# UX-Oriented Design as a Tool for Improving Labor Productivity in Corporate SaaS Solutions

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## Abstract

*Under the conditions of the digitalization of business processes and the dominance of the Software-as-a-Service (SaaS) model in the corporate sector, employee productivity directly depends on the usability of the software solutions employed. The historical neglect of UX design in favor of functionality has led to the creation of complex, non-intuitive corporate systems that generate high cognitive load and operational costs. The aim of this study is to establish and conceptualize a direct, measurable relationship between UX-oriented design processes (from the analysis of user scenarios to the implementation of design systems) and labor productivity metrics in corporate SaaS. The research methodology includes a systematic review of academic literature (2020–2025), content analysis of industry reports (Forrester, Gartner), and case analysis for the triangulation of theoretical models (TAM), practical UX artifacts, and economic indicators. The results demonstrate that UX interventions directly reduce cognitive load and correlate with measurable economic indicators, including a return on investment (ROI) in the range from 141% to 379% over a three-year period, achieved through time savings in task execution, accelerated onboarding, and a reduction in the number of errors. An original conceptual model UX Value Creation Chain in SaaS is presented. The conclusions confirm the hypothesis that UX design in corporate systems is not a cost item but a measurable driver of productivity. The findings presented in the article will be of interest to product leaders (CPO), IT directors, and HCI researchers engaged in the optimization of corporate systems and the justification of investments in design.*

**Keywords:** *UX Design, Saas, Labor Productivity, Usability, Corporate Systems, Design Systems, Return on Investment (ROI), Cognitive Load, Technical Debt, Technology Acceptance Model.*

## INTRODUCTION

The modern corporate environment is characterized by a deep and pervasive dependence on software solutions delivered under the Software-as-a-Service (SaaS) model. Statistical data for 2024–2025 confirm the total dominance of this model: by the end of 2024, 99% of organizations use at least one SaaS application [1], and by the end of 2025, 85% of all business applications will be based on SaaS [1].

Against the backdrop of this pervasive adoption, when the average organization manages a portfolio of 112 [1] or even 275 SaaS applications [5], the effectiveness of employee interaction with these systems becomes a macroeconomic factor directly affecting aggregate productivity. If 85% of business processes are executed through SaaS, any interface inefficiency, multiplied by millions of users, creates a systemic productivity tax for the entire economy [4].

This gives rise to a fundamental problem. Historically, corporate software, including enterprise resource planning (ERP) and customer relationship management (CRM) systems, has been developed with a priority on functional completeness rather than on usability and user experience (UX) [6]. In contrast to the B2C sector, where UX is a key

factor in customer retention, in the B2B environment users (employees) have often been de facto hostages of systems selected by management. This has led to the creation of complex, overloaded, and non-intuitive interfaces.

A direct consequence of this approach is a high level of cognitive load on employees. Research in ergonomics confirms that when using traditional corporate interfaces, for example in insurance claims processing systems, employees report a significantly higher level of mental strain [8]. This, in turn, leads to frustration, decreased productivity, increased error frequency, and slower adaptation of new employees [6].

Despite the intuitive understanding that better UX leads to better work, there is still a research gap in the academic and industry literature. There is no end-to-end, measurable model that clearly links specific UX design artefacts (for example, the creation of user journey maps or the implementation of a design system) with specific business KPIs (for example, a reduction in onboarding time measured in hours, or an increase in ROI expressed in percentage terms). There is a methodological gap between qualitative UX design practices and their quantitative economic justification.

The **purpose** of the study is to establish and conceptualize a direct, measurable relationship between UX-oriented design processes (from the analysis of user scenarios to the implementation of design systems) and labor productivity metrics in corporate SaaS solutions.

**The author's hypothesis** is that the systematic application of UX methodologies (the creation of user journey maps, usability testing, the implementation of design systems) directly correlates with a reduction in cognitive load and operating costs (measured through Time-on-Task and Error Rate metrics), which cumulatively leads to a measurable increase in ROI, as recorded in Total Economic Impact (TEI) models.

