What's the True Hourly Cost of Offshoring?

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// An offshore team's hourly costs took three years to become comparable with the inhouse team's costs. Getting close to breaking even took five years. Learning costs due to offshore employee turnover were the primary cost factor to get under control. //



SOFTWARE COMPANIES OFTEN choose offshore outsourcing, particularly to Asia, to reduce costs. After all, "it is cheaper, and skilled labor is easier to find."¹ Successful outsourcing cases suggest that an outsourcing vendor can provide technical and process leadership, intellectual property, on-demand scalability, market context, and supply chain knowledge, which all might be unavailable in-house.²

Unfortunately, not all global ventures are successful, and these benefits shouldn't be taken for granted.^{3,4} Offshore outsourcing has risks, and it makes sense to investigate its real costs. However, the cost models for offshoring software development are still underdeveloped.^{1,3,5}

So, how do you calculate whether your offshore outsourcing collaboration is economically sound? To find the answer, we delved into a collaboration between a Dutch software company and an Indian vendor, which we'll call DutchCo and InVend.

DutchCo was founded in the mid-90s as a software product and service supplier for customers primarily in the telecom domain. It's a small company that at the time of our investigation employed one in-house team of eight developers. Since 2009, DutchCo has collaborated with In-Vend, which provides fast software development services that supply one Scrum team of eight to DutchCo. Unlike many similar small and medium enterprises, DutchCo didn't initiate offshore outsourcing for cost reasons. It based the decision on its limited ability to find qualified employees locally, its willingness to internationalize, and the "adventure" of working with India.

Calculating Cost Savings

What constitutes an informed way to calculate hourly costs? The main research direction for calculating costs beyond salaries in offshoring contexts is *transaction cost economics* (TCE). Inspired by TCE research, we determined cost calculations and investigated the magnitude of different cost factors and possible ways to control or minimize these costs. (For more on TCE research, see the sidebar "Previous Attempts to Calculate Offshore-Outsourcing Costs.")

Collecting the Data

Table 1 lists our data sources. Data collection and analysis followed several iterations. We first interviewed DutchCo management to understand the context of the in-house and offshoring scenarios. On the basis of these interviews, we compiled cost sheets for the two scenarios.

The costs sheets served as input for two focus group sessions with key DutchCo employees. This format let the participants build on the responses of others and led to ideas that might not have emerged during individual interviews.⁶ Six DutchCo representatives participated in each session (the minimum requirement for focus groups⁶). They represented

PREVIOUS ATTEMPTS TO CALCULATE OFFSHORE-OUTSOURCING COSTS

Transaction cost economics (TCE) helps analyze why some transactions are more efficiently conducted within a company's boundaries and others are more efficiently conducted outside—that is, by a market or an offshore vendor.¹ TCE has become important for exploring outsourcing decisions.

Jens Dibbern and his colleagues combined TCE research with a knowledge-based view of organizations to calculate the magnitude of extra costs in offshore-outsourcing relations:²

Cost savings = Cost before – Contract-based costs after – Extra costs after.

They distinguished extra costs (imposed by outsourcing) from the contract-based payment to the vendor. These extra costs fall into several categories:

- onshore personnel overhead, such as knowledge transfer costs;²
- control or governance costs to ensure vendors perform according to the desired objectives;^{2,3}
- costs for developing more detailed specifications;^{2,4}
- infrastructure costs;³
- travel costs;³

- increased maintenance costs due to poor productivity;^{3,4}
- rework due to misunderstood requirements and usability;⁴ and
- inefficiency due to learning curves.³

Employing the previous equation, our research (see the main article) used "cost before" to refer to in-house costs. "Contract-based costs after" referred to the company's payment to the vendor. "Extra costs," together with related research, captured the direct and indirect costs associated with in-house and offshore scenarios. In addition, we proposed comparisons based on the true hourly costs.

