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BUSINESS ANALYTICS FOR DECISION MAKING

¹ **Chege Mark Brian Muiruri**

*Jomo Kenyatta University of Agriculture and Technology
School of Computing and Information Technology
mbmuiruri@gmail.com*

² **Sarah Nyaruguru Waiganjo**

*University of Kabianga
School of Science and Information Technology
snwaiganjo@yahoo.com*

³ **Rose Mutheu Munyao**

*Kirinyaga University College
School of Computing and Information Technology
mutherosam@gmail.com*

Abstract

Providing decision support for business processes management and decision processes is a crucial but challenging task. Business intelligence and analytics equips analytics experts with the technological capabilities to support decision processes with reliable information and analytic insights, thus potentially raising the quality of managerial decision making. More-so when leveraging e-commerce platforms with rising complex ways of doing business, it is imperative for business organisations to make calculated decisions which are supported by tools in business analytics. This paper provides insights on how e-commerce, supply chain management, human resource management and business process management employ business analytics as an enabler. Additionally, the paper concludes through business analytics initiatives, businesses and organizations gain critical insights from the structured data collected through various enterprise systems and with the emerging trends and new tools in business analytics, more intelligence will be gathered for decision making in fields such as e-government, healthcare, and security.

Keywords: *Analytics, Business Intelligence, Business Process Management, E-Commerce*

Introduction

Business analytics refers to the techniques, technologies, systems, practices, methodologies, and applications that analyze critical business data to help an enterprise better understand its business and market and make timely business decisions (Chen, Chiang, & Storey, 2012). The integration of business analytics into the overall business process can be achieved by building a closed loop decision making system in which the output of business analytics is used in the form of recommended actions. A closed loop enterprise analytics system that can support real time processing represents a fourth generation of business analytics software (Azvine, Nauck & Ho, 2003). This paper looks at application areas where business analytics is used.

E-commerce

E-commerce employs web analytics to leverage on the data collected from the customers who access their online shops. Web analytics can be defined as an evaluative technique originating from and driven by the business world in its need to get more value out of understanding the usage of its web sites and strategies therein.

Web analytics takes easily obtained statistics in order to assess website usage, measure and understand the relationship between the customer and the web site through a richer analysis of web traffic and related data. Monitoring and reporting of web site usage enables enterprises to better understand the complex interactions between web site visitor actions and web site offers, as well as leverage insight to optimize the site for increased customer loyalty and sales. Web analytics uses website information in conjunction with other data, such as demographics, customer profiles and subscription information for decision making (Phippen, 2004).

In addition, web analytics is used in tracking customers where marketers personalize communication, offers and content to make customers feel unique and special. This strategy encourages customers to spend more time and money on internet. Companies rely on various analytical methods to understand the consumer behavior and to increase their sales (Tuta, Velicu, Munthiu & Zara, 2012). The analytics reports generated enable the decision makers to maximize the results as follows:

1. **Marketers** can determine if the marketing campaign was successful and by using analytical data to find new and better solutions for future marketing programs. They can simplify processes to boost consumer response. They can analyze how the website converts more visitors into customers and which keywords are most used and lead to conversion.
2. **Web designers and developers** can improve site navigation, content and tools by using analysis. They can optimize specific website design that turns visitors away into sites that enhance user experience.
3. **Executives** have access to key performance indicators, enabling real-time performance assessment. This tool can tell a manager which search words generate the most visits, or the highest rate of convergence. By using analytics executives can learn not just to make money from the website, but also to create the most amazing and timely experiences for the customers while creating a sustainable competitive advantage.

Supply Chain Management

The influence of business analytics on performance monitoring and improving the performance of a supply chain has become an increasingly complex task and includes many management processes such as identifying measures, declining targets, planning, communication, monitoring, reporting and feedback. Thus an approach relying on conventional wisdom to making supply chain connected decisions, the use of benchmark or best-practices cannot be used to manage the supply chains. Therefore, data analysis lies at the heart of decision making in all business applications (Trkman, McCormack, De Oliveira & Ladeira, 2010).