**The scientific novelty** of the study lies in the proposed conceptual model that synthesizes practical UX artefacts (CJM, design systems) with fundamental theory (TAM) and economic metrics (TEI), which makes it possible to decompose productivity ROI down to the level of specific design decisions.

## MATERIALS AND METHODS

The methodological basis of the study is grounded in the principle of data triangulation, combining three key types of sources to construct a comprehensive evidence base. At its core is a systematic review of the literature from academic sources (peer-reviewed articles from IEEE, ACM, Scopus) and authoritative industry sources for the period 2020–2025. In addition, a case study methodology is applied for an in-depth interpretation of quantitative data presented in industry reports (in particular Forrester TEI) and academic studies. Finally, conceptual analysis is used to structure and integrate practical UX processes into the theoretical framework.

The source base is classified into three directions:

The theoretical framework. The fundamental basis for linking usability and productivity is provided by the Technology Acceptance Model. TAM is one of the most reliable models for predicting technology adoption in organizations. The key constructs of the model are Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). It is critically important that PU in an organizational context is defined as the user's perception of the likelihood that an innovation will lead to increased labor productivity, and PEOU as the degree to which the user expects that the implementation of the technology will be free from stress. Thus, TAM provides a direct theoretical link: software that is easier to use (high PEOU) is perceived as more useful, which leads to its adoption and, consequently, to increased productivity.

Practice and quantification. The key data for the economic justification are drawn from a series of Forrester Total Economic Impact (TEI) reports. These reports provide detailed, quantified business indicators (ROI, NPV, payback period) and, more importantly, decompose these indicators into specific productivity metrics (for example, hours saved on search, reduction in onboarding time). This group of sources is supplemented by data from the Nielsen Norman Group (NNG), which provides industry benchmarks for direct UX metrics (TCR, ToT, Error Rate, SUS).

Practice and methodology. Academic case studies and reviews are used to analyze specific UX methodologies (for example, the use of the PSSUQ questionnaire, UCD processes) and to identify key barriers such as technical debt and organizational resistance.

The uniqueness of the methodology of this study lies in the synthesis of these three streams: fundamental theory (TAM) explains why usability works, practical UX processes (decomposed from the practices of UX designers) show how it is implemented, and economic data (TEI, NNG) provide evidence of the extent to which it is effective.

## RESULTS AND DISCUSSION

To analyze the impact of UX design on performance, it is necessary to decompose the abstract term UX-oriented design into specific, measurable processes and artefacts. Analysis of the practical activities of UX specialists (including the creation of personas, user journey maps, wireframes, prototypes, design systems, the conduct of usability testing, and ensuring design handoff to development) makes it possible to group this activity into three logical phases, each of which generates specific value for performance.

Phase 1: Diagnosis and design (Personas, CJM, Wireframes). The stage that includes the creation of user profiles (personas), user journey maps (Customer Journey Maps - CJM) and wireframes is fundamental for process optimization. In the context of corporate software, CJM and task analysis [23] go beyond a simple description of interaction and become a diagnostic tool for business analysis. They make it possible to identify inefficient business processes, bottlenecks, redundant steps, and areas with high cognitive load.

Studies confirm that the application of User-Centered Design (UCD) processes, such as information architecture (IA) mapping and wireframing, is the core mechanism for simplifying the enormous complexity inherent in enterprise systems [11]. Thus, the intuitive user flow that the UX designer creates is, in essence, reengineering of the business process implemented at the interface level. Value is created here through the elimination of steps, automation of routine operations, and alignment of the interface with the user's mental model, which directly reduces Time-on-Task.

Phase 2: Validation and iteration (Usability testing, A/B testing). The stage that includes conducting usability testing and A/B testing for iterative improvement based on feedback represents a mechanism for empirical hypothesis testing. Usability testing methodologies [11] make it possible to obtain rigorous quantitative metrics that serve as direct proxy metrics of performance: Time-on-Task (efficiency), Task Completion Rate (effectiveness), and Error Rate (quality) [21].

Each error identified during a controlled usability test represents a prevented loss of time and a prevented error in the real work of an employee. At the scale of an enterprise, where the same task is performed thousands of times per day, preventing even a minor usability error saves thousands of person-hours and reduces operational risks [20]. Thus, this phase transforms UX from a cost item in development into a mechanism for proactive reduction of operating expenses.

