

A Forrester Total Economic Impact™ Study Prepared For Microsoft

Total Economic Impact™ Study Of Microsoft Dynamics AX 2012

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Executive Summary

Microsoft commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) that enterprises may realize by implementing Microsoft Dynamics AX 2012 (Microsoft Dynamics). The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Microsoft Dynamics on their organizations. Microsoft describes Microsoft Dynamics as “a business solution for global enterprises that supports industry-specific and operational business processes, along with comprehensive, core enterprise resource planning (ERP) functionality for financial and human resources management.”

Microsoft Dynamics Reduces IT Operations Costs And Increases Business Value

Our interviews with two existing customers and survey of 22 others, along with the subsequent financial analysis, found that a composite organization based on the organizations interviewed/surveyed experienced the risk-adjusted ROI, IRR, costs, and benefits shown in Table 1.¹ See Appendix A for a description of the composite organization. (All numbers have been rounded.)

Table 1
Composite Organization Three-Year Risk-Adjusted ROI

ROI	IRR	Payback period	Total benefits (PV)	Total costs (PV)	Net present value
92%	53%	21 months	\$6,269,550	(\$3,259,651)	\$3,009,899

Source: Forrester Research, Inc.

- **Benefits.** The composite organization experienced the following benefits that represent those experienced by the interviewed and surveyed companies:
 - **Eliminated systems licenses and maintenance.** The composite organization replaced four legacy systems with Microsoft Dynamics. Only eliminated ongoing maintenance costs have been quantified, even though there may have been incremental, new licenses required over the life of the study. Original licenses for the four replaced systems were \$2 million. The 18% maintenance savings equates to an annual savings of \$360,000.
 - **Reduced IT team size.** The required IT effort to support and upgrade enterprise systems has been reduced. This includes less system/user administrator time at eight locations around the world and fewer resources required for the central IT team. In Year 1 of the study, four fewer FTEs are required. This increases to six FTEs in Year 2 and seven FTEs in Year 3. The total savings over three years is \$2.2 million.

- **Increased business user productivity.** Greater automation and efficiency means that the composite organization can continue to increase sales and geographic expansion without adding as many employees as would have otherwise been required with legacy systems. These employees are a mix of accounting, procurement, customer service, and logistics. By Year 3 of the study, 45 FTE positions have been eliminated or not added. This equates to \$5.8 million over the life of the study.
- **Improved system reliability and uptime (non-quantified).** The mix of replaced systems experienced frequent crashes or slowdowns. These materially impaired business operations, reduced business user productivity, and increased IT team effort.
- **Better access to information and decision-making (non-quantified).** Having a unified ERP system and underlying data repositories allows business users to have better and timelier access to business information. With this, they can make more-informed decisions, which improve business outcomes and saves time. Increased business intelligence capabilities are especially important to global companies.
- **Improved business performance (non-quantified).** Many of the above benefits combine to improve the composite organization's overall performance in terms of increased sales and profitability. This is achieved through faster responses to market changes and decreased internal costs.
- **Costs.** The composite organization experienced the following costs:
 - **Implementation internal labor.** Implementation was based on a two-phased initial deployment. In phase 1, Microsoft Dynamics implemented in the United States. After a brief pause, Microsoft Dynamics was rolled out to international locations. Both phases are counted in the period. Combined, the Microsoft Dynamics implementation lasted 11 months. Four IT and 2.7 business FTEs worked on the project. The total costs during implementation were just shy of \$750,000.
 - **Professional services.** In addition to internal resources, four consultant FTEs worked on the implementation throughout both phases. The composite organization chose Microsoft Dynamics partially because less professional resources were required than with some of the competing solutions considered. Professional service fees were \$1.1 million.
 - **Software licenses.** The Microsoft Dynamics licenses cover 500 client access licenses (CAL) of different roles — task, functional, and enterprise. The initial license costs were \$750,000, and there is an annual maintenance/support of 16%. The three-year total for licenses and maintenance is \$1.1 million.
 - **Hardware.** Hardware requirements are very limited. Only one physical server, which was virtualized, was added. The three-year cost for acquisition and maintenance was \$36,250.
 - **Training.** Training for the IT team was provided to the consultants; 1.5 internal FTEs were trained to provide user training to the organization. This was completed during the initial period and Year 1 of the study. Total costs were \$193,000.

Figure 1
Composite Organization Three-Year Risk-Adjusted ROI



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 organization and deployment.** Larger organizations will incur greater system license and deployment costs. This is a function of the number of users, locations, etc. Small organizations will have lower costs and commensurately smaller benefits. The net result is that all organizations should see a similar ROI to the one depicted in this study, with larger organizations having a longer payback period.
- **Systems being replaced.** The number and complexity of systems being replaced affects the level of effort to implement Microsoft Dynamics. A greater number of systems being replaced should also result in increased benefits from system license savings and improved business operations.

