

A Forrester Total Economic Impact™ Study Prepared For Oracle

The Total Economic Impact Of Oracle Business Intelligence Applications

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FORRESTER

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Executive Summary

In March 2012, Oracle commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) enterprises may realize by deploying Oracle Business Intelligence Applications (BI Apps). The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of the BI Apps solution on their organizations.

BI Apps Lowers Costs And Increases Revenue

Our interviews with four existing customers and a subsequent financial analysis found that a composite organization based on these companies experienced the risk-adjusted ROI, costs, and benefits shown in Table 1. See Appendix A for a description of the composite organization.

Table 1

Composite Organization Three-Year Risk-Adjusted ROI¹

ROI	Payback period	Total benefits (PV)	Total costs (PV)	Net present value
97%	20 months	\$18,656,496	(\$9,486,872)	\$9,169,624

Source: Forrester Research, Inc.

- **Benefits.** The composite organization experienced the following benefits that represent those experienced by the interviewed companies (the first six are included in the ROI analysis):
 - **Lower procurement spending.** Deploying the Procurement and Spend Analytics module resulted in lower procurements costs by better identifying lower-cost providers and opportunities to negotiate better discounts and terms. This lowered the procurement costs in Year 1 of the study by 5%, a rate of savings that increased to 7% in Year 2.
 - **Accounts payable savings.** Using the Financial Analytics module enabled the composite organization to avoid making duplicate payments to vendors through better purchase order tracking, matching, and reporting. This resulted in savings of more than \$1 million per year by the third year of the study.
 - **IT and business labor savings.** Deploying BI Apps created efficiencies in both the IT and business sides of the organization. Specifically, eliminating multiple solutions reduced the amount of IT effort required as well as business resources working in the procurement organization and business analysis. This totals nine FTEs by Year 2 of the study.
 - **Lower inventory working capital.** Using the Supply Chain and Order Management Analytics module allowed the composite organization to reduce the value of inventory it held — both inputs to the

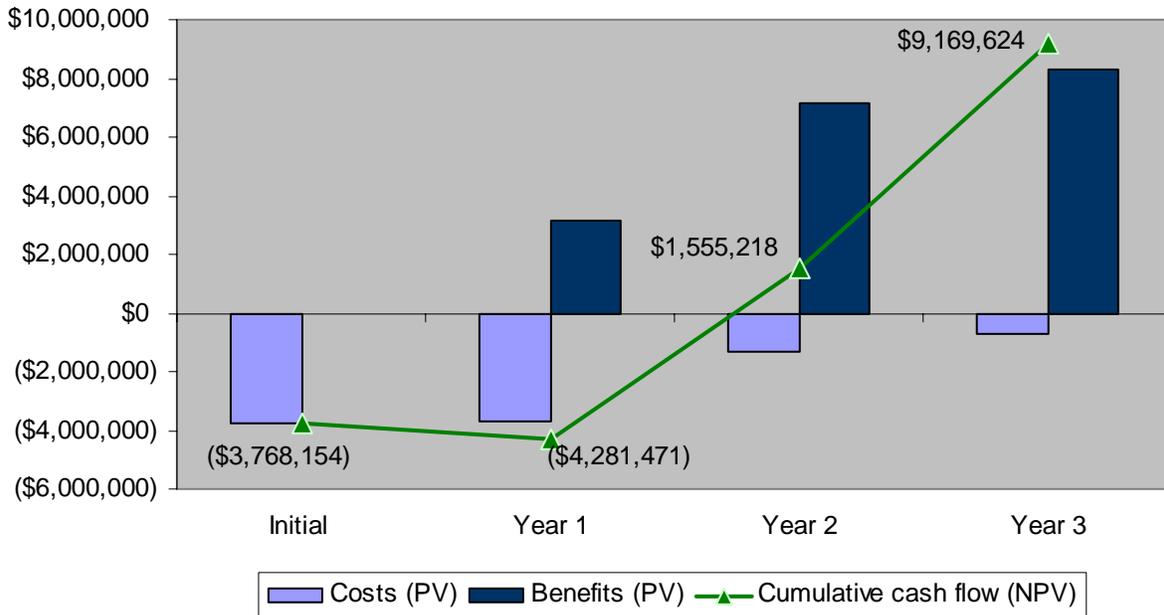
manufacturing process and finished goods. The result was a 15% reduction in inventory for the affected product categories.

- **Increased gross sales.** Implementing the Sales Analytics module increased sales transactions by identifying customer segments to focus on and providing information to convert more sales opportunities. The result was a 0.4% lift in sales in affected parts of the organization.
- **Increased prices.** The Price Analytics module reduced unnecessary discounting. The result was an 0.3% increase in average sales price.
- **Lower total cost of ownership (TCO) for a business intelligence (BI) solution (unquantified).** The composite organization had lower deployment and ongoing management costs for Oracle BI Apps compared with the anticipated cost of other solutions investigated.
- **Management productivity (unquantified).** Having better access to information makes business managers across the organization more productive by reducing the time spent hunting for information.
- **Costs.** The composite organization experienced the following costs:
 - **Internal implementation labor.** The composite organization deployed BI Apps in two phases. The initial implementation consisted of deploying the Financial Analytics and Procurement and Spend Analytics modules in the US as well as performing the data cleansing and transformation needed for the new data warehouse. The second phase, which was completed shortly following the initial implementation, brought the Sales Analytics, Price Analytics, and Supply Chain and Order Management Analytics modules to the US. All of the modules were also rolled out to the EMEA region. The first phase lasted six months, including the deployment of a data warehouse; the second phase lasted five months.
 - **Professional services.** The composite organization used professional services during both implementation phases. Three FTE consultants worked alongside the in-house deployment team.
 - **Data warehouse hardware and software.** The composite organization needed to deploy a data warehouse as part of the project. This required 2 terabytes (TB) of storage to cover the first two phases; it also required Oracle Database Enterprise Edition.
 - **BI Apps hardware.** The actual BI Apps solution sits on two medium-size servers that were deployed in the initial phase.
 - **BI Apps and related software licenses.** In addition to the database licenses described above, the composite organization required licenses for the various BI Apps modules, Oracle BI Suite Enterprise Edition Plus, and Informatica Power Center and Power Connector. The BI Apps licenses were purchased as part of an enterprisewide license, which ended up being less expensive than a per-user license for a deployment of this scope and size.
 - **Training.** During the initial period and for each of the first two years, two FTEs spent 30 days training users. This included developing training content and providing the actual training in face-to-face and webinar training sessions.