Phase 3: Scaling and consistency (Design systems, handoff). The stage that includes development and maintenance of design systems (DS) and ensuring seamless design handoff to development has a dual impact on performance.

Performance of the end user: A design system ensures consistency (uniformity) of the interface across all modules of a complex enterprise system. This is critically important, since consistency directly reduces cognitive load and learning time [6]. The user does not need to relearn interaction patterns, which makes work faster and more predictable.

Performance of the development team: A design system is a powerful tool against the accumulation of technical debt [22]. It provides developers with a library of ready-made, tested components that comply with accessibility standards. This radically accelerates the development and handoff process, reducing the time and cost of implementation.

Consequently, a design system is an economic asset that represents capitalized knowledge about usability and the brand. It simultaneously increases the productivity of both users and developers, creating a cumulative economic effect.

The relationship between UX processes and performance can be not only theoretically justified but also quantitatively measured at two levels: at the level of direct usability metrics and at the level of aggregate business indicators (ROI).

Usability testing and analytics provide a set of standard metrics that act as leading indicators of performance. In Table 1, the key metrics and their correlation with business outcomes are systematized.

**Table 1.** Key usability metrics and their correlation with performance (compiled by the author based on [20, 21]).

| Metric | Definition | Industry benchmark (NNG/Forrester) | Correlation with performance (source) |
|---|---|---|---|
| Task Completion Rate (TCR) | % of users who successfully completed the task. | 85% | When TCR falls below 85%, frustration increases sharply; users abandon complex processes 50% faster. |
| Time-on-Task (ToT) | Median task completion time. | Depends on the task | Forrester: +16% engagement if ToT < 2 min (for B2C). Decrease in ToT = direct reduction in operating costs. |
| Error Rate | % of users who made an error. | 5% | Amazon (internal): +0.5% errors = −3% conversion. NNG: frequent errors = +40% product abandonment. |
| System Usability Scale (SUS) | Standardized satisfaction score (10 questions). | Average score: 68 | Scores > 80 correlate with loyalty; < 68 indicates issues requiring remediation. |

Table 1 demonstrates how metrics from the UX laboratory (for example, Error Rate) are directly translated into business risks (loss of conversion, product abandonment) [20]. The relationship between these metrics and cognitive load is nonlinear, as illustrated in Figure 1.
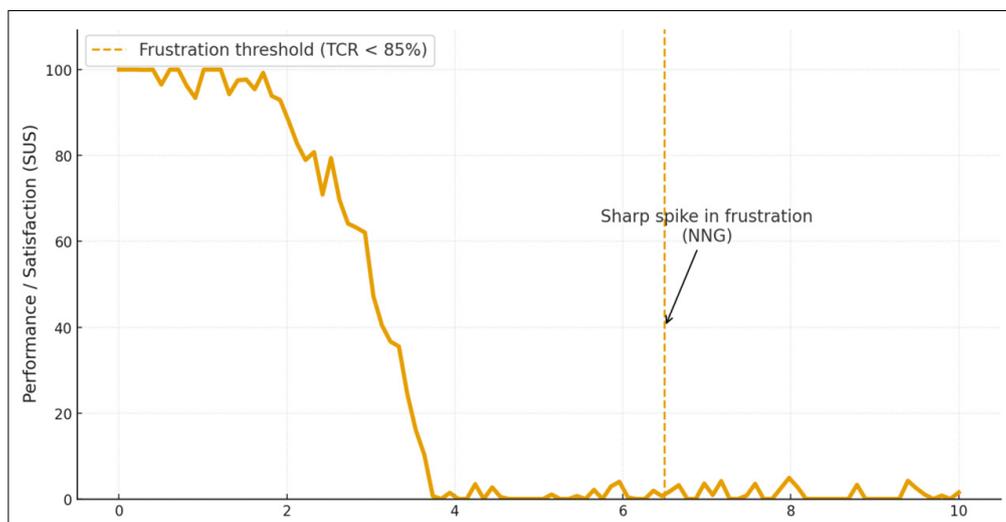


**Fig. 1.** Conceptual dependence of performance on cognitive load (compiled by the author based on [8, 20]).

As shown in Figure 1, user performance and satisfaction may remain relatively stable with a moderate increase in complexity, but after reaching a certain frustration threshold (for example, TCR < 85% [20]) a sharp, nonlinear collapse occurs. The task of UX design is to keep the system within the high-performance zone.