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different roles, which mitigated reliance on biased opinion and helped portray a more reliable viewpoint. The first session discussed the costs and benefits of offshoring versus inhouse development; the second discussed the development of goals and the impact of team changes.

In each session, after we introduced the goals, the participants performed a series of exercises. For each scenario, the participants came up with ideas for cost categories through silent writing on Post-It notes. They formed groups of threes and discussed those ideas, followed by a plenary discussion and confirmation. Next, we divided the responsibility for quantitative evaluation of each item to the groups of three, and gave them time to estimate or track the data. The participants then presented and discussed the results.

To support the participants' brainstorming, we collected cost-related data for 2013 from both DutchCo and InVend. That data helped us establish offshore outsourcing's costs (see Tables 2 through 4). Data from different sources was triangulated to improve validity. In the end, most direct costs were supported by quantitative data from DutchCo and In-Vend, whereas the indirect costs were based on the DutchCo employees' quantified perceptions.

Direct Costs

We identified the 2013 direct costs by looking at the explicit financial expenditures directly related to software development. First, we calculated the offshore contract-based personnel costs, which amounted to \in 336,676 from the InVend bills. (All numbers exclude the value-added tax.) These are the only amounts

Щ	Empirical data collected at DutchCo and InVend.			
m	Approach	Description		
A	Interviews	A one-hour interview with the DutchCo CEO and chief commercial officer focused on the company's history of offshore outsourcing.		
		A three-hour interview with the $\mbox{DutchCo}$ CEO focused on costs and benefits.		
	Focus group	Six DutchCo representatives participated in two three-hour sessions.		
	Quantitative data	DutchCo and InVend sent us email containing staffing and turnover data covering the collaboration period (2009–2013).		
		The DutchCo accountant sent us travel costs and recruitment fees for 2013.		
		DutchCo sent us emails with the salary and overhead calculations and the registered hours worked for 2013. InVend sent us email listing the billed hours for 2013.		
	Feedback session	We presented and discussed the results in a group session with DutchCo and InVend.		

DutchCo paid to InVend, and cover all InVend costs and profit. From the bills we also learned that the offshore team worked 12,975 hours. So, the average hourly rate was $\in 26$.

We similarly calculated the DutchCo team's costs. We started with the in-house salary-based personnel costs, retrieved from the accounting systems, which were \notin 437,449 (including pensions, taxes, and so on). We also added up the total net hours the employees registered: 11,503. Dividing the salary costs by the net working hours gave a \notin 38 average hourly salary (\notin 12 higher than InVend).

However, a closer look at the management of the offshore and the in-house teams revealed a number of extra direct costs. For the offshore team, these costs totaled \notin 40,010, bringing the hourly rate to \notin 29. They fell into three categories. The first was travel costs for mutual-exchange visits—six visits from the Netherlands to India (\notin 12,000) and

two from India to the Netherlands (€7,310). The second category was control costs associated with ensuring the quality of InVend's deliveries. The first focus group estimated that DutchCo spent approximately 300 hours yearly on testing and retesting InVend's delivered solutions (estimated at €14,700, given DutchCo's direct hourly costs). The last category was communication infrastructure costs to enable remote work with the offshore team (estimated at an average of €6,000 annually).

DutchCo reported other direct costs of $\in 130,436$, which raised the in-house hourly rate to $\in 49$ ($\in 20$ higher than InVend). Those costs fell into three categories. First, overhead costs included all workspace costs, human-resource management, administration, hardware depreciation, inventory, cleaning, bonuses, and so on, adding up to $\in 87,936$. Second, DutchCo paid $\in 25,000$ in recruitment fees for two new employees. Finally, DutchCo spent $\in 17,500$ on training fees for different courses and seminars for its in-house team.

Indirect Costs

Indirect costs aren't directly seen in financial expenditures. When discussing the extra costs, focus group participants mentioned some indirect costs related to inefficiency and ineffectiveness.⁵ They estimated these costs in terms of ineffective hours: the hours not directly contributing to making software.