- **Ongoing support labor.** Maintaining the BI Apps solution was pretty straightforward. Three FTEs were required in the first year; this increased to four FTEs beginning in the second year.

Figure 1

Three-Year Risk-Adjusted Financial Results



Source: Forrester Research, Inc.

Factors Affecting Benefits And Costs

Table 1 illustrates the risk-adjusted financial results that were achieved by the composite organization. The risk-adjusted values take into account any potential uncertainty or variance that exists in estimating the costs and benefits, which produces more conservative estimates. The following factors may affect the financial results that an organization may experience:

- **Size of the organization and deployment.** The absolute size of the costs and benefits are a function of the size of the deployment. Readers are encouraged to scale the results shown in this study up or down based on their company's size relative to the composite organization. Forrester believes that smaller companies will achieve a similar ROI to the one shown in this study.
- **Modules implemented.** The benefits realized are very specific to the modules implemented. Therefore, if an organization deploys different modules, some of the benefits shown in the study will not apply.

Disclosures

Readers should be aware of the following:

- The study is commissioned by Oracle and delivered by the Forrester Consulting group.
- Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in Oracle BI Apps.
- Oracle reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.
- The customer names for the interviews were provided by Oracle.

TEI Framework And Methodology

Introduction

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ framework for those organizations considering implementing Oracle Business Intelligence Applications. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision.

Approach And Methodology

Forrester took a multistep approach to evaluate the impact that Oracle BI Apps can have on an organization (see Figure 2). Specifically, we:

- Interviewed Oracle marketing, sales, and consulting personnel and Forrester analysts to gather data relative to BI Apps and the marketplace for business intelligence solutions.
- Interviewed four organizations currently using Oracle BI Apps to obtain data on its costs, benefits, and risks.
- Designed a composite organization based on characteristics of the interviewed organizations (see Appendix A).
- Constructed a financial model representative of the interviews using the TEI methodology. The financial model is populated with the cost and benefit data obtained from the interviews as applied to the composite organization.

Figure 2

TEI Approach



Source: Forrester Research, Inc.

Forrester employed four fundamental elements of TEI in modeling Oracle BI Apps service:

1. Costs
2. Benefits to the entire organization
3. Flexibility
4. Risk

Given enterprises' increasing sophistication regarding ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix B for additional information on the TEI methodology.

Analysis

Interview Highlights

A total of four interviews were conducted for this study, involving representatives from the following companies:

1. **A power management company.** The company manufactures and sells solutions for electrical, fluid, and mechanical power operations in more than 150 countries. Due to acquisitions, the company had more than five BI applications and was looking to standardize on a single solution. The deployment consisted of the Sales Analytics module, OBIEE, and Oracle Database.
2. **A plumbing hardware company.** The company manufactures and sells plumbing hardware in Europe and North America. After initiating an ERP implementation, the company realized that the included reporting tools would not be sufficient and that an enterprisewide intelligence solution was required. Initially, the firm implemented the Procurement and Spend module, followed by the Supply Chain and Order Management module.
3. **A software company.** The company sells software and processing solutions to a range of industries. It has customers in more than 70 countries. The organization found that it could not make good decisions because information was held in multiple siloed systems, including spreadsheets. There was an existing data warehouse project underway and BI Apps was layered on top. The Financial Analytics and Procurement and Spend Analytics modules were implemented.
4. **A school system.** A large US school district with hundreds of thousands of students. The existing analytics solution did not provide the types of reports required to make the needed decisions. The Financials along with Procurement and Spend modules were implemented.

The four interviews uncovered the following salient points:

- The interviewees decided to implement a BI solution for a wide variety of reasons, but these reasons largely boiled down to the need to have better, universal visibility and reporting of information to meet business objectives.

“Our business users’ need for unified reporting kept increasing, and our existing data warehouse and ERP projects were not delivering what was needed.”

“We really needed a single front-end tool with more flexibility and an intuitive, user-friendly user interface. Without this, the business would not get the information they needed.”

“In the middle of an ERP implementation, we realized that the reporting tools were not good enough to meet the business’s needs. We needed greater flexibility and something the users could understand.”

“We combined multiple sales organizations across various product lines and geographies. This meant that we needed a more robust, end-to-end business intelligence solution.”

- Top decision criteria when selecting a BI solution included out-of-the-box features and reports along with ease of integration with other Oracle solutions.

“The Oracle solution included many standard reports that met our needs.”

“The front-end dashboard was just what we needed out of the box. BI Apps tied in easily with our back-end systems using out-of-the-box adapters, which was a huge bonus for us.”

