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The effect of information and technological innovation in business performance

J. Felicita[1], Runu Tantuway[1] and Gnana Jayanthi J[2]

[1]Department of MBA, St.Joseph's College, Tiruchirappalli, TamilNadu, India-620002.

[2]Department of Computer Applications, J.J. College of Engineering & Technology, Tiruchirappalli, Tamilnadu, India-620 009.

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ABSTRACT

In today's dynamic business environment, the ability to improve business performance is a critical requirement for any organization. The importance of real time access has continually risen, based on Internet development and growing sources of information. As a result, firms collected huge quantities of data & relative new business tools in their effort to understand their business evolution, enhance their performance and create a strong relationship with the employees, clients and partners. The use of information systems has led to the recognition of the importance of quality management in the competitive environment. However, only few companies have taken actions to measure and enhance the quality of information& technology. One of the main attributes that a company with good efficiency could have is that it could expand the information & technology services from its business strategies, goals and needs. The main objective of this paper is to present relationship between objective, decision and performance for all hierarchical levels within a company, by identifying key factors and performance indicators, and present information tools that support performance management and decision making.

Introduction

Innovation is often perceived as the result of using of new knowledge to develop new products, or to upgrade existing products, which have better performance, operational and user features. Using the results of information and technological development is important for successful result of innovation! No organization can afford to ignore technological development, while believing that they can maintain high business performance. Information and technological innovation is successful only if an organization can translate the new technical solution into a competitive advantage. Performance of an organization is ensured by referencing a cumulating of factors, making a continuous and uniform analysis for the performance of employees and project teams, coordinating the organization to ensure the overall effectiveness of it. Information management solutions improve the performance of project teams, supporting the achievement of project objectives within time and budget defaults. One of the main traits that a company with good efficiency could have is expanding information technology in a way that would support the business strategies, goals and needs. Also, identifying, measuring, improving and aligning maintenance problems between business and information technology is gradually having more importance for the organizations. By understanding the alignment advantages, organizations for having a dynamic business try to create a link between technology and business. Paula Klein said, using Dorothy Miller's words, president of Redstone360 Management Services, Tucson, Arizona, that "IT and business should jointly define their goals before any spending or product deployment begins; meeting customer expectations is key to success. In addition, assessing BI operations and calculating tangible BI product values are critical to obtaining the most value from an investment."

According to Gartner, the Hype Cycle graphic has been used by Gartner since 1995 to highlight the common pattern of over enthusiasm, disillusionment and eventual realism that accompanies each new technology and innovation. The Hype Cycle Special Report is updated annually to track technologies along this cycle and provide guidance on when and where organisations should adopt them for maximum impact and value and according to Gartner, the "Hype Cycle for Emerging Technologies" report is the longest-running annual Hype Cycle, providing a cross-industry perspective on the technologies.

"Hype Cycle for Emerging Technologies" targets strategic planning, innovation and emerging technology professionals by highlighting a set of technologies that will have broad-ranging impact across the business," said Jackie Fenn, VP and Gartner fellow.

The main objective of this paper is to present relationship between the information and the technological impact on performance for all hierarchical levels within a company, by identifying key factors and performance indicators, and present information tools that support performance management and decision making. This paper is organized as follows. Section 2 indentifies the key factors and the Performance indicators like Business Intelligence (BI), Balanced Scorecard, Business Process Management (BPM), Business Activity Monitoring (BAM). Section 3 depicts the relationship between the information and the technological tools that support performance management and decision making. Finally, the last section suggests directions for further research.

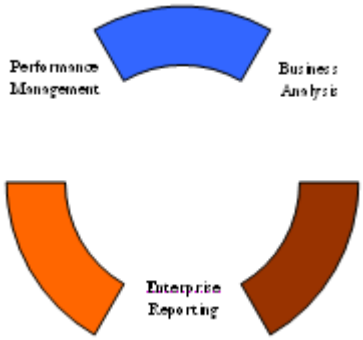
Tele:
E-mail addresses: jgnanamtcy@yahoo.com

Key Performance Indicators

A key performance indicator (KPI) is a business metric used to evaluate factors that are crucial to the success of an organization. Ultimately, they help an organization assess progress toward declared goals. Indicators include quantitative metrics such as progress Business Intelligence (BI), Balanced Scorecard, Business Process Management (BPM), Business Activity Monitoring (BAM). Since performance metrics show how well the business is doing relative to a defined strategy, they help managers to derive better business decisions.

Business Intelligence-Management needs often reports about performance indicators. When these performance indicators do not reach the desired level, additional information is required, more detailed, which help to determine causes of poor performance. The solution is offered by applications of "Business Intelligence", which includes the facility to calculate the performance indicators in real time and presenting them in graphical views and synthetic table. The expression "business intelligence" can be translated as "information about business". These applications offer the opportunity to examine the primary information used in the calculation of performance indicators, and to create different synthetic panels for each user. For example, executive management can view daily information such as: market share, price of the shares or daily sales; managers of the departments will receive information about stock levels or number of not paid invoices, and the employees will receive information about personal performance. On the basis of an efficient decision should be a clarified objective, it must define a measurement method, to determine at any time the deviation recorded for daily activity. From the perspective of software solutions, the suppliers of "business intelligence" solutions focus on functionalities for reporting and analysis.

