Dear Result,

Thank you for using the Analytics Value Predictor to predict the expected value from your hardware investment for Analytics.

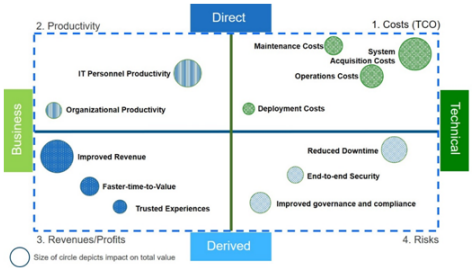
You Specified:

Your Industry: Finance
Business Imperative: End of Period Processing
Hardware Investment: 1100000
Analytics Solution: Open Data Analytics

Results Summary

Here are your personalized results for your specific Analytics initiative.

Key financial metrics – Return on Investment (ROI) and Payback Period are reported (Figure 1) for two cases: An **IBM Z14** System Analytics solution and a **x86** Analytics Solution.

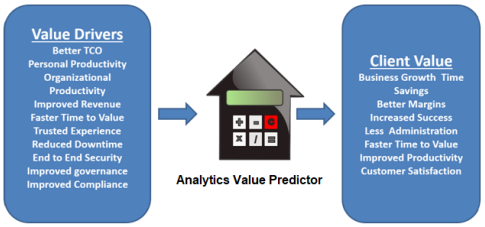


ROI and Payback for IBM System Z14 versus the x86 Solution.

The ROI measures the gain orloss generated on an investment relative to theamount of money invested. The IBM Z14 System Analytics Solution improvesyour ROI by Result% compared with a x86 Analytics Solution.

The Payback Period is the length of time(quarters)required to recover the cost of an investment. The IBM Z14 System Analytics Solution reducesyour Payback Period by Result% compared with a x86 Analytics Solution.

Figure 2(next page) depicts the costs and benefits map. IBM System Z14 costs are much lower especially software acquisition and operational costs while benefits gained from improved IT personnel and organizational productivity are higher. The benefits gained from improved security, governance anc reduced downtime are also higher.



Costs and Benefits for IBM System Z14 versus the x86 solution

Discussion and Assumptions

The Analytics Value Predictor uses a comprehensive cost-benefit analysis framework to help you evaluate your hardware investments objectively. The projected total value of ownership (TVO) and key Financial Metrics (ROI and Payback Period) over several (typically three) years are computed. This holistic framework helps you build a business case to justify your investment decisions, improve your IT organization's effectiveness and deepen collaboration between your Business and IT organizations.

Key Financial Metrics: Payback Period and, Return on Investment are computed for the two alternatives:

1. IBM Z14 System Analytics Solution
2. X86 Analytics Solution

Your Analytics Solution: Financial Metrics (ROI and Payback Period) for Analytics depend on the following:

Industry: Following choices are available for industry selection

1. Finance
2. Retail
3. Healthcare
4. Telecom
5. Others

Industry and Business Imperative:Your peers in the **Finance** industry typically deploy Analytics solutions for the following Business Imperatives:(only pick the two relevant to the industry picked. Other industry has no business imperative)

1. End of period processing
2. Revenue from user experience
3. Improve claims optimization
4. Prevent customer churn
5. Reduce risk and fraud
6. Revenue from loyalty programs
7. Improve care and reduce cost
8. Quality of customer experience

You picked **End of Period Processing**

Hardware Investment: In the TVO model,direct costs include Hardware, Software, Operations, Facilities and Maintenance costs. All costs other than Hardware (i.e. Software, Operations, …) are a multiple of the Hardware investment for each alternative. Hardware investment is the only cost input for the model and rest of the costs are derived from the Hardware investment entry automatically.

Operational applications typically run on the mainframe because of its security, reliability and performance. It has access to all the data that is needed to run the applications in a single footprint. Additional analytics workloads typically do not require more hardware and associated data center (DC) space, energy and cooling. So, no additional facilities costs have been assumed for the System Z environment.

In the x86 environment, analytics workloads require additional servers and associated infrastructure components including DC space, power and cooling. The costs associated with Hardware upgrade for a System Z are typically much smaller than costs associated with the outright purchase of ax86 system.
Your **Hardware Investment** is **$1100000.**

Analytics Solution Type:Three specific Analytics solutions are considered:

1. Open Data Analytics: IBM Open Data Analytics integrates key open-source analytics technologies with advanced data access and abstraction services. The System z version of the solution is designed to simplify data analysis. It combines open-source run times and libraries with analysis of data at its source, to reduce data movement and increase the value of insights gained from leveraging current data.