“Out-of-the-box adapters for Oracle eBusiness Suite and Siebel aligned with our ERP and front-end strategies.”

“The breadth of analytics modules available across many business areas was very important.”

- TCO was an important consideration in choosing a BI solution.

“We were acutely aware of the startup and ongoing costs as part of the decision-making process. Oracle BI Apps was our first choice from the features and TCO perspectives.”

“Implementing BI Apps greatly reduced cost and complexity compared to the myriad of manual solutions we were using before. It also priced out as a better solution than some of the other options we were exploring.”

- Consolidating onto a single solution, from both a technology and organizational perspective, was very important.

“It was very difficult to consolidate data and then slice and dice it. We now have a flexible approach where users can manipulate the hierarchies. The tools can handle any reorganization and the business can take care of itself. In the past, this was always a huge headache.”

“Because of multiple acquisitions across many countries, we wound up with siloed sales organizations, 15 ERP systems, and six business intelligence systems. A massive reorganization was launched to consolidate all of this into one. We are not able to look at information cross-border and across the entire organization.”

- Disparate (or not) BI systems meant that the interviewees could not measure KPIs that they knew were very important.

“In many areas of the business, we were not able to do analysis because data was stored in multiple databases and spreadsheets.”

“We did not have universal access to information, so we could not measure what was important to us.”

“We wanted to track product profitability, employee expenses, and accounts payable. We were not able to do that in a unified way prior to implementing BI Apps.”

Composite Organization

The composite organization is a manufacturer of industrial equipment. In addition to manufacturing at three plants in the US, it distributes and sells products across North America and Europe. A small portion of sales are completed in other geographies through channel partners. In recent years, the company has acquired several smaller competitors, resulting in a heterogeneous technology environment and organizational silos. In the most recent year, the company had \$500 million in sales; sales are growing at 5% per year on average. The organization has approximately 1,500 employees.

This organization implemented a single ERP solution and data warehouse. The company realized that it also needed a BI solution because of reporting limitations within the ERP and data warehouse systems. The initial phase was completed in parallel to the data warehouse project, and consisted of deploying the Financial Analytics and Procurement and Spend Analytics Fusion modules to US-based users. In the second phase, the organization added the Sales Analytics, Price Analytics, and Supply Chain and Order Management Analytics modules in the US. All of these modules were also rolled out to Europe and Canada as part of the second phase. There are approximately 300 total users.

Appendix A contains an expanded description of the composite organization.

Framework Assumptions

Table 2 provides the model assumptions that Forrester used in this analysis.

Table 2

Model Assumptions

Ref.	Metric	Calculation	Value
A1	Technology FTE fully burdened* annual cost	\$90,000+25%	\$112,500
A2	Business FTE fully burdened* annual cost	\$100,000+25%	\$125,000
*Includes salary, variable compensation, and all direct benefits (e.g., disability insurance)			

Source: Forrester Research, Inc.

The discount rate used in the PV and NPV calculations is 10% and time horizon used for the financial modeling is three years. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their respective company's finance department to determine the most appropriate discount rate to use within their own organizations.

Some values in the study are rounded to the nearest dollar. Therefore, some of the calculation results shown in the tables may be off by up to a few dollars.

Costs

This section describes the direct costs of implementing Oracle BI Apps and a data warehouse as well as the ongoing management costs. The majority of the effort and costs were incurred in the initial period and in Year 1, when the two deployment phases were undertaken.

Internal Implementation Labor

The implementation covers the deployment of Oracle BI Apps and related technologies and the building of a data warehouse on Oracle technologies. The initial implementation lasted six months. This effort included the design and deployment of the data warehouse, necessary data cleansing, and the design and deployment of BI Apps. This implementation is consistent with those reported by the interviewees.

The implementation was managed in-house, and the internal labor was augmented with professional services, which will be discussed later. For the initial US-only deployment, four IT and three business FTEs worked on the design and implementation. Additionally, three FTEs worked on the data cleansing and data warehouse deployment. Readers are encouraged to calculate how much data they would include and what their cleansing needs are in order to estimate the level of effort and cost. The second phase saw additional modules rolled out in the US, as well as expansion to Europe and Canada. This phase lasted five months; it required five IT FTEs and four business FTEs for the BI Apps pieces and three FTEs doing additional work on the data warehouse.

Table 3

Internal Implementation Labor Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
B1	Number of months		6	5		
B2	Number of IT FTEs		4	5		
B3	Monthly IT FTE fully burdened cost	A1/12months	\$9,375	\$9,375		
B4	Number of business FTEs		3	4		
B5	Monthly business FTE fully burdened cost	A2/12 months	\$10,417	\$10,417		
B6	Number of IT FTEs: data warehouse/ cleansing		3.0	3.0		
B7	Monthly IT FTE fully burdened cost	A1/12months	\$9,375	\$9,375		
Bt	Internal implementation labor costs	$B1 * [(B2 * B3) + (B4 * B5) + (B6 * B7)]$	\$581,250	\$583,333		

Source: Forrester Research, Inc.

Professional Services

The composite organization used professional services in addition to internal resources. The consultants focused on properly defining a solution based on business requirements and providing any subject-matter expertise that internal resources lacked. Overall project management was completed by internal resources. Professional services were used throughout both implementation phases. Ongoing management is done entirely in-house.

For the interviewed companies, there was some variation in terms of how much professional services were used. Companies that had experience with other Oracle solutions required less professional services. Overall, the interviewed companies found the implementation straightforward and could do a lot or most of the work themselves.