The offshore team experienced two major sources of ineffective hours, which totaled 4,947 hrs. (€143,463). The first was training and learning costs, which the focus group participants associated with the impact of staff turnover. In 2013, one engineer left the offshore team, and three joined. DutchCo developers indicated that costs for teaching domain and product knowledge occurred every time a new engineer joined the offshore team. These were both the costs of existing members training new hires and learning costs. The focus group quantified these indirect costs through the perceived learning curves (which we describe in the next section), estimated at 25 percent of the InVend team's total effort. This added up to 3,244 hours (€94,076).

The second source was the costs of miscommunication due to the distance between the two companies. The focus group participants revealed that because the product owners, marketing staff, consultants, and sales personnel were in the Netherlands and unavailable for prompt discussions and clarifications with the InVend team, that team's initial solutions often didn't meet expectations. The participants estimated that the associated rework consumed 17.5 percent of **TABLE 2**

Direct costs for the 2013 offshore (InVend) and in-house (DutchCo) scenarios.

	Offs	hore	In-house			
Category	Cost (€)	Explanation	Category	Cost (€)	Explanation	
Hourly rate	26	The billed personnel costs divided by the total billed working hours	Hourly rate	38	The personnel costs divided by the total registered working hours	
Contract-based personnel costs	336,676	The sum of the invoices received from InVend	Salary-based personnel costs	437,449	Salary costs including pension, insurance, daily travel, and so on	
Travel costs	19,310	Six DutchCo visits to India (estimated at \in 12,000) and two InVend visits to the Netherlands (charged at \in 7,310)	Overhead costs	87,936	The total costs for eight employees for workspace, administration, support staff, cleaning, social events, bonuses, and so on	
Control costs	14,700	In-house costs estimated at 300 hrs. for additional testing (based on DutchCo's hourly rate and including additional costs)	Recruitment fees	25,000	€12,500 paid to the recruitment agency for each of two new hires	
Communication infrastructure costs	6,000	Costs for communication equipment and lines directly purchased to support offshoring	Training fees	17,500	€2,500 per employee for training and learning, with new hires accounting for 50 percent	
Total direct costs	376,686		Total direct costs	567,885		
Hourly rate including additional costs	29	The total direct costs per employee divided by the number of worked hours (12,975 h)	Hourly rate including additional costs	49	The total direct costs per employee divided by the number of worked hours (11,503 h)	

TABLE 3

Indirect costs for the 2013 offshore (InVend) and in-house (DutchCo) scenarios.

Offshore			In-house			
Category	Cost (€)	Explanation	Category	Cost (€)	Explanation	
Training and learning costs	94,076	An average loss of 25 percent of the team's effort (3,244 ineffective hours)	Training and learning costs	56,350	An average loss of 10 percent of the team's effort (1,150 ineffective hours)	
Miscommunication costs	49,387	An average loss of 17.5 percent of the team's remaining effort (12,975 h - 3,244 h = 9,731 h) spent on clarifying expectations and adjusting the initial delivered solutions (1,703 ineffective hours)	Distraction costs	76,097	An average loss of 15 percent of the team's remaining effort (11,503 h - 1,150 h = 10,353 h) spent on consulting colocated sales and consultancy colleagues $(1,553 \text{ ineffective})$ hours)	
Total indirect costs	143,463 (4,947 h)		Total indirect costs	132,447 (2,703 h)		

Е 4

Hourly costs for the 2013 offshore (InVend) and in-house (DutchCo) scenarios.