2. IBM DB2 Analytics Accelerator: IBM Db2 Analytics Accelerator is a high-performance component tightly integrated with Db2 for z/OS. It delivers high-speed processing for complex Db2 queries to support business-critical reporting and analytic workloads. The Accelerator transforms the System Z into a hybrid transaction and analytic processing (HTAP) environment. It drives out cost and complexity and enables analytics on transactional data as it is generated. It leverages your business-critical data where it originates to integrate real-time insight with real-time operational decisions.

3. IBM Machine Learning:IBM Watson Machine Learning for z/OS brings Artificial Intelligence (AI) to your most critical business applications on IBM System Z. It offers an end-to-end machine learning platform that operationalizes predictive models while also benefiting from core IBM System Z qualities of service. It allows you to develop models with your tool of choice, readily deploy within transaction applications and automatically refresh models to maintain model accuracy with confidence.

However, for x86 systems, the data must be off-loaded from the System Z which is expensive. Also, data engineers spend nearly 50% of their time performing extract, transform and load (ETL) related activities which can be completely avoided on the Z14. Also, the data may no longer be current, and this may result inaccurate insights regardless of the Analytics solution used.

You selected **Open Data Analytics**

Total Value of Ownership (TVO) Framework

The TVO framework (Figure 3) compares the costs and benefits of IBM System Z14 environment with an equivalent x86 environment. The framework categorizes the interrelated cost/value drivers (circles) for Analytics by each quadrant: Costs, Productivity, Revenue/Profits and Risks. Along the horizontal axis, the drivers are arranged based on whether they are primarily **Technical** or **Business** drivers. Along the vertical axis, drivers are arranged based on ease of measurability: **Direct** or **Derived**.

The cost/value drivers for analytics are depicted as circles whose size is proportional to the potential impact on a client's Total Value (Benefits– Cost) of Ownership or TVO.

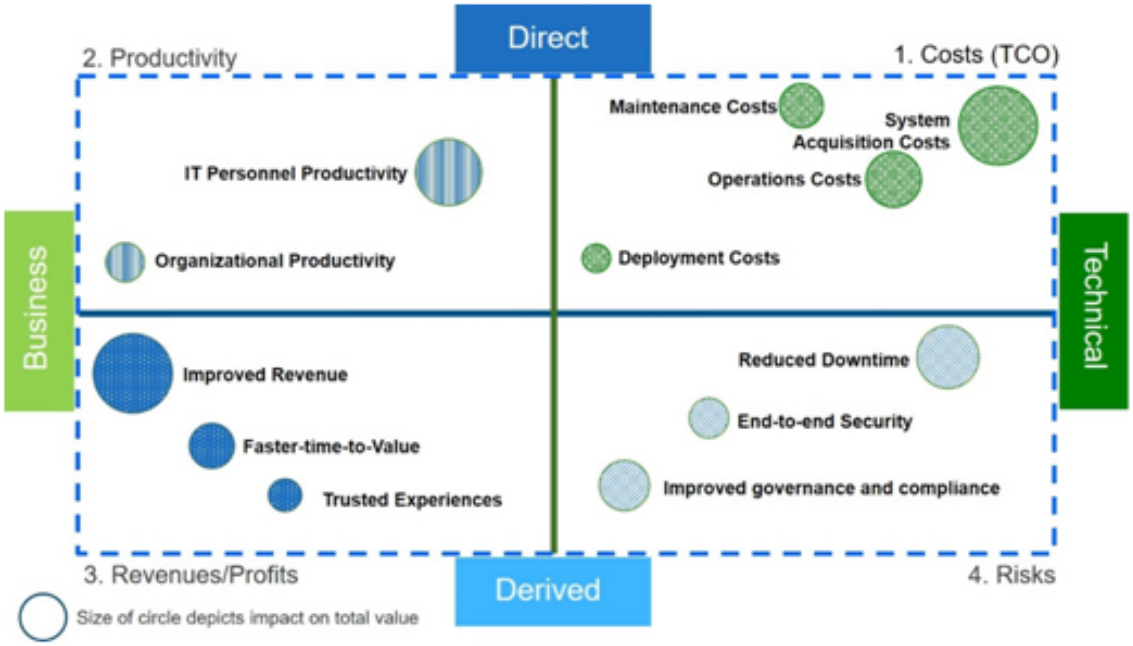
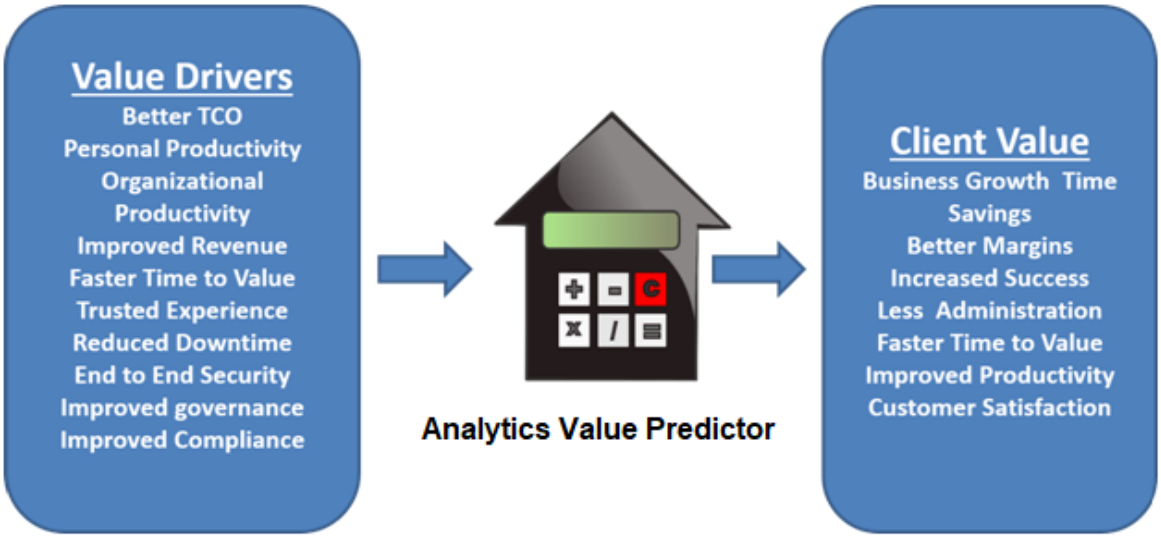


