Business Intelligence for CRM: A Vision Of Technical Education

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Abstract- Educational institutions worldwide are undergoing fundamental shifts in how they operate and interact with their "customers": students, alumni, donors, faculty members, and staff members. Kotler and Fox (1995) states that "the best organization in the world will be in-effective if the focus on 'customers' is lost. First and foremost is the treatment of individual students, alumni, parents, friends, and each other (internal customers). Every contact counts!" Technical education customers are demanding more attention and immediate service—that is, "Internet time." Proactive institutions are now adjusting their practices by refocusing their efforts externally. Because of the need to concentrate more on customers, many institutions are once again turning to technology—this time to customer relationship management (CRM) software. Similar to ERP, CRM solutions focus on automating and improving processes, although the focus is on front office areas, such as recruiting, marketing, customer service, and support. CRM goes several steps further than ERP by helping institutions maximize their customer -centric resources. Business Intelligence (BI) refers to technologies, tools, and practices for collecting, integrating, analyzing, and presenting large volumes of information to enable better decision making. Today's BI architecture typically consists of a data warehouse (or one or more data marts), which consolidates data from several operational databases, and serves a variety of front-end querying, reporting, and analytic tools. The back-end of the architecture is a data integration pipeline for populating the data warehouse by extracting data from distributed and usually heterogeneous operational sources; cleansing, integrating and transforming the data; and loading it into the data warehouse.

Keywords – Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), Business Intelligence (BI), Data warehouse, Database.

I. INTRODUCTION

CRM is both a business strategy and a set of discrete software tools and technologies, with the goal of reducing costs, increasing revenue, identifying new opportunities and channels for expansion, and improving customer value, satisfaction, profitability, and retention. CRM software applications embody best practices and employ advanced technologies to help organizations achieve these goals. CRM focuses on automating and improving the institutional processes associated with managing customer relationships in the areas of recruitment, marketing, communication management, service, and support. CRM takes a very customer-centric view of the entire customer life cycle, which means that a CRM business strategy places the customer at the center of the organization's universe. From the perspective of the customer, a CRM business strategy allows interaction with the college or university from a single entity that has a complete understanding of their unique status. In the case of a student, this might be seen through the interaction with and between the admissions, registration, financial aid, student accounts, and housing offices. For a faculty or staff member, a CRM business strategy would optimize interaction with departments administering benefits, payroll, staff training, information technology (IT), or facilities. From the perspective of the college or university, the CRM business strategy provides a clear and complete picture of each individual and all the activities pertaining to the individual.

II. METHODOLOGY

The customers should be contacted either with the help of web-site, e-mail, phone, fax or other media to get the information about the technical institutions. If the customers are not responded with above are contacted with follow-up e-mails.

The following customers/stakeholders are contacted with either one of the above media's and the data was collected. The individual data marts are maintained pertaining to Students, Administrators, Faculty Members, Advancement and the institution. Finally the data marts are integrated together to create final technical institutions database data warehouse.

2.1 Students-

Today's systems have little to offer students, particularly the new breed of technology-savvy students who want to be more in control of their learning environment. Today's students demand a higher level of access to information about their options, their performance, and their future. They also demand that technology resources be an integral part of their learning experience. The standard for access to faculty and student services will change as students come to expect virtual access to faculty and student services resources. The old ways of interacting with students will become untenable—like expecting them to line up for hours when instead they can choose an institution that can meet their needs on their own terms, on their schedule, with virtual support systems.

2.2 Administrators-

A CRM business strategy for technical institution administrative system would also introduce a true self-service system that empowers the administrative team to rethink the investment of administrative resources in institutional services. By shifting responsibility for information maintenance to students and faculty members, and empowering them to complete relevant processes and securely access vital information, the administrative staff can focus on more productive, rewarding, and satisfying activities—such as making personal connections with students and helping them plan for the future.

2.3 Faculty Members -

Today's systems provide little value for faculty members. In many institutions, there is a complete disconnect between student services and instructional programs. This disconnect is often mirrored in the rift between administrative and academic computing. In the new learning environment, faculty and student services are closely linked, dynamically sharing resources and strategies to enable student learning. Envision a time when faculty members can securely access student learning profiles assembled in the admissions process to prepare custom learning options for students who are having difficulty. Imagine a process whereby a faculty member can make immediate student referrals to key support programs on campus—even when working at home. Finally, with a system that is dynamically linked with students, faculty curriculum planners can develop an accurate picture of which technology resources truly make a difference in student learning.