Disclosures

The reader should be aware of the following:

- The study is commissioned by Microsoft and delivered by the Forrester Consulting group.

- Forrester makes no assumptions as to the potential return on investment 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 Microsoft Dynamics AX 2012.
- Microsoft 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 customers for the interviews and survey were provided by Microsoft and an external third-party organization.

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 Microsoft Dynamics AX 2012. 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 Microsoft Dynamics can have on an organization (see Figure 2). Specifically, we:

- Interviewed Microsoft marketing, sales, and consulting personnel and Forrester analysts to gather data relative to Microsoft Dynamics and the marketplace for ERP solutions.
- Received primary data from a combination of in-depth customer interviews as well as a broader survey of customers who are currently using Microsoft Dynamics AX 2012 to obtain data with respect to costs, benefits, and risks.
- Designed a composite organization based on characteristics of the interviewed and surveyed 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 the Microsoft Dynamics service:

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

Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves the purpose of providing 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 two interviews were conducted for this study, involving representatives from the following companies:

1. **Electronic components manufacturer.** This organization is headquartered in Europe. It has production facilities in the UK, Italy, the US, Mexico, China, and India. It also has sales offices in Europe, North America, and Asia. There are 900 employees, and 160 concurrent user Microsoft Dynamics licenses are used. Previously, each country had its own “ERP-lite” solution. As part of a global consolidation effort, they were all replaced with Microsoft Dynamics. The organization is currently using the Financial Management, Supply Chain Management, and Human Capital Management components.
2. **Plastic injection molding company.** Founded in 1982, the company has grown to more than 2,000 employees. It has five manufacturing facilities in the US and recently expanded internationally with facilities in Mexico and Ireland. The company has rather ordinary implementations of the Financial Management Sales and Marketing, and Supply Chain Management components. The procurement and sourcing module within Supply Chain Management has been heavily integrated into other custom production systems.

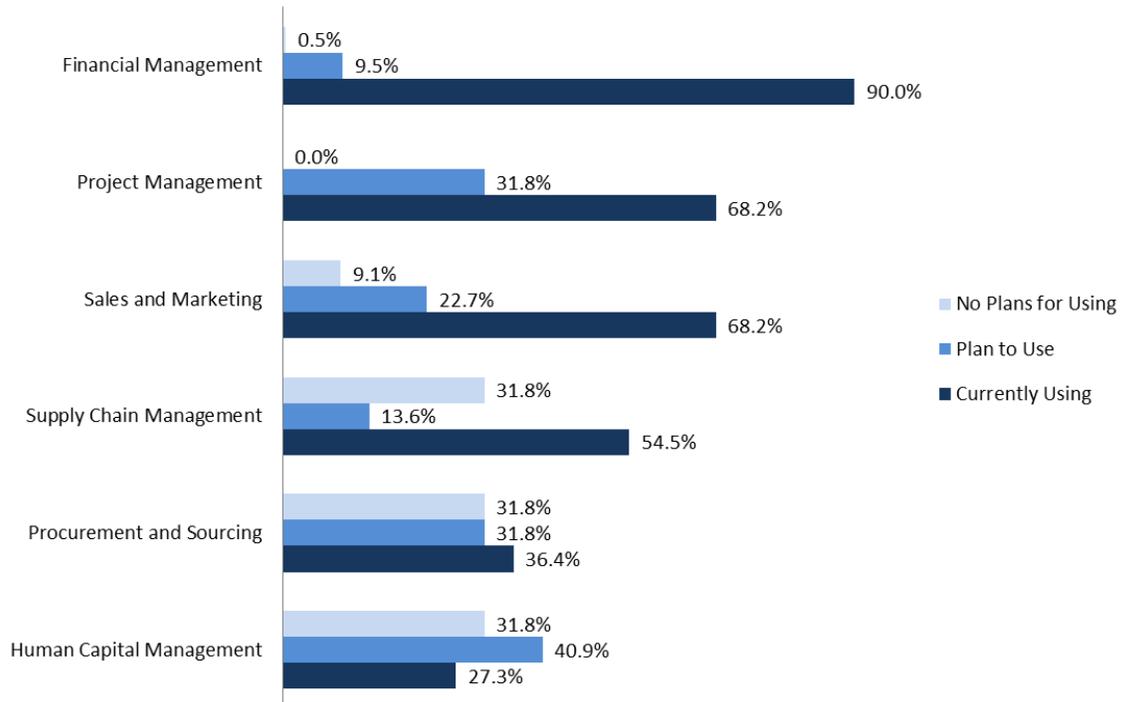
Forrester also surveyed 22 other organizations that are currently using Microsoft Dynamics. These companies varied in size (with a third over 20,000 employees) and represent a variety of industries. The number of users on Microsoft Dynamics varied from less than 100 (about 23% of respondents) to over 15,000 users (about 18% of respondents), with an average number of users around 6,800. Sixty percent of respondents had at least one legacy ERP solution prior to investing in Microsoft Dynamics.