At the highest level, the impact of UX is measured through aggregate economic indicators. Analysis of Forrester (TEI) reports on the implementation of UX-oriented and AI-driven SaaS platforms in corporations (Table 2) provides compelling quantitative evidence.

**Table 2.** Summary data from Forrester (TEI) studies on ROI from UX/AI implementation in SaaS (compiled by the author based on [13-17]).

| Platform (source) | ROI (3years) | Payback period | Key performance gain (quantified) |
|---|---|---|---|
| Glean (Work AI) | 141% | < 6 months | 110 hours per employee per year saved on search; 36 hours saved on onboarding a new employee. |
| SymphonyAI (ITSM) | 204% | (not specified) | +35% deflected tickets (deflection); -75% ticket handling time; -90% workflow configuration time. |
| Keepit (SaaS Backup) | 163% | < 6 months | Reduced workload for IT teams, increased productivity (detailed in the full report). |
| Microsoft Fabric | 379% | (not specified) | Increased productivity and efficiency (detailed in the full report). |

These data demonstrate that UX is not a cost center but a profit-generating center driven by operational efficiency. ROI in the range of 141%-379% is achieved not in abstract terms but through quantifiable time savings. For example, in the SymphonyAI case [16], an intuitive UX/UI reduced the time required to submit a support ticket from 15-30 minutes to several minutes, which resulted in 35% ticket deflection and a 75% reduction in ticket handling time.

The Glean case [14] (Fig. 2) is particularly illustrative, as it decomposes the underlying sources of benefit.
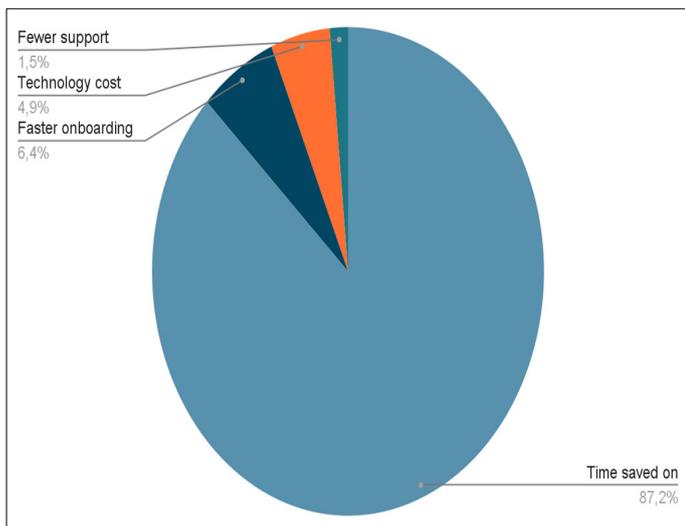


**Fig. 2.** ROI structure from UX improvements (based on Forrester TEI / Glean 14) (compiled by the author based on [14]).

As can be seen from Fig. 2, the overwhelming majority (87.2%) of the economic benefit ($23.2 million) is generated through the optimization of a single routine operation, namely information search. This represents the direct monetary equivalent of intuitive user flows and high-quality information architecture [11, 12], which constitute the core of UX work.