2.4 Advancement -

Fundraising is increasingly important in technical education. The objective is to "sell" the organization's mission to donors. Success is measured by how often gift-giving solicitation results in "taking an order." Solicitation is often done by volunteers who view fundraising as sales. In the CRM approach, individualized techniques are applied to prospective donors whose connections to the institution have been established through some other relationship, such as that of an athletic supporter or music lover. The CRM approach identifies, selects, and generates lists of targeted customers with current information to build constituencies that continue gift giving long after they or their sons or daughters have graduated. These donors consider their gifts to be investments in values that are important to them. Furthermore, other people value these donors' views, making them articulate advocates of the institution. Using CRM, the entire institution, not just a small group of volunteer telephone solicitors, is involved and organized around fundraising.

2.5 The Institution-

CRM delivers a new conceptual and structural framework for directing institutional activities to attract and retain its various customers. Following are ways in which all customers of the institution can benefit from increased access to information and services.

- Students, alumni, faculty members, and staff members can access and update information from any Web enabled device, anywhere in the world.

- The evolution from point-to-point integration between applications to a single institution-wide database with integrated business rules and a workflow process library will blur the distinction between student, finance, alumni, and human resource systems.

- The needs of the customer base become the focus rather than the rigid process structure that is the focus of today's systems.

- Administrative systems are seamlessly integrated with instructional computing and communications systems.

Most important is the ability of a truly robust set of institutional processes and tools to bring the entire institution together around its people. The work of technical education should be focused on the people it serves, not on its administrative systems.

III. BUSINESS INTELLIGENCE OF TECHNICAL INSTITUTIONS

The discipline of business intelligence addresses a broad range of functional activities from data mining and statistical analysis to predictive modeling and reporting. Within the context of CRM, business intelligence is the process of leveraging detailed customer-behavior information to best manage relationships for maximum customer satisfaction, loyalty, retention and profitability.

The foundation of a CRM strategy is the capture and leveraging of the right information to enhance your customer relationships. Relationships by their very nature are a reflection of human interaction or behaviors. Information comes in different forms that require different tools and methods for effective collection, analysis and dissemination.

Similarly, business intelligence requires the right tools - data mining, decision support and analytical technologies - to collect and analyze the right information about customer behaviors. The process of BI involves using these tools and information resources to understand related behaviors and outcomes so you can make the necessary changes to your business to achieve the desired results.

There are three fundamentally different types of CRM information resources - content data, contextual data and analytical data - and each requires different tools and methods for the appropriate management and use within your CRM strategy. It is the effective integration of information across these resources that will drive your CRM strategy development and related business intelligence processes. As a result, it is important to understand the fundamental differences in information resources and their roles within an overall CRM strategy. (Table 1).

3.1 Content Data
The content data consists of all information captured about individual events and customer encounters. Content information essentially records the details, or facts, of customer encounters - who, what, when and where. This fact-based information reflects an activity that has occurred. The content-oriented information includes direct sales encounters, customer calls to the contact center and Web service interaction.

3.2 Contextual Data
Contextual data refers to the *conditions* under which an individual event or customer encounter occurs. Contextual information enhances the knowledge of basic encounter content data by providing a more comprehensive view of the conditions of an encounter.

In addition to a customer encounter (or fact), contextual data includes a broader representation of information that might have influenced the customer's behavior during the encounter. One thing to remember is the contextual information often changes over time. Thus, it is important to maintain records of customer contextual information that reflect both the current context, such as a customer address or buying propensity, as well as the historical context, such as prior demographics. This combination of current and historical data enables effective analysis of customer relationships and trends over time. Contextual information involves leveraging such internal and third-party information as customer demographics, related marketing and event campaign details, and customer historical behaviors such as buying trends and customer service interactions.

The effective integration of information content and context drives analytic applications, which evaluate the relationship of encounters under various contextual circumstances to identify predictable trends in customer behaviors. The resulting information analysis can then be incorporated into your business intelligence process. Analytical data includes customer-buying propensity by geography and other demographics, customer service preferences by channel and customer type, and customer profitability by longevity and other demographic categories.