	Offshore			In-house			
Ă	Category	Cost	Explanation	Category	Cost	Explanation	
-	Total working hours	12,975	Based on the worked hours specified in the InVend bills	Total working hours	11,503	Based on the registered hours (starting with six employees and ending with eight)	
	Ineffective hours	4,947	Hours spent on training and learning (3,244 h) and lost because of miscommunication (1,703 h)	Ineffective hours	2,703	Hours spent on training and learning (1,150 h) and lost because of distractions (1,553 h)	
	Productive hours	8,028	The total number of working hours in 2013 minus the ineffective hours	Productive hours	8,800	The total number of working hours in 2013 minus the ineffective hours	
	Hourly cost (€)	47	The total direct costs divided by the number of productive hours	Hourly cost (€)	65	The total direct costs divided by the number of productive hours	

the InVend team's effort (the effort remaining after the training and learning hours were subtracted). This meant 1,703 ineffective hours (\notin 49,387).

The DutchCo team experienced 2,703 ineffective hours (€132,447). The related costs fell into two categories. The first was training and learning costs for the two new hires. On the basis of the perceived learning curves at DutchCo, this resulted in 1,150 ineffective hours for the whole team (€56,350).

The second category was the costs of distraction. DutchCo engineers explained that their colocated sales and consultancy colleagues distracted them with technical questions and solution discussions. They estimated the costs at 15 percent of the team's remaining effort, which amounted to 1,553 ineffective hours (\notin 76,097).

Interestingly, the DutchCo participants mentioned that their team largely avoided miscommunication costs. Proximity to experts and customers let them have ad hoc discussions that helped prevent the miscommunication problems the InVend team suffered from.

Learning Curves and the Associated Indirect Costs

Research on learning curves suggests that experience improves performance. Most dramatic improvements happen first, and with sufficient practice people achieve comparable performance levels.⁷

To explore how people improve at their jobs, we asked the DutchCo participants to draw and discuss their perceived learning curves. Their ideas suggested that both scenarios' learning curves were S-shaped. G.W. Carr argued long ago that, on average, learning undergoes an S-shaped curve showing slow initial improvement, then rapid improvement, and finally a leveling off.⁸ The curves in our case study differed in duration between the two scenarios (see Figure 1). DutchCo employees perceived that in-house team members climbed the learning curve and obtained a broader knowledge faster. That team reached

100 percent in two years, whereas the InVend team took three years.

The resulting curves are, in a sense, generic; the actual curves would differ among individualssome engineers learn more quickly than others. Although the curves' scientific validity could be questioned, they are indicative and were used to estimate differences in performance, depending on the experience within the team. We modeled the teams' total effectiveness and calculated the area above the curve as the learning and training effort on the basis of each employee's curves and periods of engagement and disengagement.

The learning curves provide a quantitative indication of the learning efforts over time. What's more important, they visualize the impact of employee turnover. Figure 1 shows what happened to overall effectiveness when people left or joined. The curves' shapes differ significantly. One reason is that DutchCo started with four fully capable engineers, who were employed



FIGURE 1. Learning curves for (a) InVend and (b) DutchCo, and (c) the variance of team effectiveness due to employee turnover. InVend employees took on average one year longer to reach 100 percent.