The synthesis of the analyzed data (the theoretical TAM basis, practical UX processes, and the economic results of TEI) makes it possible to propose a conceptual model, the UX value creation chain in SaaS (Fig. 3). This model constitutes the central thesis and the scientific novelty of the present study.
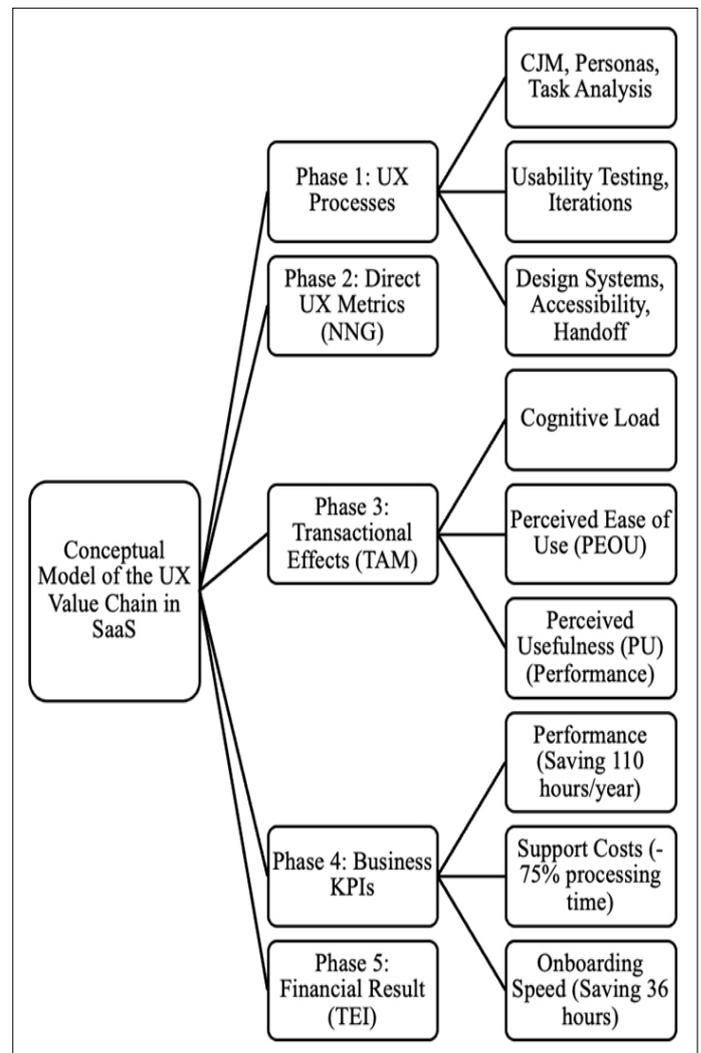


**Fig. 3.** Conceptual model UX value creation chain in SaaS (compiled by the author based on [8, 11]).

This model (Fig. 3) demonstrates an end-to-end mechanism of impact:

Phase 1 (Processes): Practical UX activities (CJM, testing, DS) [11].

Phase 2 (Metrics): Directly improve measurable UX metrics (ToT, TCR, Error Rate) [19 , 20].

Phase 3 (Effects): Improvement of the metrics reduces cognitive load [8] and, in accordance with TAM [12], increases perceived ease of use (PEOU) and perceived usefulness (PU).

Phase 4 (KPI): This leads to measurable business outcomes, such as the saving of hundreds of hours per employee [14] and the reduction of support workload [16].

Phase 5 (Result): The cumulative effect is expressed in high ROI [17, 18] and a reduction in total cost of ownership (TCO).

If the economic benefit of UX is so evident, a question arises: why do such a large number of corporate SaaS solutions continue to suffer from poor usability? [7]. The answer lies in two types of debt that act as powerful barriers to modernization: technical debt and human debt.

Technical debt is the implicit cost of future rework that arises from choosing fast but suboptimal solutions in the present [22]. In the corporate sector, this phenomenon has reached astronomical proportions.

The total accumulated technical debt in the United States reached $1.52 трлн in 2022, and the cost of low-quality software amounted to $2.41 trillion.

Legacy systems (systems created 20 or more years ago) are the norm rather than the exception (Table 3).

These systems create a scalability ceiling [23], architectural rigidity and fragility, which makes any changes, including UX modernization, extremely expensive and risky.

As a result, according to reports, up to 70-80% of IT budgets in banks and the public sector are spent not on innovation but on maintaining existing legacy systems.

