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Oracle Autonomous Data Warehouse and Oracle Analytics is Enabling a 455% ROI for d.light

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Introduction

Founded in 2007, d.light brings the benefits of solar energy to people around the world who live without reliable access to electricity. The company offers a range of solar-powered appliances, including its landmark "Everyday Lantern," a light-emitting diode (LED) lamp that charges rapidly using solar energy to provide many hours of bright light to school-age children and families. Previously, the primary option for low-income family lighting was the kerosene lamp, which uses an expensive fuel, causes respiratory problems among children, and is a significant fire hazard.

The San Francisco–based company also offers a mobile solar charging station and a variety of TVs, radios, fans, and flashlights. It has leased more than 20 million of these appliances to households and small businesses in 70 countries for as little as 50 cents per day, impacting the lives of more than 100 million people.

Under the company's pay-as-you-go model, customers make micropayments daily or weekly, eventually owning the product. To be successful, this business model requires rapid data collection and accurate data analysis to track customer accounts and analyze behavioral and market data.

To meet this need, the company has chosen a cloud-based solution from Oracle Corporation of Redwood City, California, that combines a reliable and easy-to-manage data warehouse with analytics. Oracle Autonomous Data Warehouse and Oracle Analytics both run on the latest-generation Oracle Gen 2 Cloud Infrastructure, allowing d.light to consolidate customer data and other data previously locked up in spreadsheets and to run data queries in minutes rather than hours to obtain a holistic view of its business.

By deploying the Oracle cloud solution, d.light has shortened the time it takes to load and report data from 12 hours to minutes, reducing its database administrator (DBA) workloads by 75%. Besides the savings in personnel costs, the deployment has helped d.light manage its financial risk better and identify upselling opportunities more accurately.

Business Value Highlights

ORGANIZATION:
d.light

LOCATION:
San Francisco, California, and locations across Africa, India, and China

CHALLENGE:
To provide better infrastructure to support business analytics operations

SOLUTION:
Oracle Autonomous Data Warehouse and Oracle Analytics

FINANCIAL BENEFITS:

- 455% five-year ROI
- 2.4 months to payback
- 75% more efficient DBA teams
- $1.5 million in annual time savings
- 7 hires avoided

The company has also avoided the expense of creating its own datacenter, purchasing software and hardware for the data warehouse, and hiring the professionals needed to manage operations.

To quantify the business benefits of deploying the Oracle solution, IDC interviewed Jeremiah Ochieng, Director of IT at d.light, and asked a series of questions on the investment involved and the various benefits realized. The annual benefits average over $2 million when projected over five years, resulting in a five-year return on investment (ROI) of 455% for the deployment and a payback period of 2.4 months.

Implementation

When the company began operations in 2007, it set a target of impacting 100 million lives by 2020, a milestone reached early in the year. Now its target is to impact 1 billion lives in the next 10 years.

"I was hired to develop and implement an IT strategy to achieve that goal," Ochieng said. "One of my immediate concerns was how to manage the huge amounts of data being collected and meet the need for analytics to better understand our customers and predict which of our products we could upsell."

Another factor was the need to support the global reach of the firm, which has commercial operations in India, most of Africa, some parts of South America, and large areas of Asia.

Previously, Ochieng was a database administrator, so he knew how many people would be needed to handle a conventional data warehouse. "I didn't want to hire lots of people," he said. "I also didn't have the time or budget to build an on-premises datacenter or develop a data warehouse. What I needed was a reliable and secure solution that was easy and fast to deploy and simple to manage."

"Oracle Autonomous Data Warehouse ticked all the boxes," Ochieng said. "It uses the cloud, so it is accessible globally and saves us from having to create a datacenter and supporting infrastructure. It also provides full end-to-end automation, which is critical for us."

Oracle Autonomous Data Warehouse uses machine learning to automate all database and infrastructure management, including database tuning, backups, and other routine management tasks traditionally performed by database administrators. It scales needed compute and storage resources automatically and manages everything from provisioning to life-cycle and software updates.

Auto-scaling allows the database to grow or shrink instantly online, with the user paying for only what is used. In addition, the database patches itself automatically on a user-specified schedule. Self-repairing features protect from downtime and planned and unplanned maintenance, and the self-securing database shields against both external threats and malicious internal users.

Oracle Analytics also uses machine learning to enhance data analysis and provide data-driven insights, which can be viewed on any mobile device. The integrated software suite provides enterprise-grade reporting, security, and governance and includes a business-modeling engine for "what if" analysis.

Deployment of the database proceeded quickly and without incident. "Three full-time employees were involved in the implementation, which was conducted in three phases over a six-month period," Ochieng said. "The final phase included

a number of out-of-scope add-ons requested by the business units when they recognized the potential benefits and wanted to capitalize on them."