Fig. 1- Business Performance Drivers



Business Intelligence (BI) is a concept that groups under its umbrella business, management and information tools, used in order to transform data into information, information in decisions and decisions into actions. These tools help a manager or an administrator visualize information about general function of an activity like productivity, sales performance.

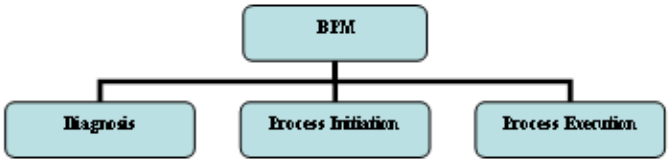
Main components of a BI system

BI systems offer more and more advance tools of active support, even changing the roles and competences. On the lower part, necessary needed competencies are supplied by database administrators (IT specialists within the organization). Analysts and experts in mathematical models are responsible for the intermediate parts. Finally, the responsible decision factor' activities are on top of the pyramid. Business Intelligence (BI) represents the capability to look inside a business and the environment in which it operates to fundament the most productive and profitable decisions. This concept was introduced in 1992 by Robert Kaplan and David Norton, continuing the research of the people from General Electric (1950). It is a powerful and innovative tool to measure performance, to measure if a firm' activities help it achieve its objectives related to its vision and strategies. It is a management system and strategic planning tool, offering a global image of a firm, transforming the strategy and firm mission into tangible and measurable objectives.

Components of BI	User	Examples
Sources of Data	Data Base Administrator	Paper, Files, Database systems, Information Providers
Data Warehouses	Real Time Processor	Online Analytical Processing
Data Exploration	Data Explorer	Bar Graph, Scattered Diagram and Pie-Charts.
Data Mining	Data Analyst	Information discovery
Data Presentations	Business Analyst	Use of MS Power Point
Making Decisions	End User	The Owner of a Firm

Business activity monitoring (BAM)

Fig. 2- BAM



It was firstly defined by Gartner as the concept of providing real-time access to critical business performance indicators to improve the speed and effectiveness of business operations. BAM is usually conducted during the execution phase of BPM. The goal of BAM is to provide real-time information about the status and results of various business operations, processes, and transactions. Enterprise-wide task of BAM is to reduce or eliminate delays, bottlenecks and inefficient use of labor and materials, while providing real-time financial and performance data. Representative feature of BAM is that it monitors many enterprise systems simultaneously and displays exceptional situation on the dashboard if symptoms of problem are identified by pre-defined rules. In the area of BAM, Kang (2008) emphasized that the potential problems with BAM are a shortage of the skilled workers, doubt over the ability of software vendors, union concerns, and so on. Buytendijk et al. (2002) asserted that creating an effective BAM environment is not only about having the right technology and processes.

Business Process Management

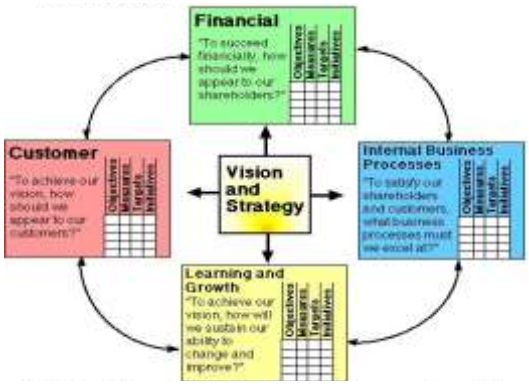
Most enterprises are struggling to change their existing business processes into agile, product- and customer-oriented structures to survive in the competitive and global business environment. In today's dynamic business environment, the ability to improve business performance is a critical requirement for any organization. So many enterprises have recently been pursuing process innovation or improvement to attain their performance goal. A business process is a sequence of activities that carries out a complete business goal. To comprehensively support business process execution, the concept of business process management (BPM) has been recently proposed. Recently, many companies that are running enterprise resource planning (ERP) system or introducing BPM system want to derive and monitor key performance indicator (KPI) to assure the effectiveness of their innovation or improvement efforts. The BPM cycle is composed of diagnosis, process design, and process execution phase. In the diagnosis phase, the operational processes are analyzed to identify problems and find areas for improvement.

In the process design phase, to-be processes are newly designed and their performance evaluation is conducted. In the execution phase, business activities are monitored, coordinated and controlled continuously for better performance. A common confusion about BPM surrounds the difference between the workflow systems of the 1990s and today's BPMS. Older, proprietary workflow systems managed document-based processes where people executed the workflow steps of the process. Today's BPM systems manage processes that include person-to-person work steps, system-to-system communications or combinations of both. In addition, BPM systems include integrated features such as enhanced (and portable) process modeling, simulation, code generation, process execution, process monitoring, customizable industry-specific templates and UI components, and out-of-box integration capabilities along with support for Web-services-based integration.