**Table 3.** Statistics on the prevalence of legacy systems and technical debt by industry (2022–2025) (compiled by the author based on [1-4; 6, 22]).

| Industry | Statistics (Source) | Impact (Source) |
|---|---|---|
| Finance/Banking | 70% of banks globally on legacy (2025); 95% of ATM transactions on COBOL. | 70% of the IT budget for maintenance; 3 times more vulnerabilities. |
| Healthcare | >60% of hospitals in the USA on legacy. | Highest cost of a data breach ($9.77M). |
| Public sector (USA) | 10 critical systems = $337M per year; 80% of the IT budget for maintenance. | Very high maintenance costs. |
| Overall (USA) | Technical debt: $1.52 trillion (2022). | Cost of poor software quality: $2.41 trillion (2022). |

An equally significant barrier is human debt, understood as the set of non-technical factors that hinder change [23].

Organizational resistance: Employees accustomed to legacy systems may resist change due to fear or discomfort with learning something new [23]. Management accustomed to the functionality-first paradigm may fail to recognize the value of investing in UX [7].

Measurement complexity: As practitioners note, calculating ROI for UX in a corporate environment is a truly daunting (daunting) task [9, 10]. It requires enormous effort in data collection, navigating internal politics, and making constant trade-offs, which discourages many UX teams from attempting to provide a quantitative justification for their work.

These two types of debt create a loop in which technical and human debt mutually reinforce each other, making modernization practically impossible.

The landscape of enterprise SaaS is once again changing under the influence of artificial intelligence. The new paradigm is not merely generative AI (GenAI) but agentic AI and multi-agent systems.

In contrast to GenAI (which operates in assistant or co-pilot mode), agentic AI is autonomous, adaptive, and goal-directed. It is capable of planning and executing complex objectives with minimal supervision, effectively switching to autopilot mode.

This creates fundamentally new challenges for UX design:

From GUI to trust: Designers are moving from designing direct-manipulation interfaces (GUI) to designing uncertain and predictive interactions.

From usability to control: The primary task of UX becomes not only making the interface understandable but also building trust in the autonomous agent and providing the user with adequate mechanisms for control and intervention.

From processes to behavior: Designers begin to design not static workflows but dynamic behavior and AI personas [12, 19, 22].

The evolution of productivity in SaaS thus proceeds through three stages. If today UX design saves an employee 110 hours per year by improving their own search [14], then tomorrow UX design, by engineering a trust interface, will allow the employee to delegate tasks to an AI agent, saving orders of magnitude more time.

## CONCLUSION

The conducted study confirmed that UX-oriented design in corporate SaaS solutions has transformed from a subjective aesthetic discipline into a measurable economic instrument for increasing labor productivity.

The objective of the study was achieved. The Conceptual model Value Creation Chain of UX in SaaS is presented, which

successfully establishes and conceptualizes a measurable relationship between all stages of the chain: from practical UX processes (CJM, usability testing, design systems) to the fundamental theory of technology acceptance (TAM) and quantifiable business outcomes (ROI 141%–379%, savings of 110 hours per employee).

The author's hypothesis was fully confirmed. It has been demonstrated that UX interventions directly reduce cognitive load (both measured and perceived) and operating costs (which is reflected in a decrease in Time-on-Task and Error Rate), which cumulatively leads to a high return on investment, documented in independent Forrester TEI reports.

The study identified key barriers — technical debt (reaching $1.52 trillion) and human debt (organizational resistance) — that form a vicious circle preventing UX modernization.

The practical significance of the work lies in the fact that the proposed model (Fig. 3) and the collected data serve as a practical guide for product leaders (CPO), CIOs, and UX leaders. They can use these materials for:

1) Justification: Arguing for investments in UX design to stakeholders using the language of numbers (ROI, NPV, hours saved).

2) Measurement: Assessing the effectiveness of UX teams through the relationship between direct UX metrics (TCR, SUS) and business KPIs.

3) Prioritization: Focusing efforts on activities that deliver the greatest economic impact (for example, Fig. 2 shows that search optimization (87.2%) may be more important than reducing support load (1.5%)).

Finally, the study outlined a future development trajectory — the transition to UX for agentic AI. Traditional performance metrics (ToT, TCR) will require rethinking within a new paradigm in which the key success factors will not be ease of use but trust, control, and transparency of autonomous systems.

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