Figure 3 below shows which Microsoft Dynamics components are being used by the survey respondents.

Figure 3

Respondents Use The Financial Management And Project Management Components The Most

“Which components of Dynamics AX 2012 are you currently using or planning to use within the next 12 months?”



Base: Survey of 22 IT decision makers, US mid-size organizations

Source: Forrester Research, Inc.

The interviews and surveys uncovered the following salient points:

- Respondents chose Microsoft Dynamics over the competitor solutions because it was a good fit, was easy to implement, and provided excellent value:
 - “In 2010 we undertook a formal search for an ERP provider. We judged Microsoft Dynamics to be the easiest solution to implement and operate.”
 - “We have a small IT team, and they all have a lot of preexisting knowledge of Microsoft products as a .NET shop. That made Dynamics the logical choice for us.”
 - “Dynamics gives us the possibility to develop in a language similar to what we already use. It is very good in terms of simplicity to install and manage.”

- “Many of the other solutions we looked at were either too expensive or a poor fit for our industry.”
- “The total cost of implementation, licensing, consulting, etc., was much less than the others.”
- Microsoft Dynamics was critical to supporting growth and expansion:
 - “In 2007 our company was not so big. We wanted to expand to India and China, and Microsoft Dynamics helped us do that.”
 - “Our previous ERP solutions could not scale to support our planned growth. We are forecasting 3x growth in the next few years. With Microsoft Dynamics we can now achieve that.”
 - “Microsoft Dynamics provides much better support for our international operations and expansion.”
- Consolidating ERP solutions into a single one was very important to the interviewed companies:
 - “We decided that a top priority for the company was to have a single system that housed all customer and product data. Previously, a customer could exist in multiple systems, and we did not have a holistic view of them. Different ERP systems also meant different business processes around the world.”
 - “We needed to harmonize across the entire company. Consistency was very important to us.”
- The degree of flexibility that Microsoft Dynamics provides was viewed as very favorable:
 - “We have a lot of custom-built systems. Dynamics AX has a service model that is easy for us to program against. We can tie all of these custom systems directly into AX instead of having to reverse-engineer the business logic.”
 - “We can use custom business logic in Dynamics. The alternative approach of reverse-programming the logic would have been too much work for our small IT team.”
 - “What we really wanted from an ERP system was customizability and programmability into external systems. AX fit the bill. It also had a good ecosystem for extra software such as business intelligence and international support.”
- Microsoft Dynamics fits into the interviewed companies’ cloud strategies:
 - “In the future, we plan to host more in the cloud. Dynamics will make this much easier to do.”
 - “Cloud computing is part of the direction we are going in. Microsoft Dynamics fits nicely into this road map.”

Composite Organization

Based on one company interview and 22 survey respondents from companies currently using Microsoft Dynamics, Forrester constructed a composite organization that encompasses characteristics heard across the

interviews. Our composite organization has benefited from replacing four previous ERP solutions, along with other point solutions, with Microsoft Dynamics. Forrester then created a TEI financial framework and an associated ROI analysis for this composite company. This Forrester study illustrates the financial impact of using Microsoft Dynamics for a typical enterprise customer.

Forrester named the composite organization Acme Flow Control (Acme). Acme designs, manufactures, and sells control valves and seals for industrial uses. The company is headquartered in the United States and has manufacturing facilities in the US, Mexico, Poland, and China. Most manufacturing is still done in the US. It has sales offices in the UK, Japan, and Sao Paulo.

Acme has a total of 4,000 employees. The internal IT development and operations organization has 20 team members. They support the ERP systems and other core business systems. A separate, specialized IT department handles production systems on the factory floor. Acme deployed Microsoft Dynamics across the entire organization. The Financial Management, Supply Chain Management, and Business Intelligence and Reporting modules were implemented. The vast majority of employees are assembly-line workers who do not directly use Microsoft Dynamics. This leaves approximately 500 employees who use Microsoft Dynamics on a daily basis.

See Appendix A for a more complete composite organization description.

Framework Assumptions

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

Table 2

Model Assumptions

Ref.	Metric	Value
A1	Annual blended fully burdened cost* — IT employees	\$130,000
A2	Annual blended fully burdened cost* — business employees	\$110,500
A3	Annual blended fully burdened cost* — warehouse employees	\$45,500
*Fully burdened cost includes insurance, paid vacation, and any other cost borne by the organization.		

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 organization.

Some dollar values presented in this study have been rounded to the nearest whole cent or dollar. Therefore, some of the calculation results in the subsequent tables may not exactly match the results if the reader follows the formulas and values presented.