TABLE 5

Yearly costs for the offshore (InVend) and in-house (DutchCo) teams.*								
Cost	2009	2010	2011	2012	2013	Avg.		
Offshore								
Estimated direct costs (€)	127,804	224,218	340,811	327,358	376,686	279,375		
Total working hrs.	4,402 (100%)	7,723 (100%)	11,740 (100%)	11,276 (100%)	12,975 (100%)	9,623 (100%)		
Ineffective hrs.: training and learning	4,182 (95%)	6,101 (79%)	5,518 (47%)	4,130 (37%)	3,244 (25%)	4,635 (48%)		
Remaining hrs.	220 (5%)	1,622 (21%)	6,222 (53%)	7,146 (63%)	9,731 (75%)	4,988 (52%)		
Ineffective hrs.: miscommunication.	39	284	1,089	1,251	1,703	873		
Productive hrs.	181	1,338	5,133	5,895	8,028	4,115		
True hourly costs (€)	706	168	66	56	47	68		
In-house								
Estimated direct costs (€)	316,197	216 107						
		510,197	398,096	482,546	576,885	416,184		
Total hrs.	6,817 (100%)	6,817 (100%)	398,096 8,379 (100%)	482,546 10,225 (100%)	576,885 11,503 (100%)	416,184 8,748 (100%)		
Total hrs. Ineffective hrs.: training and learning	6,817 (100%) 0 (0%)	6,817 (100%) 0 (0%)	398,096 8,379 (100%) 1,005 (12%)	482,546 10,225 (100%) 1,227 (12%)	576,885 11,503 (100%) 1,150 (10%)	416,184 8,748 (100%) 676 (8%)		
Total hrs. Ineffective hrs.: training and learning Remaining hrs.	6,817 (100%) 0 (0%) 6,817 (100%)	6,817 (100%) 0 (0%) 6,817 (100%)	398,096 8,379 (100%) 1,005 (12%) 7,374 (88%)	482,546 10,225 (100%) 1,227 (12%) 8,998 (88%)	576,885 11,503 (100%) 1,150 (10%) 10,353 (90%)	416,184 8,748 (100%) 676 (8%) 8,072 (92%)		
Total hrs.Ineffective hrs.: training and learningRemaining hrs.Ineffective hrs.: distractions	6,817 (100%) 0 (0%) 6,817 (100%) 1,023	6,817 (100%) 0 (0%) 6,817 (100%) 1,023	398,096 8,379 (100%) 1,005 (12%) 7,374 (88%) 1,106	482,546 10,225 (100%) 1,227 (12%) 8,998 (88%) 1,350	576,885 11,503 (100%) 1,150 (10%) 10,353 (90%) 1,553	416,184 8,748 (100%) 676 (8%) 8,072 (92%) 1,211		
Total hrs.Ineffective hrs.: training and learningRemaining hrs.Ineffective hrs.: distractionsProductive hrs.	6,817 (100%) 0 (0%) 6,817 (100%) 1,023 5,794	6,817 (100%) 0 (0%) 6,817 (100%) 1,023 5,794	398,096 8,379 (100%) 1,005 (12%) 7,374 (88%) 1,106 6,268	482,546 10,225 (100%) 1,227 (12%) 8,998 (88%) 1,350 7,648	576,885 11,503 (100%) 1,150 (10%) 10,353 (90%) 1,553 8,800	416,184 8,748 (100%) 676 (8%) 8,072 (92%) 1,211 6,861		

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* We approximated the 2009–2012 numbers using the learning-curve models in Figure 1 for the actual 2013 cost data and the actual 2009–2012 personnel engagement data.

before 2009 and had already reached 100 percent ability. Another reason is that DutchCo didn't experience rapid employee turnover, unlike the offshore team.

Staff turnover was clearly the most disturbing factor in Dutch-Co's collaboration with InVend. The learning costs' impact was high. Since the collaboration started, 15 InVend engineers had been hired and seven had left. We contacted InVend to understand what happened. We learned that five engineers quit In-Vend for other career opportunities, one was asked to leave, and one was transferred within InVend. Adding new members compensated for the loss but meant that the InVend team consistently comprised a mixture of new hires and relatively more experienced engineers.

Calculating the True Hourly Costs

On the surface, DutchCo's collaboration with InVend offered a $\in 20$ hourly benefit over in-house development when considering hourly rates and additional costs, as we mentioned before. Going beyond



FIGURE 2. The average salary rates and hourly costs for 2009–2013 for the (a) offshore (InVend) and (b) in-house (DutchCo) teams. When we calculated the hourly costs for the whole period, the offshore benefits dropped significantly.

the directly visible, however, requires more complex calculations. The major complexity comes from accounting indirect costs fairly. To account for them, we divided the direct costs by the number of productive hours—the hours remaining for effective work. The offshore team had almost twice as many ineffective hours as the in-house team. So, the 2013 hourly cost was \in 47 for the offshore team and \in 65 for the in-house team, a difference of \in 18.

