

A Review on the Importance/Roles of Business Intelligence in Telecommunication Industry

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Abstract

BI is a tool that integrates gathering of data, collecting information, and management of knowledge. It includes the use of systematic and analytical tools in completing and presenting information to the organization's stakeholders and decision makers. Companies related to telecommunication are into BI solutions for remaining competitive in the industry. This paper is a review of journal articles on business intelligence related to telecommunication industries all over the world. The types of BI (tactical, strategic and operational), BI application in different industries such as Telecommunication, Manufacturing and financial, the roles of business intelligence in the telecommunication industry in terms of decision making, customer relationship management, data mining, financial fraud detection, and prevention were discussed. The highlights of the gist of BI in the industry forwarded at the end of this paper.

Keywords: Business Intelligence, BI Application, Telecommunication Industry

I. INTRODUCTION

At the present time Business Intelligence has become the top priority for early stage start-ups, global enterprises, and other companies. In order to keep business competitiveness, growth driven, ensuring continuous improvement and enhancing profits, a business intelligence (BI) strategy is needed. Like any part of business, BI solutions can be used to identify and analyze all types of data that will be beneficial for businesses that include reducing cost, increasing revenue, enhancing business performance, and improving decision making.

II. DEFINITION OF BUSINESS INTELLIGENCE

Business Intelligence (BI) is a system that can be used for making decision from information generated after data compilation. Business Intelligence is an integration of data compilation, information database, and management of knowledge with the use of (systematic and analytical) tools in presenting information to the organization's decision makers, and stakeholders.

In order to make accurate and better decisions the processes and procedures in BI must integrate data compilation, sharing of data, and reporting [1].

Business Intelligence must integrate the base data and critical business information in identifying significant events, discovering new scenarios in business, and foreseeing future business complications [2]. Hence, BI integrates the group, gathering, examination, and envisaging of data for business management and strategies development.

BI is a computer-based decision analysis, and usually done online by either administrators or managers because it involves gauging, assessing options, analysing danger, and finally, execution.

III. TELECOMMUNICATION INDUSTRY AND BI

Most telecommunications companies in the world are discovering BI solutions to endure and sustain their attractiveness. For example, during knowledge-economy, due to lack of understanding in managing knowledge has resulted companies to either make lesser investment or not investing [3].

Example of telecommunication industry BI application such as fraud detection, traffic analysing and customer loyalty analysis [4]. The following table show the business intelligence application to specific telecommunication industry:

TABLE 2-0: BI APPLICATION IN TELECOMMUNICATION INDUSTRY

Application	Usage	Example
Fraud management	To reveal fraudulent activities and identifying operational problems [4] [20][21][22].	Fraud analysis Call volumes Call time Response time Employee productivity
Market analysis	Provides analytics across planning, pricing, marketing, operations and networking, in assisting management, in determining what are the most effective services plans and promotions for customer [3][4][6].	Market share Customer segmentation Customer loyalty Cross-sell analysis Price points Next to buy Service history
Financial analysis	Examination of financial performance metrics across the company with the use of intelligence in making the most accurate and profitable business decisions [3][20].	Tariffs Report revenues Analysis of costs Taxes Analysis of margins

CRM	Segmenting customers using demographics, services plans, and billing information. It allows managers to produce strategies that might capture and keep profitable customers [3] [4][10].	Churn analysis Customer scorecard Customer inquiry Customer profitability
Network optimization	Can perform comparison on a broad range of metrics across operations system and able to produce real time reports that emphasized problems for instantaneous attention [3].	Network planning Network utilization Quality of services Analysis of capacity
Billing and Sales analysis	Summarizes selling, billing, bundled, and unbundled services from terabytes of data [3] [4].	Sales Trends Sales force Product attraction Intelligent billing

IV. TYPES OF BUSINESS INTELLIGENCE

The difference between the three types of business intelligences are on the frequency in capturing, analysing, and reporting of the data as shown below.

TABLE 2-1: DIFFERENY TYPES

Types	Definition	Authors
Strategic	To provision long run business goals &	[16]

	objectives, by aggregating, performing arithmetic analysis, multidimensional analysis, mining of data, and investigation of data.			customer loyalty [6],[18]; segmenting of customers [12].
			Marketing	Customer targeting and clustering, market segmentation [6],[18].
Tactical	Used by business analysts for routine task involving in retrieving and analysing data, that will be used for short-term business decisions making.	[16]	Manufacturing	Order shipment and customer support [9].
			Financial	Analysis of claims, risks, credit cards, and frauds [12].
			Insurance	Claim activity, risk management [13].
Operational	For administering & enhancing everyday business operations. For example, meeting & responding to specific occurrences that happen during the operation.	[16][17]	Logistic	Transport and warehouse management [14].

V. BUSINESS INTELLIGENCE APPLICATIONS IN DIFFERENT INDUSTRIES

Many years ago, BI technologies and strategies were implemented in most industries. International BI (the first BI) is used for observing foreign currencies fluctuations in year 1967 [5]. Organizations often implement BI for evaluating business atmosphere for instance market research [6], analysis of competitors [7], reengineering of business process [8], planning of enterprise resources [8] and managing customer relationship [9].

TABLE 2-2: BI APPLICATIONS IN INDUSTRIES

Industries	BI Application
Telecommunication	Analysis of calls [10], assurance of network usage and detecting fraud [11]; analysis of customer churn [6],[18]; analysis of

VI. THE ROLE AND IMPORTANCE OF BI IMPLEMENTATION: TELECOMMUNICATION INDUSTRY

Business intelligence potential is growing more and more as many organization and companies analyse data and information collected in order to modulate problems faced. Using BI is very important for industries for prospects to answer the market changes and its demands, and to predict customer behaviour [15]. Organization tends to implement smart corporate strategy and business strategies for future direction and achieve long-term goals. Business intelligence in overall is deployed by organization to increase profitability. Here are the goals of this approach which are depth market, analysis, market segmentation, maintaining customer satisfaction levels, tracking customer's behaviours, performance, and overall strategic direction, customer segmentation, and decision support system [3][4][8] [18][22]. The latest use of BI is for risk analysis and fraud detection and prevention in telecommunication industry [19][20][21][22].

VII. CONCLUSION

In conclusion, BI allows the integration of data, stockpiling of information, and management of knowledge with the use of relevant tools for

either decision makers, or stakeholders usage. In fact, the telecommunications companies in the world had explored BI solutions in order to survive and maintain competitiveness of their business [3][4].

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