers do you have?
- How do you usually price your software development projects or services?
    - What parts/components do your pricing model(s) consist of?
    - Can you show some quotes?
- What are the main factors influencing your pricing decisions?

    - How does the choice of pricing model depend on the specifics of the specific (developed) product? The specifics of the customer and previous cooperation with them (customer relationship)? The availability of data necessary for pricing and calculating profitability?
    - Which customers and products are relatively higher priced and more profitable for your company?
- Please give an example of a recent software development project and how you determined its price?
    - Why did you use this model/these principles for pricing?

Value-based pricing (20 minutes)

- Based on literature and practice, one of the pricing options for software development is value-based pricing, which means that the seller's fee depends on the value created for the customer. Do you use or have you considered using value-based pricing for your products and development work?
    - Please describe with some examples in which context and how you have done it?
    - If you have not, why not?
- Based on your experience, what are the advantages and disadvantages of value-based pricing compared to other pricing models?
    - For example, compared to cost-based pricing?
    - What have been the main challenges in implementing value-based pricing in your company?
    - The main risks for the buyer and seller?
- Do you use or have you considered using performance-based pricing (i.e. the vendors fee depends on the project's performance)?

Enablers and Barriers (15 minutes)

- What factors do you think would support/support or facilitate/facilitate the implementation of performance-based pricing in your company?
    - What specific characteristics of Estonia (e.g. size, customer position in the market, cultural aspects, regulations) play a significant role in which pricing methods are used here?

    - What specific tools, technologies, skills and knowledge or resources would be necessary to implement value-based pricing? Why?
    - How would they support the implementation of performance-based pricing? What would they change for your company?
- In your opinion, what are the biggest barriers, and how do they prevent the wider adoption of performance-based pricing in the Estonian software industry?
    - What are the main (perceived) threats, risks or fears of sellers and buyers?
    - Which different types of barriers have a relatively greater impact?
    - What role do so-called soft factors such as trust and culture play?

