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Review on Business Intelligence Tools

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Abstract--- *The augmenting number of SMEs (small and medium-sized enterprises) has resulted in a multitude of naive businessmen. Adding to that, there is a lack of realization of the scale to which their business data can help them grow. Consequently, the SMEs store data in an unstructured and unorganized fashion, which can hardly be employed for business analytics and discovering trends and frequent patterns. The goal is to have an interface to get feed the data in a structured manner so as to track down trends and other overlooked aspects of an enterprise such as return on capital, KPIs (key performance indicators), break-even point etc. to suggest business actions to those SMEs to increase their profits and thereby helping them grow their business. The BI (business intelligence) tools currently in the market are targeted for large enterprises and require a significant amount of investments on infrastructure. Moreover, the current tools are cumbersome for the SMEs to install and operate. Any SME needs nothing more than a simple ETL (extract-transform-load) implementation along with supporting dashboards and analytics to make the BI tool easy to use and on-the-go. This paper is a brief study of the existing approaches to business intelligence implementation. This paper will help understand the compatibility of these approaches for any small or medium enterprise.*

Keywords--- *Business Intelligence, Dashboards, Key Performance Indicators, Small and Medium-sized Enterprises.*

I. INTRODUCTION

The basic idea is to analyse data and present actionable information to help executives, managers and other corporate members of the organization make informed business decisions. The SMEs suffer a lack of realization of the scale to which their business data can help them grow. That is what results in data that is stored in an unstructured and unorganized fashion.

The focus is on KPIs (Key Performance Indicators) and other matrices that are clearly the driving property to derive insights. The web interface represents the dashboard and that is what the user sees and drives business decisions according to it.

The speciality is to make the business executives understand the business trends using the real-time data. The real-time data is used to make insights helpful to make critical business decisions. This methodology is aimed to omit the cumbersome task of setting up Business Intelligence tools made for large enterprises into a tool for the small and medium enterprise.

Web-pages infused with data analytics for businesses like general stores, pharmacies, grocery stores, apparel outlets etc. This tool is expected to reduce costs and increase profits of any small or medium enterprise. This will also replace the current ERPs used at the point of sale at the businesses.

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The tool can be used for both product-based company or service-based company. The methodology must be capable of predicting sales, break-even point and more. Any business intelligence tool must help be created by keeping SMEs in mind, especially the 42.50 million SMEs, i.e. 95% of the total industrial units in India alone.

II. STUDY ON CURRENT APPROACH

The present tools present in the market is specifically designed only for large enterprises. These tools are developed keeping large enterprises in mind and is of no use to the executives of a SME (Small and Medium Enterprise). The present tool doesn't support real-time insights out-of-the-box, the data needs to be taken from the database to the software tool. Additionally, the tool is "software based" and thus it is machine dependent which increases the dependency of the tool, i.e. software and hardware requirements. The present tools are not usually web-based; they are tools that need a host OS to work on. This decreases the flexibility of a business owner.

The present tools are very generic and don't perform real-time data collection directly and thus it does not give real-time insights. Some existing tools depend on 3rd party applications (e.g. MS Excel). The tools have no specific features for business-centric analysis of a small enterprise.

[1] stresses on the development of Business Intelligence Tool using APIs that are open source and using data that are relevant and crucial to making business decisions. It says that this approach will decrease the inconvenience caused by using the tools that were designed for large enterprises. It also mentions about the tool being mobile but does not mention the importance of the presence of the tool at the point of sale (POS).

It is observed that various authors define Business Intelligence in a different way. For one it can be an ERP (Enterprise Resource Planning) tool, for one it can be a CRM (Customer Relationship Management) tool or any other kind of tool for that matter. For SMEs, [1] defines the exemplary model i.e. the data is stored on the local system but can also be accessed from anywhere.

According to [1], it is suggested to use web servers for fast and easy access to data but also points out that necessary steps need to be taken to keep it secure. One of the approaches suggested is to use static IP instead of dynamic IP while implementation. Keeping a local server would be costlier to maintain than to maintain a constant internet connection.

The framework in [3] might be suitable for large enterprises but won't be suitable for SMEs. The design proposed in [5] is spot on, but lacks the technical aspect of the model for a business intelligence solution. [4] and [6] lacks the very motivation of using a business intelligence tool, i.e. driving business decisions is not well stated on how we can achieve it. In contrast to [7], it won't be wrong to state that the capabilities of any BI tool can be realized only if the tool is tailor-made and is integrated end-to-end.

In [8] the application strategies are well explained but the core systems strategy lacks a bit

According to [2], there are various factors that play a role while development and usage of a BI tool in general. They are financial resources, management support, client and vendor support, level of satisfaction delivered, government regulations, user-interface and storage capacity.

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Let us scrutinize the above-mentioned factors in detail:

Financial resources: Financial resources play a major role for large enterprises however this is not the case for any SME. Since SMEs need no such infrastructure as needed by large enterprises. The cost is extremely affordable for SMEs seeing their need of features and facilities.

Management Support: Since SME owners are their own boss, they need no official approval or support from any other management staff.

Client & Vendor Support: Integration with various clients and vendors are not required in the system of an SME, however the fact that the integration is possible with the system is an added advantage for making changes in the future.