Figure 3: TVO Framework for Analytics Workflows with Cost/Value Drivers

Figure 4 depicts the Analytics Value Predictor which consolidates these input value drivers, and then computes business impacts and your Personalized Value.


Value Drivers
Better TCO
Personal Productivity
Organizational Productivity
Improved Revenue
Faster Time to Value
Trusted Experience
Reduced Downtime
End to End Security
Improved governance
Improved Compliance
Analytics Value Predictor
Client Value
Business Growth Time Savings
Better Margins
Increased Success
Less Administration
Faster Time to Value
Improved Productivity
Customer Satisfaction

Personalized Value from the Value Drivers

The value drivers quantify business impacts using best practices industry data, targeted industry expert interviews and secondary research as follows:

Better Total Cost of Ownership (TCO): Typical costs include: one-time acquisition costs for the hardware and deployment, and annual costs for software, maintenance and operations. One major difference between the Z14 and x86 is the cost of moving and storing data. In a x86 environment, typically, there are seven or more copies being maintained in other locations for analytics or other purposes. In a Z14 environment, the data resides in a single centralized location. This helps lower deployment times (one-time cost) and improve productivity. All these differential savings grow with configuration size.

Improved Personnel and Organizational Productivity: The TVO model quantifies the IT personnel productivity and that of the organization. The Z14 provides analytics in a single platform that delivers a range of managed reporting and self-service Analytics capabilities. This platform can improve the productivity of data scientists, engineers, application developers and analysts. The ability to set up and execute queries faster allows the data scientist to perform and run more experiments and refine the results. On x86 systems, data engineers spend nearly 50% of their time performing extract, transform and load (ETL) related activities which can be completely avoided on the Z14.

Improved Revenue/Profit: Faster time to value with better performance, scale, ease of deployment and integration drives higher revenues/profits. Key features include analytics on transaction data close to real time and performing analysis on detailed data. In addition, support for in-memory, parallel and vector processing improves data ingestion and query performance. Greater innovation and better decision-making capabilities with trusted data help improve compliance with regulators faster, builds the brand equity, improves margins and reduces time to market, improving revenues and profits.

Faster Time to Value: Clients can enhance the productivity of data scientists and improve time to value by deploying Analytics faster and with the most current data and better security and resiliency.

Trusted Experience: Greater innovation and better decision-making capabilities with trusted data help improve compliance with regulators faster, builds the brand equity, improves margins and reduces time to market.

Reduced Downtime: The System Z14 has almost zero downtime. It provides technology and services to help identify and remove single points of failures (SPOFs) in critical components and handles failures while maintaining user access. Components can be repaired, maintenance performed, and products migrated with minimal business impacts.

End to End Security: The Z14 secures data with pervasive encryption. It excels with security features that are built into the hardware, firmware, and operating systems which provides comprehensive data protection. By placing security controls on the data, the Z14 creates an envelope of protection around data at-rest and datain-flight.

Improved Governance and Compliance: The Z14 system reduces business disruption, productivity losses, fees, penalties and other legal and non-legal settlement costs by incorporating legal and regulatory compliance goals and policies in the system. Better governance also lowers risks associated with regulatory non-compliance in highly regulated industries.

Disclosures (In the PDF and will also be in links at the bottom of the page)