Costs

This section describes the costs associated with implementation and ongoing management of Microsoft Dynamics.

Implementation Internal Labor

There was a wide range of implementation times, depending on the size of the organization and Microsoft Dynamics components being added. See Figure 4 below for the distribution of duration times. For Acme, the project lasted 11 months, starting from when Microsoft Dynamics was chosen. This was split into two phases. The first phase consisted of planning, core development, and rollout in the United States. Phase 2 consisted of further rollout to international locations. Both phases are included in the initial period in order to show three full years of related benefits. From the IT teams, there were four FTEs working on the project. This included project management, development, database, infrastructure, and business analyst resources. There was also representation from the various business groups, both functional and geographic. Nine business representatives worked on the project for 30% of the time.

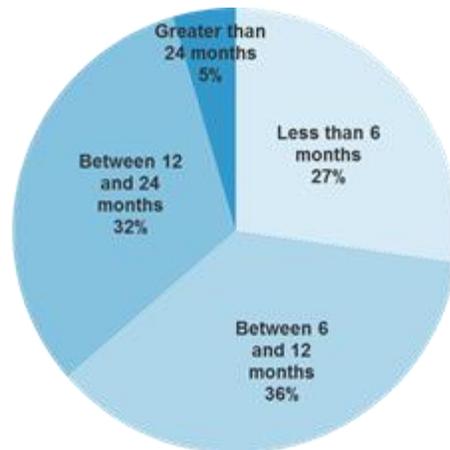
Table 3
Implementation Internal Labor

Ref.	Metric	Calculation	Initial
B1	Number of months — phase 1		7
B2	Number of months — phase 2		4
B3	Number of IT FTEs		4.0
B4	IT monthly fully burdened cost	A1/12 months	\$10,833
B5	Number of business FTEs	9 resources * 30%	2.7
B6	Business fully burdened cost	A2/12 months	\$9,208.33
Bt	Implementation internal labor	$(B1+B2)*(B3*B4+B5*B6)$	\$750,154

Source: Forrester Research, Inc.

Figure 4

Implementation Time Variation Is Mainly A Factor Of Company Size

”Roughly how long did it take to implement Microsoft Dynamics AX within your environment?”

Base: Survey of 22 IT decision makers, US mid-size organizations

Source: Forrester Research, Inc.

Professional Services

The level of professional services required by the interviewed companies, and therefore, Acme, was not particularly onerous. The level of effort was higher early in the project when designing and deploying the technologies and defining business processes. Most of the migration and development efforts were done by internal resources. There was a small spike in the number of consultants leading up to the production launch to do final testing and troubleshooting. There were four FTE consultants working throughout both phases of the implementation.

There are some ongoing professional services to help deploy new features and implement new projects. Neither the ongoing costs nor the incremental benefits from subsequent work are included in the ROI analysis. There is discussion of these components in the Flexibility section of this study.

Table 4
Professional Services

Ref.	Metric	Calculation	Initial
C1	Number of consultant FTEs		4
C2	Number of weeks — phase 1	$B1 * 4.2 \text{ weeks}$	29
C3	Number of weeks — phase 2	$B2 * 4.2 \text{ weeks}$	17
C4	Average daily rate	$\$1,200 * 5 \text{ days}$	\$6,000
Ct	Professional services	$C1 * (C2 + C3) * C4$	\$1,108,800

Source: Forrester Research, Inc.

Software Licenses

Microsoft Dynamics licenses are primarily based on the number of users. The Client Access License cost varies depending on that user's role.² License costs are also impacted by the number of server licenses, overall size of the deployment, and any other existing enterprise agreements. For Acme, there were 500 CALs, consisting of the Enterprise, Functional, and Task roles. Most employees working in manufacturing do not require direct access to Microsoft Dynamics. In addition to the initial licenses costs, there is a 16% annual maintenance/support contract that is required for the first year. In following years it is optional, but most companies continue to pay for this.

Readers are strongly encouraged to work with their Microsoft account manager to understand their unique licensing costs.

Table 5
Software Licenses

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
D1	Microsoft Dynamics licenses		\$750,000			
D2	Maintenance and support	$D1 * 16\%$		\$120,000	\$120,000	\$120,000
Dt	Software licenses	$D1 + D2$	\$750,000	\$120,000	\$120,000	\$120,000

Source: Forrester Research, Inc.

Hardware

The hardware requirements for Microsoft Dynamics are very small. Each of the interviewed companies bought a single physical server. This server was virtualized to provide the necessary application and database servers. Failover/backup protection was completed using existing disaster recovery (DR) hardware in a secondary facility.