Table 4
Professional Services Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
C1	Number of months	B1	6	5		
C2	Number of consultant FTEs		3	3		
C3	Monthly cost	\$1,600 per day*22 days	\$35,200	\$35,200		
Ct	Professional services costs	$C1 * C2 * C3$	\$633,600	\$528,000		

Source: Forrester Research, Inc.

Data Warehouse Hardware And Software

The ERP and BI Apps implementations required the creation of a brand-new data warehouse. The data warehouse replaces a mix of solutions and was totally new to the composite organization. Implementation labor costs were covered in the cost categories discussed earlier. The initial deployment consisted of installing and configuring Oracle Database Enterprise Edition as well as 2 TB of physical storage. An additional terabyte was added in both Year 2 and Year 3. Because the cost of storage can vary greatly depending on the technologies used, readers are encouraged to identify the storage solution that best meets their needs.

Table 5
Data Warehouse Hardware And Software Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
D1	Number of terabytes of storage added		2		1	1
D2	Cost per terabyte		\$50,000		\$50,000	\$50,000
D3	Oracle Database Enterprise Edition	4 processors*\$47,500	\$190,000			
D4	Total technology costs	D1*D2+D3	\$290,000		\$50,000	\$50,000
D5	Maintenance	D4*22% [through current year]	\$63,800	\$74,800	\$85,800	\$63,800
Dt	Data warehouse hardware and software costs	D4+D5	\$63,800	\$124,800	\$135,800	\$63,800

Source: Forrester Research, Inc.

BI Apps Hardware

For the BI Apps solution and associated technologies (excluding the data warehouse), two new servers were added. These are upper-middle range servers. Two interviewees commented that no additional hardware was required.

Table 6
BI Apps Hardware Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
E1	Number of servers		2			
E2	Cost per server		\$20,000			
E3	Maintenance	E1*E2*20% [through current year]		\$8,000	\$8,000	\$8,000
Et	BI Apps hardware costs	E1*E2+E3	\$40,000	\$8,000	\$8,000	\$8,000

Source: Forrester Research, Inc.

BI Apps And Related Software Licenses

In addition to the cost of the Oracle Database licenses discussed above, the composite organization required licenses for the five implemented Oracle BI Application modules, Oracle BI Suite Enterprise Edition (needed to create custom reports), and Informatica (needed to connect BI Apps to the data warehouse). Oracle has a variety of licensing models including per user and enterprisewide licenses and may offer volume discounts. This study uses list prices for enterprisewide licenses. Readers are encouraged to work with their Oracle sales representative to identify the most cost-effective licensing model based on the specifics of their deployment.

For the BI Apps solution, the enterprise license is based on total annual revenue. For every \$1 million in revenue, each module costs \$1,000. So, for a \$500 million company, each module would cost \$500,000. Oracle BI Suite Enterprise Edition Plus and Informatica licenses are priced on a per-processor basis. The deployment consists of two dual-processor servers. Oracle charges 22% annual maintenance on most of their technologies; this was applied to Informatica licenses as well for simplicity.

Table 7

BI Apps And Related Software License Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
F1	Total annual revenue (grows by 5% per annum)			\$500,000,000	\$525,000,000	\$551,250,000
F2	Number of BI Apps modules implemented		2	3	0	0
F3	BI Apps Enterprise license costs	$\$1,000^* (F1/\$1,000,000)*F2$	\$1,000,000	\$1,500,000	\$125,000	\$131,250
F4	Oracle BI Suite Enterprise Edition Plus	4 processors* \$221,250	\$885,000			
F5	Informatica Power Center and Power Connectors	4 processors*\$25,300	\$101,200			
F6	Maintenance	$(F3+F4+F5)[\text{through current year}]*22\%$		\$766,964	\$794,464	\$194,700
Ft	Oracle software license costs	$F3+F4+F5+F6$	\$1,986,200	\$2,266,964	\$919,464	\$325,950

Source: Forrester Research, Inc.

Training

Deployment of these solutions requires training for the IT administrators and the business users. Interviewees described the solution as being “very intuitive,” which reduced the amount of training required. For the initial period and the first two full years, two FTEs each spent 30 days learning the technologies, preparing training materials, or

training other users. Training was conducted in person or via webinar. The daily salaries of people receiving training were not included in the cost analysis.

Table 8
Training Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
G1	Number of training FTEs		2	2	2	
G2	Number of days of effort		30	30	30	
G3	Daily fully burdened cost	B3/22 workdays	\$426	\$426	\$426	
Gt	Training costs	$G1 * G2 * G3$	\$25,560	\$25,560	\$25,560	

Source: Forrester Research, Inc.

Ongoing Support Labor

Maintaining Oracle BI Apps is relatively simple. There is a corresponding benefit of reduced effort associated with the ongoing support of multiple solutions; this is covered in the Benefits section of this study. Ongoing efforts associated with the data warehouse, such as additional data cleansing of new data sources, is not included, as that effort would be required whether or not a BI solution was implemented.

The support effort includes updating and/or patching BI Apps, making any changes to integrate with additional data types, and developing new reports. Three FTEs are involved in these activities during Year 1; this increases to four FTEs in Year 2 to handle additional demand across North America and Europe.

Table 9
Ongoing Support Labor Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
H1	Number of FTEs			3	4	4
H2	Annual fully burdened cost	A1		\$112,500	\$112,500	\$112,500
Ht	Ongoing support labor costs	$H1 * H2$		\$337,500	\$450,000	\$450,000

Source: Forrester Research, Inc.

Total Costs

Table 10 summarizes the costs for implementing and maintaining Oracle BI Apps and its supporting technologies and deploying a data warehouse.