Level of Satisfaction Delivered: The productivity of the tool is measured as by the business owners as, whether the tool is driving profits for the business. If yes, what per cent of growth is due to the tool. This is what a business owner sees and this is what has to be fulfilled while delivering the product.

Government Regulations: The government regulations like internet privacy, financial norms have to be taken into consideration while developing and deploying the system to a business owner.

User-interface: User interface has to be user-friendly and universal. The key terms used in the tool must also have in detail explanation and also an option of using the tool in different languages.

Storage Capacity: The storage capacity required for any SME would be relatively low and can be stored in any personal computer. This is advantageous since there is no need to subscribe to costly cloud storage services.

It is noted that the model proposed in [2] helps to reduce the financial burden without compromising the satisfaction. It also reduces the cost of storage capacity by using local devices.

According to [4], the requirement analysis for any BI project must include various KPIs (Key Performance Indicators) suggested by the end user and business owner. KPIs are the atomic attributes that are a crucial part the metrics used to calculate the impact of various factors on the business.

[6] suggests using XML for easy deployment of services for small business. Web-based interfaces are light and flexible with respect to price. However, in recent years, JSON has been used rather than XML for several reasons. JSON is easy to parse when compared to XML and another advantage is that JSON can be parsed into ready-to-use JS (JavaScript) object. The paper also introduces the use of Vector Databases that is proven to have better access speed when compared to Relational Databases.

Below are the possible enhancements that can be made in the long run of a tool.

[3] proposes a new concept of BPM (business performance management). BPM is stated as the final component of BI. In comparison to BI, BPM can practically improve the overall business performance while BI can do it theoretically. However, practically BI hasn’t delivered the claim of improvement of business performance. BPM depends on the objectives set to strategize, adjusting to the actions taken and monitoring the effect of the performance improvements made.

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Drill down analysis is a beneficial tool to detect the bottleneck of any business management process. Drill down analysis requires the analysis of various KPIs discussed in [4]. To implement BPM successfully, the end user must be able to communicate effectively to the development team to explain them the business process of the enterprise.

In [5], BI tools are defined as tools that act as a support system to the business executive. The tool can be implemented and used in three ways.

The descriptive tool is the one that gives updates about the business of what is currently doing on in the enterprise.

The predictive tool is all about knowing the accurate projections of the future states and conditions of the business.

The prescriptive tool is what suggests business decisions based on the current facts and future predictions made by the predictive tool.

The generic BI tool helps to find the invisible data and the predictive tool helps in making decisions based on the unearthed data from the BI tool.

III. CONCLUSION

The BI tools provide access to data and their analyses in order to effectively manage enterprises across all sizes. However, the usage of BI in small and medium businesses is lower than in large companies as common BI solutions seem to be too complex or costly for small business's needs. The first part of this contribution described several trends, which can positively affect the BI usage rate in the SME sector.

For example, BI over the internet provides several advantages for smaller companies like lower implementation cost and ease of use. Another step on how to decrease BI implementation cost is to use open source tools and applications.

Identification of relevant KPIs is crucial and integrating them in a way that helps drive business decisions is important for a BI tool to be beneficial.

A perfect of blend of technological knowledge and managerial knowledge is required for successful adoption of BI system in an enterprise.

REFERENCES

[1] Talati, S., McRobbie, G., & Watt, K. (2012, June). Developing business intelligence for Small and Medium Sized Enterprises using mobile technology. *In Information Society (i-Society), 2012 International Conference on* (pp. 164-167). *IEEE*

[2] Adeyelure, T. S., Kalema, B. M., & Bwalya, K. J. (2016, September). Development of Mobile Business Intelligence framework for small and medium enterprises in developing countries: a Case study of South Africa and Nigeria. *In Computational and Business Intelligence (ISCBI), 2016 4th International Symposium on* (pp. 11-14). *IEEE.*

[3] Shi, Y., & Lu, X. (2010, November). The role of business intelligence in business performance management. *In Information Management, Innovation Management and Industrial Engineering (ICIII), 2010 International Conference on* (Vol. 4, pp. 184-186). *IEEE.c*

DOI: 10.37200/IJPR/V24I1/PR200277
Received: 22 Nov 2019 | Revised: 26 Dec 2019 | Accepted: 10 Jan 2020

[4] Gangadharan, G. R., & Swami, S. N. (2004, June). Business intelligence systems: design and implementation strategies. *In Information Technology Interfaces, 2004. 26th International Conference on* (pp. 139-144). *IEEE*

[5] Wazurkar, P., Bhadoria, R. S., & Bajpai, D. (2017, November). Predictive analytics in data science for business intelligence solutions. *In 2017 7th International Conference on Communication Systems and Network Technologies (CSNT)* (pp. 367-370). *IEEE*

[6] Grabova, O., Darmont, J., Chauchat, J. H., & Zolotaryova, I. (2010). Business intelligence for small and middle-sized enterprises. *ACM SIGMOD Record*, 39(2), 39-50.

[7] Heang, R. (2017). Literature Review of Business Intelligence

[8] Horakova, M., & Skalska, H. (2013). Business intelligence and implementation in a small enterprise. *Journal of systems integration*, 4(2), 50-61.

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