Benefits

With the Oracle deployment, d.light has been able to streamline its operations, cut costs, and transform its data processes. The company has also been able to better understand and manage its financial risk. "We work with people who typically have no formal employment or established credit," Ochieng said. "To deal with this risk, we needed to look at data from different sources and integrate it into a holistic view of our customers. This is what our Oracle Analytics has done. We can now look at our customers in a much more meaningful way, and that is invaluable."

Before it deployed the Oracle Autonomous Data Warehouse, d.light had 16 field workers who would collect data on their laptops and upload it to a server running Tableau for data collation on Excel spreadsheets. "We had the data but no data warehouse," Ochieng said.

On a typical day, the 16 field workers would work from 4:00 a.m. to 12:00 p.m. to generate the data for three key reports. "With the Oracle Autonomous Data Warehouse, we have collapsed the eight hours per person needed to generate the reports to 20 minutes of processing time on the database," Ochieng said. "In addition, we generate close to 50 critical reports that people access on a daily basis."

Because of Oracle Autonomous Data Warehouse's auto-healing and self-patching capabilities, many of the company's field workers who were doing manual tasks could be redeployed. Some of the 16 field workers left the company, and others were reassigned. Two are spending 10% of their time on data administration. A third is developing the analytics to help with such decisions as which products to take into what regions and how best to handle collections for various products.

The Oracle Cloud–based system has also opened up additional ways to increase value. One is to bring in external data and conduct multivariate analysis. "Now we are completely data driven," Ochieng said. "For instance, several of our customers have seasonal incomes, while others rely on support from their relatives. If we have data on bumper harvests, for example, we can encourage farmers in the region to pay off their loans a little faster. Or, when local schools are opening, people are likely to be spending more on fees and supplies and may want to pay off their loans more slowly."

"Our customers are people off the electric grid who are at the bottom of the socioeconomic pyramid," Ochieng said. They often start with a lantern, which is a relatively small purchase. After that, they frequently want to upgrade to radio or TV or more lighting.

"With the Oracle Autonomous Data Warehouse, we can analyze how our customers are using the appliances and target upgrade products more accurately," Ochieng said. "Also, because we have collapsed the time for the analysis from a week to a few hours, we can generate many additional reports more frequently."

With the previous manual system, the work was tedious, with employees having to wake up early each day. Sometimes the data was inaccurate; other times, the data was not available when employees took time off for other commitments. Now the redeployed field workers have the time to interpret the data and figure out what needs to be done. The system has also led to better repayment. "We can now identify problem areas on a daily basis and deal with them," Ochieng said.

The company is also achieving a higher quality of sales. "By understanding the regional markets, we can determine what people in the different regions can afford and target them with appropriately priced appliances," Ochieng said.

Using the cloud has also saved a lot of money and headaches. "With an on-premises system, we would have needed to build a datacenter and supporting software, hardware, and network infrastructure," Ochieng said. "We would also have needed to hire two system administrators, two database administrators, and two datacenter personnel as well as a group data scientist."

Return-on-Investment Analysis

By reducing the original 16 field workers to two individuals working 10% of their time on data administration, d.light was able to save an average of more than $1.5 million annually when projected over five years. Annual savings from not having to hire additional people to implement an on-premises solution amounted to an average of $448,500 when projected over five years.

With its cloud-based solution, the company also saved on infrastructure-related costs. Dispensing with its 12 servers saved an average of $24,000 annually when projected over five years. Savings on storage costs amounted to an average of $4,975 per year when projected over five years.

IDC projects that from these savings, d.light will realize a five-year ROI of 455% from deploying the Oracle solution. Payback on the investment occurred within 2.4 months (see Table 1).

TABLE 1: ***ROI Analysis***

	Five-Year ROI Analysis
Total benefits (discounted)	$7,355,900
Total investment (discounted)	$1,325,000
Net present value (NPV)	$6,030,900
Return on investment (ROI)	455%
Payback period	2.4 months
Discount rate	12%

Source: IDC, 2020

IDC interviewed Ochieng to understand d.light's use of and investment in Oracle Autonomous Data Warehouse. IDC used this discussion to gather the information needed to quantify the benefits and investment associated with d.light's use of Oracle solutions and created an ROI analysis from the results.

IDC calculates the ROI and payback period in a three-step process:

- Measure the financial benefits directly resulting from the solution, including higher IT staff and user productivity since deployment.
- Ascertain the total investment.
- Project the investment and benefit over five years and calculate the ROI and payback period. The ROI is the five-year net present value (NPV) divided by the investment. Payback period (expressed in months) is the time required to pay back the initial investment and establish a positive cash flow. To account for the time value of money, IDC bases the ROI and payback period calculations on a 12% discounted cash flow.

About the Analyst

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Harsh V. Singh is a Senior Research Analyst for the Business Value Strategy Practice, responsible for developing return-on-investment (ROI) and cost-savings analysis on enterprise technological products. Mr. Singh's work covers various solutions that include datacenter hardware, enterprise software, and cloud-based products and services. Mr. Singh's research focuses on the financial and operational impact these products have on organizations that deploy and adopt them.

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