However, this is the most optimistic scenario, which represents only the last year of collaboration. We also looked at the whole collaboration period (2009–2013) to include start-up costs, which usually represent a significant investment.¹ We calculated the average direct costs, average ineffective hours, and true hourly costs for the five-year period (see Table 5 and Figure 2), on the basis of each team's personnel engagement data (also partially seen in Figure 1). We approximated those direct costs using the 2013 data and the variance of ineffective hours due to learning.

When we calculated the hourly costs for the whole period, the offshore benefits dropped significantly, with a remaining average true hourly cost of €68 versus €61 for DutchCo. You could challenge whether offshoring was worth the investment from a purely financial viewpoint. However, the DutchCo CEO incorporated the InVend team's initial start-up costs in his decisions, and merely looked at performance over the last two years, while trying to increase it in the near future. Had InVend been able to keep the first eight people employed, their true hourly cost would

have been €48 for the five-year period. This clarifies the growth opportunities the DutchCo CEO saw, his interest in speeding up the learning curves, and his full focus on reducing InVend employee turnover.

When confronted with our findings, the InVend account manager stated, "I am surprised by the amount of time we spend negotiating hourly rates with our customers, while never discussing learning curves and retention, while these have much more impact on their bottom-line cost!" Similarly, the DutchCo CEO recognized that the cost calculations made the impact of cost factors more obvious. In particular, an increase in the offshore travel and training budgets demonstrated a much clearer return on investment owing to their expected acceleration of the learning curve.

Lessons Learned

We learned three main lessons. First, offshore outsourcing incurs more costs than just direct hourly rates. Second, it took five years to get close to break-even. Finally, learning costs due to offshore employee turnover were the primary cost factor to get under control.

Selecting Offshore Destinations

Certain offshore destinations are well known for sensational cost advantages in terms of salary expenses. Even after including the extra direct costs, our calculations confirmed that offshore outsourcing was still cost attractive (\notin 29 versus \notin 49). given fact. We might influence it to lower it, but cannot prevent it completely. Anticipating attrition is a much better strategy." We strongly suggest that companies carefully consider attrition levels when selecting offshore-outsourcing partners and destinations, especially for work requiring a long learning curve.

Explicitly Addressing Learning

Speeding up learning could be even better than controlling attrition. Yet this requires investments that are usually seen as unwanted extra costs. In our case, DutchCo didn't implement any dedicated training program to get new InVend employees up to

Learning costs due to offshore employee turnover were the primary cost factor to get under control.

However, a fundamental difference emerged when we took employee turnover into account. Many companies have experienced that seeking and retaining employees in rapid-growth markets often backfires with high turnover rates.^{3,4} The InVend team turnover rates were 67 percent in 2009, 14 percent in 2010, 25 percent in 2011, 14 percent in 2012, and 11 percent in 2013. In contrast, nobody left DutchCo during that period. As we mentioned before, had InVend been able to retain its first eight employees, the resulting true hourly costs would have been considerably lower.

However, it's naive to expect you can completely prevent people from leaving. Or, as DutchCo's corporate technology officer expressed during the feedback session, "Attrition is a speed more quickly. The DutchCo CEO stated in the feedback session, "Speeding up the learning curve is our core responsibility. From this study I learned that I need to establish much more interaction and have the new offshore people onsite with the Dutch people during their first period. Furthermore, we need to integrate someone from the Dutch team into the offshore team in India [who is there] 25 percent, maybe even 50 percent, [of the time]!"

Industrial experience shows that learning curves in offshore software development are often underestimated: five-year learning curves aren't uncommon.⁹ Although faster learning has a clear high priority, perhaps an even more important lesson was the significance of learning curves.