Chen, Chiang & Storey (2012), identified business analytics as an important tool in supply chain management and as such, a correct and relevant business decision is based on bundles of large volumes of both internal and external data and is only possible with business analytics. For social media analytics of customer opinions, text analysis and sentiment analysis techniques are frequently adopted. Various analytical techniques have also been developed for product recommender systems, wish lists, and discounting system based on a customer's preferences. Further, predictive

analytics is being used by e-commerce websites for their supply chain management to ship products that have not be purchased in anticipation of the orders being placed before delivery to fasten shipping time.

Human Resource Management

Currently the main functions of Human Resource Management are recruitment, selection, training, development, employee relations, compensation, legal compliance and performance management systems. All these functions are carried out with intention for better results. In many cases Human Resource departments become more efficient by tracking on employee turnover, cost per hire and even the return on investment but they have a much harder time relating that data to better business performance. In regard to these challenges, Human Resource Management has been shifting its focus from what it does to the quality of the talent decisions it supports. This has been gradually achieved by looking at the following analytical tools for Human Resource (Harris, Craig & Light, 2011):

1. Data in order: employee database

HR should have employee database that captures all the details of the employees. This will enable him to track the skill and

competencies of the workers they have. Also from such database, HR can develop a more comprehensive database that will capture employees' attitudes, behaviors, and personality and biographical information. Such information will provide an analysis that will help the HR during recruitment exercise, by comparing the details of the applicants with the analysis of best performance of an employee.

2. Key segments: critical talent management

On the second rung, companies can use analytics to identify key segments of employees. Statistical analysis of good data yields useful segmentation – of employees, workforces, talent pools, or key skills. For example, analytics can be used to systematically and rigorously identify critical talent (such as key recruiting targets, high-potential employees and top performers). Companies make a whole range of investments aimed at finding, keeping, engaging and training the people who work for them. An analytical approach to these investments can help organizations discover which ones generate the biggest

performance payoffs – and to use that knowledge to focus their talent investments.

3. Differentiated action: focus HR investments

Segmentation is not just a categorization scheme, but should be the basis for treating groups of employees differently and targeting the most valuable ones. In this case a sophisticated segmentation enables differentiated action. At this level, HR investments can be extremely made in the employee groups or workforce segments that create the most value for the firm. Through such employees, the company will have high output results. Thus HR's ability to retain skilled, satisfied employees for the delivery function is critical to the company's business results.

4. Predictive action: customizing the employee-value proposition

HR should use analytic analysis to figure out factors or reasons that makes individual retain a given job. HR should also work out retention rate and advice the organization on what action they should take to retain individual in their organization. This application of analytics leads to predictive action, in which companies anticipate employees' preferences and future

behaviors. HR practices are to help them hold on to their valuable talented workers.

5. Institutional action: workforce planning

It's very important for every organization to have a workforce plan. This plan will help the organization to predict the kind of workers who will be an asset to them. Teams of HR staff, metrics group and business leaders should create models for each line of business and for the workforce as a whole. They look at a range of possible scenarios about business conditions and then calculate the labor needed to match them. Total headcount is not the only issue on the docket. The workforce planners also determine the ideal staffing mix (internal and external people), as well as the skills mix. This grounding in the business unit keeps workforce planning focused on corporate goals.

6. Real-time optimization: talent supply chains

Real-time optimization, is where processes are adjusted to enable a company maintain the best possible mix of skills and supply of talented workers. This is achieved by looking at the future needs for talents and skills of the workers employed, looking at the past performance. If there is any talent

gap, the identified talents gap is then communicated to the best sources according to efficiency and effectiveness of the talents needed. Some of the talents traits collected are on job performance, i.e. how well employees fit with the organization and its culture, and retention. For the first time, talent pipelines can now be developed years in advance to meet specific future talent needs (Schneider, 2006).