Table 1. Business Intelligence for CRM

Content	Context	Analysis
Action	Nuance	Meaning
Event-oriented	Conditions	Trends and Comparisons
Who, What, When, Where	Environment	Impact
Capture	Relationship	Predictability

IV. RESULTS AND DISCUSSION

The first step in a business intelligence strategy is to clearly define business and performance objectives, establishing the foundation of a business intelligence road map. BI road map identifies key functional and process activities required to effectively integrate and leverage BI within overall CRM strategy and execution. The Business Intelligence strategy for CRM in Technical institutions really improve the

- Improve student recruitment and retention
- Monitor student performance against mandates and regulations
- Improve financial performance with full insight into results and full forecasting capability
- Timely access to critical information for monitoring performance against targets, assessing educator qualification and establishing and monitoring metrics to measure the success of programs and curriculum
- Provide online communication and information sharing for teachers, parents and students including performance scorecards, curriculum, events, student loans, articles, publications, schedules and assignments
- Ensure transparency in day-to-day operations
- Provide greater regulatory oversight with process optimization and records management
- Balance financial and budgetary risk and optimize funding while maintaining regulatory compliance
- Leverage investments in existing resources and infrastructure by integrating data from existing sources
- Produce BI Reports for administrators, regulators and stakeholders on performance, revenue, demographics and other factors
- Establish and monitor key performance indicators (KPIs) and metrics to objectively measure and monitor performance and results
- Analyze and act on business intelligence for promotional activities and plans
- Provide a 360° view of student and staff profiles, products, services, sales, marketing and other information
- Assess all aspects of organization performance, e.g., funding, budgets, actual vs. plan, income, profit, employee and student satisfaction, flexibility, transformation and growth
- Perform analysis to find and retain the most profitable customers, develop and analyze services manage risk, campus security, staffing and student population growth and other factors
- Create a simple, intuitive reporting system with information integrated from all enterprise data sources and present and share data in a personalized dashboard and alerts view to achieve meaningful insight into financial and operational results.

A critical step in BI strategy is to make sure that analyzing results based on the most comprehensive information available. For every customer interaction and result, the more you know about the conditions surrounding the interaction, the better you'll be able to predict key influencing behaviors.

Once trends and influencing factors are identified, establish a business process that effectively communicates expected changes in behavior to reduce negative factors or conditions and to reinforce positive behaviors. The analysis of these changes must be a closed-loop process, one that continually evaluates the impact and rate of change as well as the results.

V. CONCLUSION

Data integration flows are the back-end of a typical BI architecture. Each data mart will give a separate BI solution for Technical Institution. The whole database of Technical Institutions of different stake holders will give a clear view of BI of technical institutions for CRM.

In this paper, we have given the importance for stake holders for the sustainability of technical institutions by getting the clear requirements of each customers so that technical institutions can change themselves according to the customer's need.

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REFERENCES

[1]   Cliffs, N.J.: Prentice Hall, 1995.
[2]   Kotler, P., and Fox, K. Strategic Marketing for Educational Institutions. Englewood
[3]   M. Castellanos, A. Simitsis, K. Wilkinson, U.Dayal. Automating the Loading of Business Process Warehouses. In EDBT, 2009.
[4]   S. Chaudhuri, U. Dayal, V. Ganti. Database Technology for Decision Support Systems. In IEEE Computer 34(12), pp. 48-55, December 2001.
[5]   Q. Chen, M. Hsu. Data Continuous SQL Process Model. In CoopIS, pp. 175-192, 2008.
[6]   A.Y.Halevy, A. Rajaraman, J.J. Ordille. Database Integration: The Teenage Years. In VLDB, pp, 9-16, 2006.
[7]   W.H. Inmon. Building the Data Warehouse. John Wiley, 1993.
[8]   W. H. Inmon, A. Nesavich. Tapping into Unstructured Data: Integrating Unstructured Data and Textual Analytics into Business Intelligence. Morgan Kaufmann, 2007.
[9]   W.H. Inmon, D. Strauss, G. Neuschloss. DW 2.0. The Architecture for the Next Generation of Data Warehousing. Morgan Kaufmann, 2008.
[10] S. Luján-Mora, P. Vassiliadis, J. Trujillo. Data Mapping Diagrams for Data Warehouse Design with UML. In ER, pp. 191-204, 2004.
[11] D. Skoutas, A. Simitsis. Designing ETL Processes Using Semantic Web Technologies. In DOLAP, pp. 67-74, 2006.
[12] C. White. The Next Generation of Business Intelligence: Operational BI. DM Review Magazine, May 2005.