Table 10
Total Costs

Ref.	Costs	Initial	Year 1	Year 2	Year 3	Total
Bt	Internal implementation labor	(\$581,250)	(\$583,333)			(\$1,164,583)
Ct	Professional services	(\$633,600)	(\$528,000)			(\$1,161,600)
Dt	Data warehouse hardware and software	(\$290,000)	(\$63,800)	(\$124,800)	(\$135,800)	(\$614,400)
Et	BI Apps hardware	(\$40,000)	(\$8,000)	(\$8,000)	(\$8,000)	(\$64,000)
Ft	BI Apps and related software licenses	(\$1,986,200)	(\$2,266,964)	(\$919,464)	(\$325,950)	(\$5,498,578)
Gt	Training	(\$25,560)	(\$25,560)	(\$25,560)		(\$76,680)
Ht	Ongoing support labor		(\$337,500)	(\$450,000)	(\$450,000)	(\$1,237,500)
	Total	(\$3,556,610)	(\$3,813,157)	(\$1,527,824)	(\$919,750)	(\$9,817,341)

Source: Forrester Research, Inc.

Benefits

The first part of the Benefits section details the quantitative benefits included in the ROI analysis. The second explains qualitative benefits that the interviewed customer described but which could not be quantified for this study. The latter benefits are not part of the ROI analysis. Readers should take the qualitative benefits into consideration when analyzing the total benefits their organization may realize by utilizing Oracle BI Apps.

Lower Procurement Spending

Use of the Procurement and Spend Analytics module enabled the composite organization to seek out better prices and discounts from vendors. This was accomplished by having information on prices from all vendors in one place, which identified the best vendor from a price perspective and strengthened the organization's negotiations and ability to play one vendor against another. This can also result in better payment terms and other contract conditions.

This benefit was realized by three of the interviewed companies. Observations on this benefit included:

“Having all of our purchasing information in one place allows us to look at which vendor gives us the best price by category. This has resulted in a 10% reduction in procurement costs and more than paid for the BI Apps project by itself.”

“Having global visibility into spending has helped us lower supplier costs and negotiate improved payment terms.”

For the composite organization, it was assumed that the affected procurement spending increases over time as additional parts of the business — geographies and lines of business — are brought into the BI Apps solution. The percentage reduction is assumed to be 5% in Year 1 and 7% beginning in Year 2. Because a procurement rationalization initiative involves more than just deploying a technology, only 60% of this benefit was attributed to BI Apps, potentially making these calculations conservative.

Table 11

Lower Procurement Spending

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
I1	Affected procurement spending		\$50,000,000	\$75,000,000	\$100,000,000
I2	Reduction in procurement spending		5%	7%	7%
I3	Reduction in procurement spending attributable to OBIA		60%	60%	60%
It	Lower procurement spending	I1*I2*I3	\$1,500,000	\$3,150,000	\$4,200,000

Source: Forrester Research, Inc.

Accounts Payable Savings

Having all purchase order (PO) information and invoices available in a single place and with more effective reporting tools allowed the composite organization to avoid duplicate payments that cannot be recovered. Another possible benefit that is not included in the calculations is avoided late payment fees. The composite organization has seen the level of savings increase over the life of study as more parts of the organization are brought into the system.

One interview provided an example related to employee expense reimbursement. “We are now able to track all POs and tie them to invoices in employee expense reports. Avoiding payment of duplicate invoices has saved us close to \$1 million a year.”

Table 12

Accounts Payable Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
J1	Avoided duplicate payments		\$500,000	\$1,000,000	\$1,250,000
Jt	Accounts payable savings	J1	\$500,000	\$1,000,000	\$1,250,000

Source: Forrester Research, Inc.

IT And Business Labor Savings

Automating the data collection and reporting process into useful information greatly reduces the manual effort required by both IT and business users. All of the interviewees gave examples of this time savings.

“We avoided adding people to the procurement and finance teams because we can do more with less.”

“BI Apps and OBIEE resulted in needing fewer business analysts in the lines of business. I estimate that this saved us four positions.”

“It used to take a lot of work to bring the data together. BI apps have improved productivity and efficiency.”

“We replaced five to seven different platforms. Each had its own team supporting it. This has been largely eliminated.”

The composite organization saw a savings of two IT FTEs in Year 1; this increased in Year 2 as BI Apps was further rolled out. There were also savings on the business side in the procurement team and business analysts.

Table 13

IT And Business Labor Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
K1	Reduction in IT FTEs		2	3	3
K2	IT annual fully burdened cost	A1	\$112,500	\$112,500	\$112,500
K3	Reduction in procurement FTEs		1	2	2
K4	Reduction in business analyst FTEs		2	4	4
K5	Business annual fully burdened cost	A2	\$125,000	\$125,000	\$125,000
Kt	IT and business labor savings	$K1*K2+(K3+K4)*K5$	\$600,000	\$1,087,500	\$1,087,500

Source: Forrester Research, Inc.

Lower Inventory Working Capital

Improved procurement results in working and final goods inventory being managed in a leaner manner. This frees up working capital to be more effectively deployed. Additionally, fewer materials need to be written off. One interviewee said, "We have seen a 30% reduction in working capital." This translates to €50 million less inventory. No numbers were provided on reduced/scrapped inventory.

For the composite organization, a much more conservative figure was used. The amount of inventory affected increases over the life of the study as additional product lines and lines of business are brought into the system. A 15% reduction in working capital was held constant over the three years.

Table 14

Lower Inventory Working Capital

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
L1	Value of inventory affected		\$10,000,000	\$20,000,000	\$30,000,000
L2	Reduction in working capital		15%	15%	15%
Lt	Lower inventory working capital	L1*L2	\$1,500,000	\$3,000,000	\$4,500,000

Source: Forrester Research, Inc.