To ensure that talent-management is successful, the HR must:

- i. Collect the necessary data and analyze it. This will help the HR to make informative decisions.
- ii. Be very strategic. HR should work with talent and skilled workers.
- iii. Leadership- should appoint talent leaders for various sections. Must have right people with the right analytical skills
- iv. Targeting the right analytics opportunities. You cannot chase after every possible analytical opportunity – you have to pick your spots according to the likelihood for the greatest payoff.
- v. Analysts: deep analytical skills. Having disciplined and methodical approaches to measuring and

tracking global HR processes, capabilities and outcomes is only half the battle. The other half is building and using analytical skills throughout HR so that the organization can extract the most value from the data and metrics.

Harris, Craig & Light (2011) acknowledge that analytical approaches can help human resource executives to link investments in human capital to a company's returns on financial capital. More important, they can help human resource leaders actively shape their organization's future by managing talent and directing programs toward the long-term needs of the business. Statistical analysis of good human resource data yields useful segmentation of employees, workforces, talent pools or key skills. Companies make a whole range of investments aimed at finding, keeping, engaging and training the people who work for them. An analytical approach to these investments can help organizations discover which ones generate the biggest performance payoffs and to use that knowledge to focus their talent investments.

Accenture uses a five step model called DELTA (data, enterprise, leadership, targets and analysts) to summarize the essential

elements of a successful use of analytics in building human capital (Davenport et al., 2010). The DELTA model is as follows:

Data: accessible and high-quality. Since many HR functions still work with fragmented systems, processes, and capabilities, it can be challenging simply to get consistent and reliable data from across the organization. Too often, HR is strapped by many systems that generate incomparable metrics based on idiosyncratic calculations. Metrics must be consistent across units and over time so that companies can compare internal groups, benchmark externally, and track causal relationships between human capital investments and performance outcomes. In order to manage talent strategically, organizations need to use human capital metrics that can guide strategic decisions and actions, and not rely solely on backward-looking measures that simply report the past. With the right data, HR can model and predict the performance consequences of specific strategic, workforce and labor-market changes. For example, instead of simply tracking training hours per employee, companies can forecast changes in skill requirements. It can then improve investments in talent management processes and human capital capabilities.

Enterprise: strategic perspective. To take advantage of analytics, you need the integration of data, analyses and processes throughout the enterprise. Too often, HR analytics are localized and one-off operations. A disciplined and methodical approach to analyzing, forecasting, predicting and optimizing global HR processes, capabilities and outcomes will improve the impact of talent, and of the HR function, on the business.

Leadership: advocates for analytics. For a human capital analytics program to be successful, it must be led by the right people with the right analytical skills. Such leaders must also be able to manage the changes in culture, process, behavior and capabilities caused by an analytics initiative. Ideally, senior executives who are passionate about analytics and fact-based decision-making should lead the charge.

Targeting: the right analytics opportunities. You cannot chase after every possible analytical opportunity – you have to pick your spots according to the likelihood for the greatest payoff. Targets are essential for focusing any company's analytical efforts, but they are particularly critical for HR's forays into human capital analytics – largely

because there simply is not enough analytical talent in HR to allow it to be equally analytical with all their activities.

Analysts: deep analytical skills. Having disciplined and methodical approaches to measuring and tracking global HR processes, capabilities and outcomes is only half the battle. The other half is building and using analytical skills throughout HR so that the organization can extract the most value from the data and metrics. Your success with human capital analytics will depend, in large part, on HR's ability to find and nurture analytical talent – the people who produce the data, the quantitative analysis, and statistical models you need to make better decisions and achieve better results. Connecting these specialists with the business will ensure that they understand how human capital analytics can drive value for the business.

Business Process Management

Business Analytics has played a key role in shaping Business Process Management (BPM) thus proving its value for practice. This Analytics unearths contemporary and future challenges in BPM. This is by exposing the potential roadblocks and bad practices in BPM. The adoption and use of

BPM remains fragmented and there is little agreement concerning the right scoping of BPM (Rosemann & Vom, 2010; Brocke & Schmiedel, 2014). Most researchers feel there is need to establish how to size and scope BPM in an organization. This is why Brocke & Schmiedel established ten principles to assist both researchers and practitioners toward an understanding of the requirements of effective BPM. However, compulsory or mere routine use of the principles is not advocated for. Instead Readers must use their experience and judgment to apply the principles in light of the requirements of a specific BPM program. The ten principles provide normative statements on how to scope and implement BPM as well as normative advice on what not to do. This helps -:

- i. To better master the huge knowledge base on BPM available today.
- ii. Managers to use the principles as a checklist in order to assure the appropriateness of their own BPM approach.