Table 6

Hardware

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
E1	Hardware costs		\$25,000			
E2	Maintenance	$E1 * 15\%$		\$3,750	\$3,750	\$3,750
Et	Hardware	$E1 + E2$	\$25,000	\$3,750	\$3,750	\$3,750

Source: Forrester Research, Inc.

Training

Training for the IT organization was provided by the external consultants. Acme trained internal business resources to provide user training to the 500 Microsoft Dynamics users. This was done during the initial period and Year 1 of the study. Only these trainers' costs are included in the ROI analysis, but not any downtime for when the individual users were going through training sessions.

Table 7

Training

Ref.	Metric	Calculation	Initial	Year 1
F1	Number of end user trainers		0.25	1.50
F2	Trainer fully burdened cost	$=A2$	\$110,500	\$110,500
Ft	Training	$F1 * F2$	\$27,625	\$165,750

Source: Forrester Research, Inc.

Total Costs

Table 8 summarizes costs associated with the implementation of Microsoft Dynamics.

Table 8

Total Costs — Non-Risk-Adjusted

Ref.	Cost category	Initial	Year 1	Year 2	Year 3	Total
Bt	(\$750,154)				(\$750,154)	(\$750,154)
Ct	(\$1,108,800)				(\$1,108,800)	(\$1,108,800)
Dt	(\$750,000)	(\$120,000)	(\$120,000)	(\$120,000)	(\$1,110,000)	(\$750,000)
Et	(\$25,000)	(\$3,750)	(\$3,750)	(\$3,750)	(\$36,250)	(\$25,000)
Ft	(\$27,625)	(\$165,750)			(\$193,375)	(\$27,625)
	(\$2,661,579)	(\$289,500)	(\$123,750)	(\$123,750)	(\$3,198,579)	(\$2,661,579)

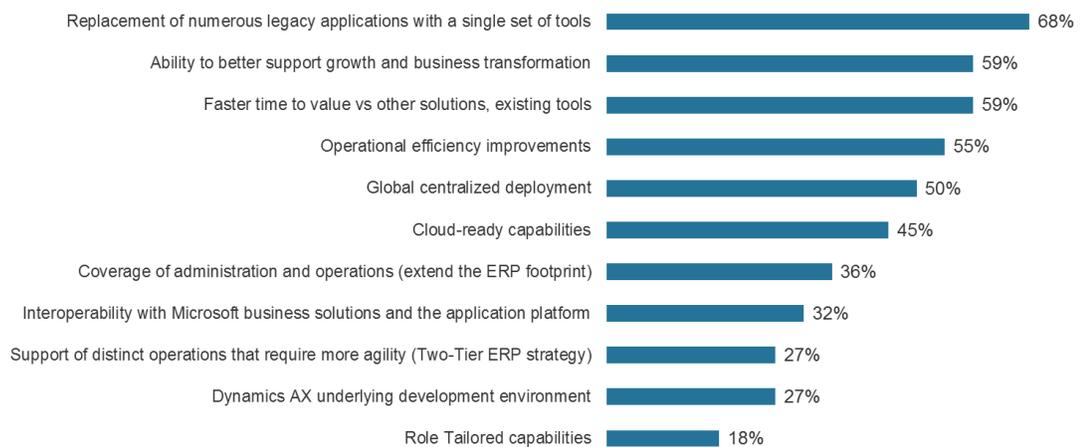
Source: Forrester Research, Inc.

Benefits

The interviewed and surveyed companies realized many benefits from implementing Microsoft Dynamics. Figure 5 below shows the breadth of benefits reported in the survey. This section focuses on a selected subset of benefits that were especially important to the interviewed companies, the first three of which are included in the ROI analysis. Readers are encouraged to consider all benefits, whether or not they have been quantified, when determining the total ROI for their own organization.

Figure 5
Client Benefit Expectations For Dynamics AX 2012

“At a high level, please describe the types of business and technological benefits you have realized/expect to realize. You may wish to refer to these capabilities of Dynamics AX 2012 for your response. (Select all that apply.)”



Base: Survey of 22 IT decision makers, US mid-size organizations

Source: Forrester Research, Inc.

Eliminated System Licenses And Maintenance

On average, the interviewed and surveyed companies replaced six systems with Microsoft Dynamics. Acme replaced four systems. These multiple systems were a by-product of acquisitions and autonomous, organic growth in different countries. In addition to license and maintenance savings, not having to support multiple systems reduces IT team effort.

For ROI analysis purposes, only eliminated ongoing maintenance costs are included in this benefit. This is based on an 18% annual maintenance charge on \$2 million in licenses for retired legacy systems. There may have been additional, new licenses required for added features, growth, and new versions in the retired systems which are not factored into the analysis. They were not included because of the very large variation from one company to the next. The reader should consider any future license costs that can be avoided by retiring legacy systems.