Increased Gross Sales

Sales Analytics improved the composite organization's total sales by helping identify customer segments and upsell/cross-sell opportunities to focus on and improve win rates. Customer retention also factors into this benefit. Interviewee benefits included:

"We were able to increase revenue by focusing on customer segments with the highest win rates."

"A main KPI is on-time delivery. If we do not deliver on time, an order might be cancelled and placed with one of our competitors. On-time delivery has improved every year for the last three years. This also improves customer satisfaction and loyalty."

"We have seen a 0.5% increase in total revenue by having a consolidated view of EMEA orders and sales."

The composite organization realized the benefit beginning in Year 2. The baseline revenue on which the benefit is realized is slightly less than total company revenue because some sales go through other channels not included in the BI Apps project, e.g., sales through distributors in non-core geographies. The organization saw a 0.4% lift in sales at a gross margin of 40%.

Table 15

Increased Gross Sales

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
M1	Baseline revenue affected	Grows 5% per year		\$450,000,000	\$474,390,000
M2	Incremental sales			0.4%	0.4%
M3	Incremental revenue	M1*M2		\$1,800,000	\$1,897,560
M4	Gross margin			40%	40%
Mt	Increased gross sales	M3*M4		\$720,000	\$759,024

Source: Forrester Research, Inc.

Increased Prices

In addition to an increase in sales volumes discussed above, BI Apps also helped the composite organization improve prices realized using the Pricing Analytics module. The composite organization is able to identify existing customers that do not need as big a discount in order to repurchase and to identify customer segments and product lines that do not need to be as heavily discounted.

Interviewees said:

“We used BI Apps as part of a major price initiative. We found customers where discounting wasn’t needed. Analytics will continue to contribute substantially to price goal realization by providing detailed information by country, product line, etc.”

“BI Apps is helping us to identify a little earlier where we are not reaching adequate margin levels.”

“The Realized Price Index (RPI) model resulted in eliminating instances where customers were buying a product from a particular foreign geography because the given product was priced cheaper at one location than another. Purchasing based on regionalized pricing was hurting the overall global product margin.”

The composite organization achieved a 0.3% increase in sales margin using BI Apps.

Table 16

Increased Prices

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
N1	Increased sales prices	M1*0.3%		\$1,350,000	\$1,423,170
Nt	Increased prices	N1		\$1,350,000	\$1,423,170

Source: Forrester Research, Inc.

Total Benefits

Table 17 summarizes the total quantified benefits the interviewed company realized from Oracle BI Apps.

Table 17

Total Benefits

Ref.	Benefits	Year 1	Year 2	Year 3	Total
It	Lower procurement spending	\$1,500,000	\$3,150,000	\$4,200,000	\$8,850,000
Jt	Accounts payable savings	\$500,000	\$1,000,000	\$1,250,000	\$2,750,000
Kt	IT and business labor savings	\$600,000	\$1,087,500	\$1,087,500	\$2,775,000
Lt	Lower inventory working capital	\$1,500,000	\$3,000,000	\$4,500,000	\$9,000,000
Mt	Increased gross sales		\$720,000	\$759,024	\$1,479,024
Nt	Increased prices		\$1,350,000	\$1,423,170	\$2,773,170
	Total	\$4,100,000	\$10,307,500	\$13,219,694	\$27,627,194

Source: Forrester Research, Inc.

*Qualitative Benefits****Lower Total Cost Of Ownership For A Business Intelligence Solution***

The benefits that were quantified looked at the impacts to the business. Additionally, there are cost differences between various BI solutions in the marketplace. In many instances, Oracle BI Apps can result in a lower TCO in terms of

solution purchase costs, initial implementation efforts, and ongoing management. This benefit is not included in the ROI analysis so as to not confuse a TCO benefit with the underlying business benefits.

One of the interviewees completed a detailed TCO analysis as part of the BI solution selection process. For a small implementation, they found that initial purchase and implementation costs for BI Apps were approximately half the cost of the other top choice. Additionally, ongoing maintenance was approximately one-third of the cost. Readers are encouraged to complete a TCO analysis of the various solutions being considered as part of the vendor selection process.

Management Productivity

The quantified benefits section of the study looked at some specific labor savings in the IT and business teams. In addition, there can be a much larger pool of users who see a productivity gain by having the right information readily available and in a format that provide valuable insights. One interviewee reported that there are “300 to 400 senior managers using BI Apps — and they are saving quite a bit of time.” This productivity gain was not tracked at a granular enough level to quantify the benefit.

As part of a BI initiative, it is useful to look at which business processes and roles are affected. This can provide insight into how many total users are benefiting and to what extent. For some companies, this can be a very large benefit and should be factored into the ROI analysis.

Flexibility

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for some future additional investment. This provides an organization with the “right” or the ability to engage in future initiatives but not the obligation to do so. There are multiple scenarios in which a customer might choose to implement Oracle BI Apps and later realize additional uses and business opportunities. Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix B).

BI Apps makes for inherently more flexible organizations by allowing them to easily gather information in different ways and report it in a meaningful way. This can be adjusted based on new business initiatives and challenges, reorganizations, product launches, etc. Additionally, business users are less dependent on the IT organization to create custom reports, resulting in faster decision-making.

BI Apps also provides flexibility in terms of future deployments. The overall solution is comprised of 22 modules, each of which can be added in at a time in the future when the business need arises. All of the interviewees were in the process of implementing additional modules or investigating these options. Geographic expansion is another way to grow the BI Apps deployment and benefits realized. None of these flexibility benefits are included in the ROI analysis.