These principles are discussed below:

Principle of context-awareness: points out that BPM require consideration of the given organizational setting. Context-awareness

involves a concern for factors that distinguish BPM contexts between organizations and within organizations. BPM should be adapted to suit the existing circumstances. It should fit the organization and, in particular, differentiate the management of business processes according to the process nature.

Principle of continuity: stresses that BPM should be a permanent practice that facilitates continuous gains in efficiency and effectiveness. If BPM-facilitating values become part of the organizational culture, BPM will be a natural part of daily work. The internalization of these values can be stimulated by adapting communication, leadership behaviors, reward structures and governance practices.

Principle of enablement: focuses on the need to develop individual and organizational BPM capabilities not merely invest in BPM tools or consultants that they may not really understand and may not be capable of fully utilizing to achieve their process objectives. It focuses on building both capabilities currently needed by an organization and dynamic capabilities needed for responding effectively to future contingencies. To establish which BPM capabilities are needed at which stage and

how to develop them, then the maturity of the company has to be put into consideration (Škrinjar & Trkman, 2013; Brocke & Schmiedel, 2014).

Principle of holism: emphasizes the need for a holistic scope of BPM that is BPM should not have an isolated focus on specific areas of an organization. The maturity model developed by Rosemann & de Bruin (2005) includes the factors strategic alignment, governance, methods, IT, people and culture to be considered in BPM. Starting with a more narrow/functional focus rather than with an enterprise wide focus can increase the initial BPM performance. Nevertheless, even such BPM initiatives need to consider the enterprise environment and the current and future implications of the project.

Principle of institutionalization: calls for embedding BPM in the organizational structure. The introduction of formal BPM roles and responsibilities ensures that the “horizontal discipline” is given its due weight and that the organization is rebalanced in favor of a more customer-centric, horizontal integration of work. Many organizations have found that a centralized BPM support organization can help raise the general level of process

orientation. These support organizations typically use multi-dimensional BPM maturity assessments to guide the journey toward becoming more process-oriented.

Principle of involvement: stresses that all stakeholder groups who are affected by BPM should be involved. Since introducing BPM typically means that many jobs change and many people will be affected, the responsiveness of people and their true commitment toward the change is critical to the success of BPM. The active involvement of employees fosters a true sense of ownership and even increases organizational performance.

Principle of joint understanding: draws attention to BPM as a mechanism to introduce and sustain a common language allowing different stakeholders to view, frame and analyze organizational systems. Process modeling is performed with a view toward using a common, often graphical language to describe, communicate and analyze processes.

Principle of purpose: highlights the role of BPM as a management method to achieve organizational change and create value. It indicates the requirement of BPM Principle of simplicity to align with a strategic

mission and goals. It focuses on the ability of BPM to create transparency about the business and the organizational system. Perusing this transparency then helps to create and improve the value that can be generated within the organization.

Principle of simplicity: suggests that the amount of resources invested into BPM should be economical. Focusing on simple solutions means balancing the inputs against the output of more efficient and effective organizational Processes. An organization should carefully choose which processes require which level of attention from a strategic, technical and staffing.

Principle of technology appropriation: emphasizes that BPM should make opportune use of technology, particularly IT. The selection, adoption and exploitation of IT should be inherent in BPM and managed from the point of view of supporting the enterprise, rather than single departments or individuals solutions.

Conclusion

Through business analytics initiatives, businesses and organizations gain critical insights from the structured data collected through various enterprise systems and analyzed by relational database management

systems. The ability to mine unstructured user generated contents has brought about unprecedented intelligence on consumer opinion, customer needs, and recognizing new business opportunities.

With the emerging trends and new tools in business analytics, more intelligence will be gathered for decision making in fields such as e-government, healthcare, and security. Therefore, business analytics is a key component in current business decision making environment.

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