Table 9
Eliminated System Licenses And Maintenance

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
G1	License cost of eliminated systems		\$2,000,000	\$2,000,000	\$2,000,000
Gt	Eliminated systems licenses and maintenance	G1*18%	\$360,000	\$360,000	\$360,000

Source: Forrester Research, Inc.

Reduced IT Team Size

Transitioning to Microsoft Dynamics has resulted in a smaller, more-flexible IT organization. One interviewee said, “We can now move more quickly and are more agile. Dynamics has made supporting operations much easier.” The team size was able to be reduced because it no longer needs to support multiple systems, can centralize more operations and support, and can automate more activities.

Acme was able to reassign existing resources and avoid additional hires on the central IT team. Additionally, the level of support required at the large, remote locations was significantly reduced. Each of the eight locations had one FTE, and that effort could be reduced by 25%, on average. The smaller team is able to do more than the previous, larger team and focus more effort on activities “that make the company unique.”

Table 10
Reduced IT Team Size

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
H1	Number of central IT team resources redeployed		1.5	3.0	3.0
H2	Number of avoided additional hires		0.5	1.0	2.0
H3	Number of local IT support resources (locations) redeployed	8*25%	2.0	2.0	2.0
H4	Total IT FTE positions eliminated	H1+H2+H3	4.0	6.0	7.0
H5	Average IT fully burdened cost	=A1	\$130,000	\$130,000	\$130,000
Ht	Reduced IT team size	H4*H5	\$520,000	\$780,000	\$910,000

Source: Forrester Research, Inc.

Increased Business User Productivity

The companies interviewed and surveyed described how Microsoft Dynamics has made business users more productive. One company said that “it is much easier to scale than in the past. Instead of adding 30 employees in customer service and accounting, we were able to achieve the same growth with 10 new employees.” Another interviewee described how logistics staff could be decreased 25% to 50% in different facilities. This is achieved by providing business users with the tools they need to do their jobs more efficiently and by increasing process automation.

Table 11
Increased Business User Productivity

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
I1	Number of business FTEs eliminated/avoided		5	10	20
I2	Average business user salary	=A2	\$110,500	\$110,500	\$110,500
I3	Number of logistics FTEs eliminated		3	15	25
I4	Average warehouse fully burdened cost	=A3	\$45,500	\$45,500	\$45,500
It	Increased business user productivity	I1*I2+I3*I4	\$689,000	\$1,787,500	\$3,347,500

Source: Forrester Research, Inc.

There are a wide variety of ways in which a company can achieve increased business user productivity and operational effectiveness. The quantified examples provided in this study are a couple of ways the two interviewed companies achieved this. Table 12 shows several more examples of operational efficiency reported by survey respondents. Readers are highly encouraged to consider their own organization and potential ERP deployment to identify all opportunities to improve business user productivity and operational effectiveness

Table 12

Efficiency Improvements For Specific Use Cases

“For each operational efficiency improvement area you identified, what has been the percent efficiency improvement since implementing Microsoft Dynamics AX?”

% improvement	Planning/ forecast reporting	Financial management	Inventory management	Manufacturing operations
Less than 10%	7	8	8	10
Between 10% and 20%	4	5	1	4
Between 21% and 30%	4	3	1	
Between 31% and 40%		1		
Between 41% and 50%				
Between 51% and 60%	1	1		
Between 61% and 70%		1		
Between 71% and 80%	1			

Base: Survey of 22 IT decision makers, US mid-size organizations

Source: Forrester Research, Inc.

Total Benefits

Table 13 summarizes the total quantitative benefits associated with implementing Microsoft Dynamics.

Table 13

Total Benefits — Non-Risk-Adjusted

Ref.	Benefit category	Year 1	Year 2	Year 3	Total
Gt	Eliminated systems licenses and maintenance	\$360,000	\$360,000	\$360,000	\$1,080,000
Ht	Reduced IT team size	\$520,000	\$780,000	\$910,000	\$2,210,000
It	Increased business user productivity	\$689,000	\$1,787,500	\$3,347,500	\$5,824,000
	Total benefits	\$1,569,000	\$2,927,500	\$4,617,500	\$9,114,000

Source: Forrester Research, Inc.

Improved System Reliability And Uptime (Non-Quantified)

Some of the interviewed and surveyed companies reported that the legacy systems replaced with Microsoft Dynamics were unstable and often suffered outages. This can further impact business user productivity, damage customer perceptions, and cause additional IT effort to get systems back up.

One company described the issues very well. “Our old ERP system was crashing a couple of times a day. When that happened, our front office came to a complete halt. Our IT team spent a lot of time putting in place contingencies so that the ERP system being down would not shut down production. These outages impacted a couple of hundred employees. Some of them had to come in on weekends to complete their work.” Since implementing Microsoft Dynamics, the outage problems have gone away.