Risk

Forrester defines two types of risk associated with this analysis: implementation risk and impact risk. “Implementation risk” is the risk that a proposed investment in Oracle BI Apps may deviate from the original or expected requirements, resulting in higher costs than anticipated. “Impact risk” refers to the risk that the business or technology needs of the

organization may not be met by the investment in Oracle BI Apps, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

Quantitatively capturing investment and impact risk by directly adjusting the financial estimates results in more meaningful and accurate estimates and a more accurate projection of the ROI. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. The risk-adjusted numbers should be taken as “realistic” expectations since they represent the expected values considering risk.

The following implementation risks that affect costs are identified as part of this analysis:

- The effort to complete the initial implementation can be higher than the composite organization experienced. The greatest variable is the amount of data to be included in the data warehouse and the amount of data cleansing required. A thorough data analysis should be completed as part of the vendor selection and project planning process.
- License costs can vary greatly depending on the size of the deployment and the type of license chosen, e.g., per user versus enterprisewide. It is very important to understand the license costs in order to determine the potential ROI.

The following impact risks that affect benefits are identified as part of the analysis:

- The total size of the deployment and organization will affect the absolute level of benefits realized. However, there should be a corresponding reduction in costs.
- Successful realization of the benefits requires users to be fully trained and to actually utilize the tools and information. This may require a change management effort as part of the training effort.

Table 18 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates. The TEI model uses a triangular distribution method to calculate risk-adjusted values. To construct the distribution, it is necessary to first estimate the low, most likely, and high values that could occur within the current environment. The risk-adjusted value is the mean of the distribution of those points. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Table 18

Cost And Benefit Risk Adjustments

Costs	Low	Most likely	High	Mean
Internal implementation labor (low risk)	98%	100%	105%	101%
Professional services (medium risk)	100%	100%	115%	105%
Data warehouse hardware and software (medium risk)	100%	100%	115%	105%
BI Apps hardware (low risk)	98%	100%	105%	101%
BI Apps and related software licenses (high risk)	100%	100%	125%	108%
Training (low risk)	98%	100%	105%	101%
Ongoing support labor (low risk)	98%	100%	105%	101%
Benefits	Low	Most likely	High	Mean
Lower procurement spend (high risk)	50%	100%	100%	83%
Accounts payable savings (high risk)	50%	100%	100%	83%
IT and business labor savings (medium risk)	80%	100%	103%	94%
Lower inventory working capital (high risk)	50%	100%	100%	83%
Increased gross sales (high risk)	50%	100%	100%	83%
Increased prices (high risk)	50%	100%	100%	83%

Source: Forrester Research, Inc.

Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Financial Summary

The financial results calculated in the Costs and Benefits sections can be used to determine the return on investment, net present value, and payback period for the organization's investment in Oracle BI Apps. These are shown in Table 19 below.

Table 19

Cash Flow: Non-Risk-Adjusted

Cash flow: Original estimates						
	Initial	Year 1	Year 2	Year 3	Total	Present value
Costs	(\$3,556,610)	(\$3,813,157)	(\$1,527,824)	(\$919,750)	(\$9,817,341)	(\$8,976,803)
Benefits		\$4,100,000	\$10,307,500	\$13,219,694	\$27,627,194	\$22,178,020
Net benefits	(\$3,556,610)	\$286,843	\$8,779,676	\$12,299,944	\$17,809,853	\$13,201,217
ROI	147%					
Payback period	17 months					

Source: Forrester Research, Inc.

Table 20 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 18 in the Risk section to the cost and benefits numbers in Tables 10 and 17.

