

How to Choose a BI Solution for the Clinical Laboratory

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Abstract - Clinical laboratory information systems (LIS) rely on new solutions such as Business Intelligence (BI) to help manage their environments. Without proper BI solution, decision-making is based on instinct rather than on data. Using current tools and processes in the LIS, it is often difficult to deliver valuable information to the right people at the right time. This systematic research conducted between the years 2007 and 2012 suggests that as BI solutions come in a wide variety of flavors, an actionable insight into 8 areas in addition to 11 key factors should be considered selecting and evaluating a BI platform.

Keywords - Business Intelligence, Clinical Laboratory, Information System, Solution, Key Factors

I. INTRODUCTION

BI has been recognized by many businesses as a valuable tool to reach strategic goals, increase profitability, improve customer satisfaction and ensure regulatory compliance.

In today's healthcare environment, organizations are swimming in an ever-deeper pool of data yet many lack the technology to use this data as valuable information. As regulations change and the amount of data increases, organizations are turning to BI solutions to harness data for precise decision-making to help improve patient outcomes, reduce costs, and ensure their organization's future. Also in a dynamic and uncertain business environment, with increasingly intense competition and vibrant globalization, there is a growing demand by healthcare businesses for analyzing patient's information quickly and efficiently.

Laboratory leaders are under constant pressure to do more with less, and it is clear that they need to leverage their most valuable asset, data. The laboratory has been a leader of automation and digitization within the hospital for more than a decade. Thus, it has an opportunity to set the stage for the rest of the healthcare systems in improving quality and decreasing costs through the use of that information. But with current tools and processes within LIS, it is often challenging and burdensome to deliver that valuable information to the right people, at the right time. It is now crucial for laboratories to be equipped with analytics solutions that empower them with the insight required to survive and thrive in the ever-changing healthcare environment.

For the laboratory, BI solutions extract, mine and analyze information from LIS, HIS, Pathology, Blood Bank,

Outreach, Payroll and/or Materials Management systems to provide business performance management, predictive analytics and dashboards on the key performance indicators that matter most to the Laboratory.

Choosing the right BI and analytics solution can be a complicated process. This descriptive study aims to highlight some of the key considerations when selecting a BI solution for a clinical laboratory or even a healthcare organization.

II. METHODS AND MATERIALS

Efforts were made to have a systematic search for all related deficiencies and insufficiencies on reports and articles of authorities and expert bodies in the fields of laboratory and information systems, written in English language. A search on reports and articles that were published between the years 2007 and 2012, was conducted. Then, all issues and key factors considered during evaluation of a BI platform for the LIS were extracted and categorized into groups for better understanding that are explained in the succeeding section.

III. RESULTS

The results of this research show that, current systems and processes pose significant challenges to accessing, analyzing, and sharing the data required to drive daily processes and operational improvement within the laboratory. Due to this, key decision makers often stop asking for information or decline information request and limit themselves to make decisions based on their personal experience and knowledge, rather than on data. Because they face challenges such as: timeliness, visual representation, inefficiency, lack of drill down, and lack of root cause analysis. Moreover, wasting time to run reports on servers, not only wastes a significant amount of time from valuable operational and information technology (IT) resources, but also limits the organization's ability to get detailed, actionable, and timely information which are critical to daily operations and performance improvement.

In addition, as healthcare leaders who make daily decisions that have a significant impact on both healthcare costs and patient outcomes, concerning a robust BI solution in a clinical laboratory is not optional, but mandatory. Thus, an in-depth, timely, and actionable insight into following areas is required:

- 1) Reimbursement dynamics
- 2) Competitive environment
- 3) Better access to modern medical technology
- 4) Increasing employment expenses
- 5) Growth in performance measurement and reporting
- 6) Quality satisfaction
- 7) Exponential growth in data
- 8) Patient confidence and satisfaction

Moreover, BI solutions come in a wide variety of flavors. It is critical to select a product that not only contains great technology, but is also tailored to the company and the company's teams' needs in the laboratory. Here are some key factors to consider when evaluating a BI platform:

1) Relevance:

Is the product designed and built for laboratories or healthcare organization? Does the software provider understand LIS and the database structure, governance and as such of the systems? Can the system also be used in Pathology, Blood Bank, or other areas of your business?

2) Ease of Use:

Is it intuitive and easy to use? Does it enable the users to quickly create meaningful analysis and drill down into detailed information easily? Is the laboratory's user able to create dashboards and graphs that he would be comfortable sharing with executives or customers?

3) Return on Investment:

Does the product provide targeted dashboards and data relevant to laboratory's key performance indicators? Is the system customizable to create and include the KPIs that matter most to the laboratory staff?

4) Timeliness:

Do the reports run in a reasonable timeframe? Is the user able to share reports with colleagues quickly? Do the reports automatically run so that the user doesn't have to rerun or re-create them every time?

5) Accuracy:

Does the product perform and report accurately? As the laboratory is highly based on data and the diagnostics are significantly impressed by laboratory tests, is the user confident enough to the requested results? New survey of needed BI for clinical laboratories shows high precision around 98% is needed and preferable.

6) Flexibility / Aggregation:

Does the product have the flexibility to pull data from systems or sources other than the LIS that may become important to the laboratory's user? Can the product grow with user as user needs continue to expand?

7) Ease of Implementation and Maintenance:

Is it light-touch on laboratory's user constrained LIS/IT team? Can the product be implemented without having to purchase additional capital equipment, people and so forth? Will sufficient training, support, and resources be provided to laboratory's staff? Are upgrades, maintenance, support, and hosting included?

8) Performance:

Does the BI vendor, has created and managed a database that is optimized for quick and efficient data retrieval and analysis? Does the database enable report creation within minutes, rather than hours?

9) Qualify IT team talent:

As data is not only critical to managing these complex organizations, but there is also increased demand from the government and payers for more sophisticated reporting and management, are IT teams much more responsive and supportive of BI solutions? Does the IT team focus on what is most important to the laboratory?

10) Cost-effectiveness:

Does the BI solution provide a cost-effective way to provide organization-wide access to information using familiar tools that are flexible enough to meet a wide range of needs, across a wide range of users? Does the BI solution help reduce the incremental cost for new solutions and help speed up delivery time by utilizing many of the existing tools laboratory user has in place today?

11) Level of specialty:

Does the BI solution cover needs at the personal, departmental, or organization level for the laboratory?

IV. CONCLUSION

The aim of this paper is to assist in navigating through the complicated process of selecting a BI solution, which has become a key decision that needs to be addressed. As leaders who make decisions that have a significant impact on people's lives, healthcare administrators need ready access to quality BI solutions. With the right tools, laboratories have the opportunity to lead that charge and set an example for the remainder of the healthcare delivery system.

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