Better Access To Information And Decision-Making (Non-Quantified)

Microsoft Dynamics’ flexibility to integrate with systems and data repositories can make data more accessible to business users. This contributes to the business productivity benefit quantified above, and is also worth highlighting separately. One respondent said, “We now have more-timely access to data. Also, we no longer need to spend time creating manual spreadsheets. We now know where inventory is in real time, and that is incredibly valuable to us.” Another said that “we can touch the data directly, which speeds things up. In the past we did not have real-time access to data.” Readers should consider the ways better and timelier access to data by the end users delivers benefits to the organization. Improved business intelligence is especially important for global companies.

Increased Business Performance (Non-Quantified)

Many of the previously described benefits touch on overall improved business performance. A robust and easy-to-use ERP solution such as Microsoft Dynamics can radically change a company in terms of time-to-market, IT and business employee effectiveness, and growth potential. Figure 6 outlines some of the benefits mentioned by the survey respondents.

Figure 6

Impact Of Microsoft Dynamics on Top Line Growth

“You noted that your company uses Microsoft Dynamics AX to support growth and business transformation. Thinking about this, what are some of the ways Microsoft Dynamics AX has had a positive top line impact on your organization?”



Base: Survey of 22 IT decision makers, US mid-size organizations

Source: Forrester Research, Inc.

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 Microsoft Dynamics 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).

Microsoft Dynamics makes organizations inherently more agile by reducing time-to-market for new services and products dependent on data and information technology. Greater standardization of business processes enables increased interoperability and faster rollouts. A previous investment in Microsoft Dynamics can also create additional, future benefits by adding new modules and rolling out to other parts of the organization. All of the interviewed companies are looking to add features and integrate more data repositories. These flexibility benefits were not 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 Microsoft Dynamics 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 Microsoft Dynamics,

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 risk 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 implementation costs could vary based on the level of Microsoft programming skills, e.g., .NET, that the IT organization already has.
- The implementation costs could take longer than anticipated based on the complexity of business processes and features included in legacy systems being replaced.

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

- Business user productivity gains are dependent on the types of business functions that are being redeployed in Microsoft Dynamics.
- IT organization productivity gains can vary based on the existing team size and spare capacity.
- If a company is not replacing legacy solution, there will not be an opportunity to eliminate license costs. However, business-related benefits should be much higher.

Table 14 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 14
Cost And Benefit Risk Adjustments

Costs	Low	Most likely	High	Mean
Implementation internal labor (low risk)	98%	100%	110%	103%
Professional services (low risk)	98%	100%	110%	103%
Software licenses (medium risk)	100%	100%	125%	108%
Hardware (no risk)	100%	100%	100%	100%
Training (no risk)	100%	100%	100%	100%
Benefits	Low	Most likely	High	Mean
Eliminated systems licenses and maintenance (high risk)	50%	100%	100%	83%
Reduced IT team size (medium risk)	80%	100%	103%	94%
Increased business user productivity (high risk)	50%	100%	100%	83%

Source: Forrester Research, Inc.

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 Microsoft Dynamics. These are shown in Table 15 below.

Table 15
Cash Flow — Non-Risk-Adjusted

Categories	Initial	Year 1	Year 2	Year 3	Total	PV
Costs	(\$2,661,579)	(\$289,500)	(\$123,750)	(\$123,750)	(\$3,198,579)	(\$3,120,009)
Benefits	\$0	\$1,569,000	\$2,927,500	\$4,617,500	\$9,114,000	\$7,314,981
Net benefits	(\$2,661,579)	\$1,279,500	\$2,803,750	\$4,493,750	\$5,915,421	\$4,194,972
ROI	134%					
IRR	69%					
Payback period	19 months					

Source: Forrester Research, Inc.

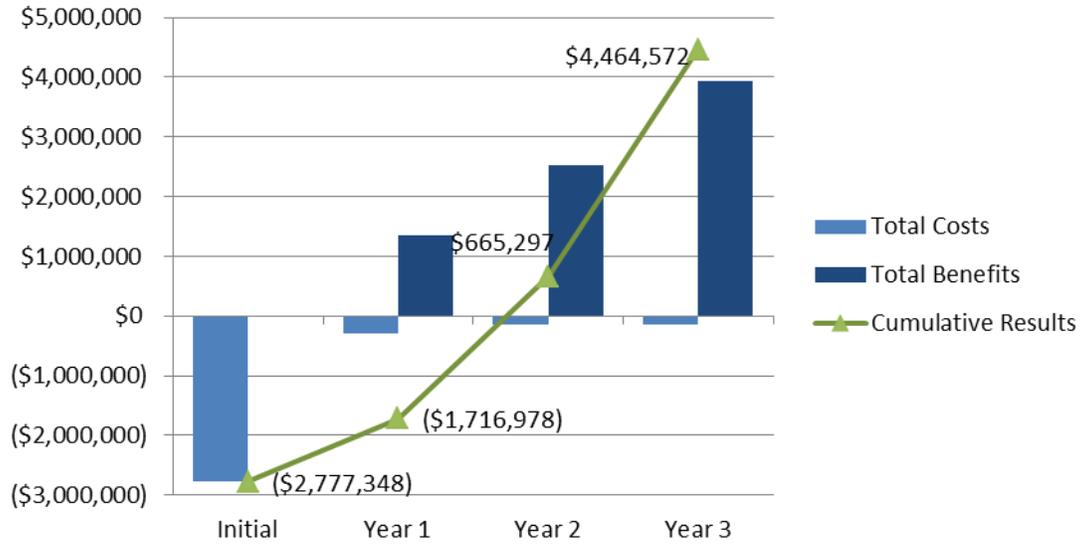
Table 16 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 14 in the Risk section to the cost and benefits numbers in Tables 8 and 13.