Table 20

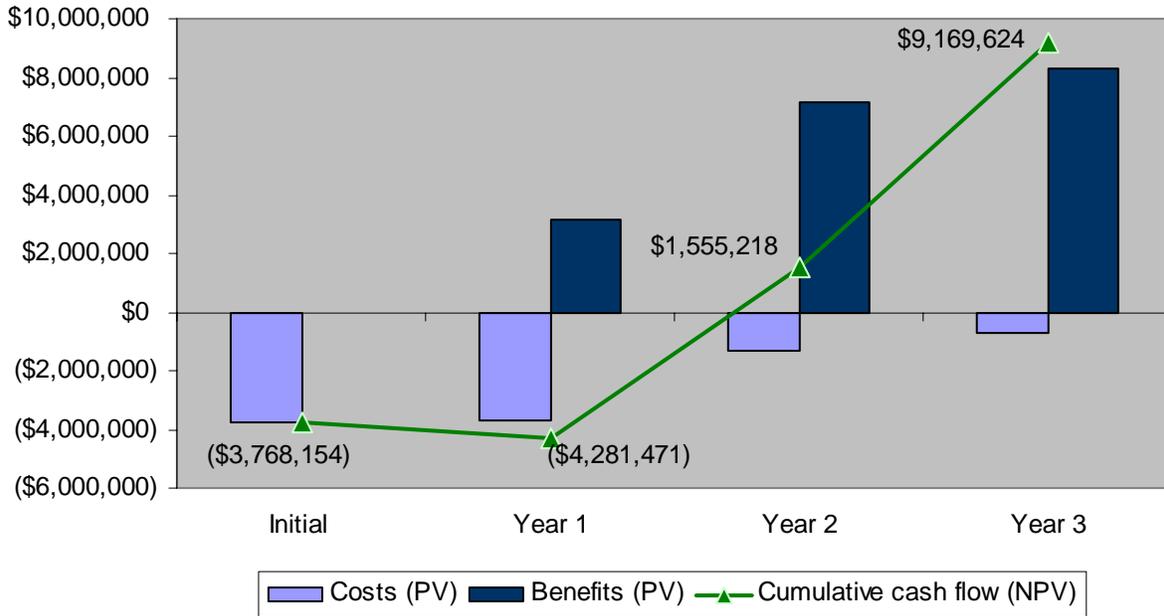
Cash Flow: Risk-Adjusted

Cash flow: Risk-adjusted estimates						
	Initial	Year 1	Year 2	Year 3	Total	Present value
Costs	(\$3,768,154)	(\$4,033,648)	(\$1,612,457)	(\$957,196)	(\$10,371,455)	(\$9,486,872)
Benefits		\$3,469,000	\$8,674,850	\$11,091,971	\$23,235,821	\$18,656,496
Net benefits	(\$3,768,154)	(\$564,648)	\$7,062,393	\$10,134,775	\$12,864,366	\$9,169,624
ROI	97%					
Payback period	20 months					

Source: Forrester Research, Inc.

Figure 3

Three-Year Risk-Adjusted Financial Results



Source: Forrester Research, Inc.

Oracle Business Intelligence Applications: Overview

According to Oracle, Oracle BI Apps provide complete, real-time, and enterprise wide insight for all users, enabling fact-based actions and intelligent interaction. Oracle BI Apps are prebuilt solutions that start with the customer, embrace any existing corporate data source, and are seamlessly integrated with Oracle's transactional solutions to increase effectiveness across the entire customer life cycle.

Oracle BI Apps is made up of ERP Analytics, CRM Analytics, EPM Analytics, and Industry Analytics. Each of these areas is comprised of multiple modules which can be implemented individually or in conjunction with others.

<p>ERP Analytics</p> <ul style="list-style-type: none"> • Financials • HR • Procure and Spend • Projects • Supply Chain • Order Management • Logistics • Manufacturing • Enterprise Asset Management 	<p>EPM Analytics</p> <ul style="list-style-type: none"> • Scorecard • Strategic Planning • Financial Close • Planning and Forecasting • Profitability Management
<p>CRM Analytics</p> <ul style="list-style-type: none"> • Sales • Marketing • Service • Contact Center • Price • Loyalty 	<p>Industry Analytics</p> <ul style="list-style-type: none"> • Financial Services • Communication • Healthcare • Retail

Appendix A: Composite Organization Description

The composite organization is a manufacturer of industrial equipment. In addition to manufacturing at three plants in the US, it distributes and sells products across North America and Europe. A small portion of sales are completed in other geographies through channel partners. In recent years, the company has acquired several smaller competitors which has resulted in a heterogeneous technology environment and organization silos. In the most recent year, the company had \$500 million in sales, which are growing at 5% per year on average. The firm has approximately 1,500 employees in total.

The company has a major business initiative to remove process inefficiencies and to better operate as a global organization. Once completed, the strategy is to undertake an aggressive expansion in other geographies, most notably Asia. This project includes the implementation of single ERP solution, remove organizational barriers, and deploy a data warehouse so managers can make more informed business decisions.

The company realized that it also needed a business intelligence solution because of reporting limitations within the ERP and data warehouse systems. It chose to use Oracle BI Apps because of the canned reports and features available — the implementation was 50% out of the box and 50% customization — and the ease of integration with other Oracle solutions already in place.

The initial phase was completed in parallel to the data warehouse project, and consisted of deploying Financial Analytics and Procurement and Spend Analytics Fusion modules to US-based users. The second phase saw Sales Analytics, Price Analytics, and Supply Chain and Order Management Analytics added in the US. All of these modules were also rolled out to Europe and Canada as part of the second phase. In total, there are approximately 300 users.

Appendix B: Total Economic Impact™ Overview

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, risks, and flexibility.

Benefits

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line

of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

Costs

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the form of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

Risk

Risk measures the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: 1) the likelihood that the cost and benefit estimates will meet the original projections, and 2) the likelihood that the estimates will be measured and tracked over time. TEI applies a probability density function known as “triangular distribution” to the values entered. At minimum, three values are calculated to estimate the underlying range around each cost and benefit.

Flexibility

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point in time. However, having the ability to capture that benefit has a present value that can be estimated. The flexibility component of TEI captures that value.

Appendix C: Glossary

Discount rate: The interest rate used in cash flow analysis to take into account the time value of money. Although the Federal Reserve Bank sets a discount rate, companies often set a discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their respective organization to determine the most appropriate discount rate to use in their own environment.

Net present value (NPV): The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Present value (PV): The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total net present value of cash flows.

Payback period: The breakeven point for an investment. The point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Return on investment (ROI): A measure of a project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

A Note On Cash Flow Tables

The following is a note on the cash flow tables used in this study (see the example table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in Years 1 through 3 are discounted using the discount rate (shown in Framework Assumptions section) at the end of the year. Present value (PV) calculations are calculated for each total cost and benefit estimate. Net present value (NPV) calculations are not calculated until the summary tables and are the sum of the initial investment and the discounted cash flows in each year.

Table [Example]

Example Table

Ref.	Category	Calculation	Initial cost	Year 1	Year 2	Year 3	Total

Source: Forrester Research, Inc.

Appendix D: Supplemental Material

Related Forrester Research

"Drive Business Insight With Effective BI Strategy," Forrester Research, Inc., April 30, 2012.

Appendix E: Endnotes

¹ Forrester risk-adjusts the summary financial metrics to take into account the potential uncertainty of the cost and benefit estimates.