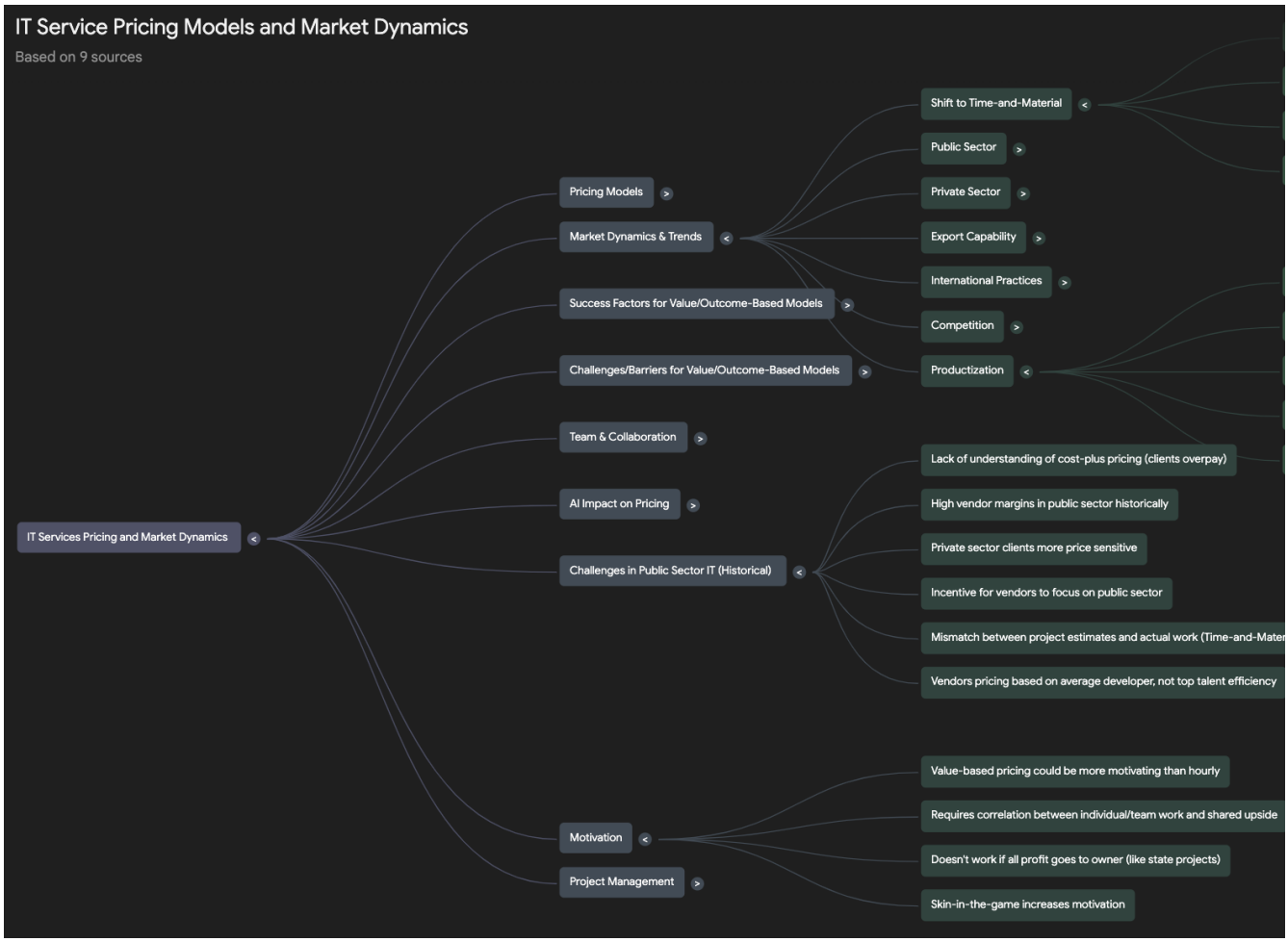
Closing questions (5 minutes)

- How do you think software pricing models will develop in the future, both in your company and in Estonia in general?
    - Which pricing principles will be relatively more important? Why is that?
- What other important observations, knowledge or experiences related to software pricing would you like to share and what could be researched in this area in the future?

Thank the interviewee for their participation and contribution.

Appendix B – Sample Mind Map from NotebookLM

NotebookLM was used as an assistive tool in coding, thematic analysis and triangulation. A crucial feature of this LLM tool was the ability to verify its output against the source material in a user-friendly fashion.



Resümee

Tarkvaraprojektide tulemuspõhise hinnastamise võimaldajad ja takistused

Käesolev artikkel analüüsib tulemuspõhise hinnastamise rakendamist võimaldavaid ja takistavaid tegureid tarkvaraprojektides, tuginedes seitsme Eesti tarkvaraettevõtte eestvedajaga läbi viidud kvalitatiivsele uuringule. Tulemused näitavad, et paindlikkuse tõttu eelistatakse valdavalt ajakulu- ja materjalipõhist hinnastamist, kuigi sellega kaasnevat stiimulite ebakõla ollakse teadlikult tajutud. Tulemuspõhise hinnastamise kasutuselevõttu takistavad peamiselt väärtuse määratlemise ja mõõtmise keerukus, kõrge tajutud riskitase, vähene usaldus ning hanketingimused. Selle rakendamist soodustavad tugev partnerlussuhe kliendiga, unikaalne väärtuspakkumine, mõõdetavad tulemused ning kokkulepped riskide jagamiseks. Uuring rõhutab, et projektipõhises tarkvaraarenduses on usaldus ja kontekst määrava tähtsusega tulemuspõhiste, sageli hübriidsete hinnastusmudelite rakendamisel.

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ENABLERS AND BARRIERS TO PERFORMANCE-BASED PRICING OF SOFTWARE PROJECTS

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Kaido Koort

20/05/2025