Creating Win–Win Collaborations

Successful collaborations are built on reciprocity, meaning that both parties experience the same pain and happiness. The DutchCo CEO was convinced that InVend wasn't taking the actions needed to control internal attrition. At the same time, the InVend representatives explained that the collaboration with DutchCo provided limited opportunities to satisfy these employees' careers. So, not transferring them to more challenging projects might make them resign from InVend and thus leave DutchCo. Furthermore, to prevent attrition, InVend employees' salaries must grow faster than the hourly rates paid by DutchCo. The consequence is that after a time, it's in InVend's business interests to rotate employees.

We made three recommendations to DutchCo and InVend. First, set acceptable rates for employee retention and attrition. This will ensure the accumulation of knowledge at the offshore site and the availability of experts to train novices. It will also prevent InVend from transferring people to other projects. In case InVend violates the attrition or retention rate, it must act to prevent losses or compensate DutchCo for them. The losses' size, however, might vary because specific individuals have different impacts: who guits matters.

Second, include human-resource management in the collaboration. To prevent attrition, DutchCo should ensure promotion opportunities. In particular, the company should commit to an annual increase in the contractbased hourly rates for developers to compensate InVend for annual salary increases. Although this will increase DutchCo's costs faster than before, it will mitigate the attrition costs, which are considerably higher. The number of teams should also increase to enable promotion opportunities and increase DutchCo's importance as an InVend customer.

Finally, include the learning process explicitly in the collaboration. Have more frequent face-to-face meetings between the sites and an explicit training program. Don't take slow learning curves for granted; actively address them.

Limitations

Neither our approach nor the obtained results can claim any level of external validity: this is just a single case study of a single collaboration during a specific five-year period. As we mentioned before, the cost categories and magnitude of indirect and unquantifiable categories were all perception-based, and the five-year costs were only an approximation based on the actual 2013 data. Salaries, hourly rates, and working hours for other years might have varied. To mitigate this, the approximated direct costs for each year included the known impact of people joining and leaving. However, the true hourly cost numbers in this article are at most indicative.

Also, the scientific validity of our calculation of the costs associated with the learning curves is limited because

- the costs were based only on the DutchCo employees' perceptions and
- we used a single curve for all employees.

However, we know of no other way to quantify the impact of learning and experience gained in a team. Our perception-based qualitative evaluation seemed better than ignoring this dominant cost factor.



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In summary, although we don't claim that these results accurately reflect all actual costs, our findings have indicative value and can inspire others in making more informed cost calculations.

s DutchCo's collaboration with InVend economically beneficial? Before our study, like many companies,¹ DutchCo only compared its own salary rates with contractbased payments to the vendor. Like others,¹⁰ DutchCo and InVend considered only the information easily available in accounting systems.

Our cost structure and approach to calculate the true hourly costs provided a means of informed comparison of the two teams. We showed that the impacts of turnover and learning curves were much larger than were previously quantified. Although achieving true hourly costs that were comparable for both teams took three years and approaching the break-even point took five years, offshore outsourcing wasn't a failure. Switching vendors carries large investments, although in some cases it's the only way out of an unsuccessful relationship.⁴ DutchCo and InVend will continue their collaboration and focus on the identified improvement opportunities.

When sharing our findings with DutchCo, InVend, and other companies, we experienced a great interest in holistic cost models that include different cost factors, provide different cost management activities, and enable calculations over different time periods.¹⁰ This idea might also prove useful in areas other than outsourcing. Companies might want to compare in-house scenarios versus local, nearshore, and offshore outsourcing or insourcing. Finally, the results obtained through our true-cost calculation benefited both the customer and vendor. This is best illustrated by the InVend account manager's concluding remark in the feedback session: "Wow, this is really great! So, when we stabilize and lower attrition, plus work together on faster learning curves, I can double our rates and still be cheaper!"

We rest our case. 👁

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Reliability Engineering for Software

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