Table 16
Cash Flow — Risk-Adjusted

Categories	Initial	Year 1	Year 2	Year 3	Total	PV
Costs	(\$2,777,348)	(\$299,100)	(\$133,350)	(\$133,350)	(\$3,343,148)	(\$3,259,651)
Benefits	\$0	\$1,359,470	\$2,515,625	\$3,932,625	\$7,807,720	\$6,269,550
Net benefits	(\$2,777,348)	\$1,060,370	\$2,382,275	\$3,799,275	\$4,464,572	\$3,009,899
ROI	92%					
IRR	53%					
Payback period	21 months					

Source: Forrester Research, Inc.

Figure 7
Composite Organization Three-Year Risk-Adjusted ROI



Source: Forrester Research, Inc.

Microsoft Dynamics AX 2012: Overview

According to Microsoft, Microsoft Dynamics AX 2012 is a business solution for global enterprises that supports industry-specific and operational business processes, along with comprehensive, core enterprise resource planning (ERP) functionality for financial and human resources management. It is a business solution that supports both operational and administrative processes of organizations; this single solution comes with localizations, in the box, for 36 countries. With a specialized focus on manufacturing, retail, service industries, and public sector, Microsoft Dynamics AX includes capabilities such as:

- Financial management.
- Human capital management.
- Manufacturing.
- Supply chain management.
- Project management and accounting.
- Retail.
- Business intelligence and reporting.

Appendix A: Composite Organization Description

Based on two company interviews and 22 survey respondents from companies currently using the Microsoft Dynamics AX 2012, Forrester constructed a composite organization that encompasses characteristics heard across the interviews. Forrester then created a TEI financial framework and an associated ROI analysis for this composite company. By aggregating the findings from the customer interviews and portraying a composite organization that has benefited from replacing four previous enterprise resource planning (ERP) solutions, along with other point solutions, with Microsoft Dynamics AX 2012, this Forrester study illustrates the financial impact of using Microsoft Dynamics for a typical enterprise customer.

Forrester named the composite organization Acme Flow Control (Acme). Acme designs, manufactures, and sells control valves and seals for industrial uses. The company sells through its own sales force as well as a global network of distributors and resellers. The company is headquartered in the United States and has manufacturing facilities in the US, Mexico, Poland, and China. Most manufacturing is still done in the US. It has sales offices in the UK, Japan, and Sao Paulo. Acme has extensive sales support and service activities. The latter is a profit center for the company. Seventy percent of its customers are in the United States.

Acme has a total of 4,000 employees. The internal IT development and operations organization has 20 team members. They support the ERP systems and other core business systems. A separate, specialized IT department handles production systems on the factory floor. Total revenues in 2013 were \$750 million.

Acme decided to implement Microsoft ALM solutions because the previous ERP solution has performance problems and did not support future needs. There were frequent system outages that impacted user productivity and production output. Additionally, Acme is looking to open multiple new sales offices around the world, and expanding the prior ERP solution to these geographies was proving very challenging.

Acme deployed Microsoft Dynamics AX 2012 across the entire organization. The Financial Management, Supply Chain Management, and Business Intelligence and Reporting modules were implemented. The vast majority of employees are assembly-line workers who do not directly use Microsoft Dynamics. This leaves approximately 500 employees who use Microsoft Dynamics on a daily basis.

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.

Appendix D: Endnotes

¹ Forrester risk-adjusts the summary financial metrics to take into account the potential uncertainty of the cost and benefit estimates. For more information on Risk, please see page 23.

² Source: Microsoft (http://download.microsoft.com/download/1/A/4/1A4CA2CF-FE7C-4629-921C-B41CD63FC021/Microsoft_Dynamics_AX_2012_R2_Licensing_Quick_Reference_Guide-CustomerEditionDec2012.pdf).