Balanced Scorecard (BSC)

The term "scorecard" signifies quantified performance measures and "balanced" signifies that the system is balanced between: short-term objectives and long-term objectives; financial measures and non-financial measures; lagging indicators and leading indicators; internal performance and external performance. It measures the link between the strategic direction and its day-to-day putting into practice, with the help of some selective measures known as KPI (Key Performance Indicators). KPI are representative for customer service department, transport and distribution, production and storage. They can be used by themselves or connected with other measurements criteria. A key benefit of using a disciplined framework is that it gives organizations a way to 'connect the dots' between the various components of strategic planning and management, meaning that there will be a visible connection between the projects and programs that people are working on, the measurements being used to track success, the strategic objectives the organization is trying to accomplish and the mission, vision and strategy of the organization. In practice, BSC recognize that global performance of a firm can't be measured by just one function, but with the help of combined independent measures

Fig. 3. The balanced scorecard framework



"The Relationship between Information and Technological Tools in Business Performance"

Information systems and organizations have a mutual influence on each other. On the other hand, information systems must be aligned with the organization to provide information needed by important groups within the organization. At the same time, the organization must be aware of and must open itself to the influences of information systems to benefit from new technologies. Information systems affect organizations necessarily affect the design of systems.

Relationship between Balanced Score Card and Business Performance

Balanced Score Card has increasingly been applied in the public sector. Part of the balanced scorecard's popularity can be attributed to the fact that it is consistent with many common performance improvement initiatives undertaken by companies, such as continuous improvement, cross-functional teamwork, or customer-supplier partnering. It complements these initiatives by helping managers to understand the complex interrelationships among different business areas. By linking the elements of a company's competitive strategy in one report, the balanced scorecard points out situations where improvement in one area comes at the expense of another. In this way, the scorecard helps managers to make the decisions and tradeoffs necessary for success in today's fast-paced and competitive business environment.

Relationship between Business Intelligence and Business Performance

Management needs often reports about performance indicators. When these performance indicators do not reach the desired level, additional information is required, more detailed, which help to determine causes of poor performance. The solution is offered by applications of "Business Intelligence", which includes the facility to calculate the performance indicators in real time and presenting them in graphical views. These applications offer the opportunity to examine the primary information used in the calculation of performance indicators, and to create different synthetic panels for each user. For example, executive management can view daily information such as: market share, price of the shares or daily sales; managers of the departments will receive information about stock levels or number of not paid invoices, and the employees will receive information about personal performance. On the basis of an efficient decision should be a clarified objective, it must define a measurement method, to determine at any time the deviation recorded for daily activity.

Relationship between Business Process Management and Business Performance

Rather than thinking of BPM as a project that has a beginning middle and an end, it should be conceived as an ongoing activity that is tied to all technology and business activities that are critical to enterprise operations. A business process is a sequence of activities that carries out a complete business goal. To comprehensively support business process execution, the concept of business process management (BPM) has been recently proposed. The BPM cycle is composed of diagnosis, process design, and process execution phase. In the diagnosis phase, the operational processes are analyzed to identify problems and find areas for improvement. In the process design phase, to-be processes are newly designed and their performance evaluation is conducted. In the execution phase, business activities are monitored, coordinated and controlled continuously for better performance.

Relationship between Business Activity Monitoring and Business Performance

Business Activity Monitoring helps organizations to make better informed decisions, quickly respond to problems, increase the speed of change, and exploit new revenue opportunities faster. BAM is proving to be an extremely useful tool for many companies as they strive to get a better understanding of

generally targeted at understanding business flow through the IT systems, by counting processes, transactions, and events and displaying that information through historical reports. But as BAM experience has grown, the focus has swung much more to moving from this relatively static view of the business to a much more dynamic, high-value one where business process interactions and trends are examined much more closely. The high level of statistical and analytical intelligence now delivered with the best BAM solutions provides the ability to understand much more accurately the business dynamics and therefore bring a tighter focus on addressing real business issues. BAM can be used to forecast events such as interest rates, stock prices, fuel prices and even the outcomes of political elections and to determine how specific changes might affect the way an enterprise should be managed. For example, the prospect of an angry public electing legislator who favors price controls might motivate energy suppliers to keep retail prices down in the short term. Broda and Clugage (2006), proposed key steps and critical success factors to BAM implementation. The key steps are as follows: define a vision, establish the data model, build real-time data streams, and roll out operational dashboards. They suggested that the critical success factors are performance, heterogeneous data access, and usability.

Conclusion

Innovation should not only improve the current economic situation of the organization, but must also contribute to the creation of conditions, that ensure a healthy long-term management of the organization. Innovation is therefore fully successful if it is a means for further business development of an organization. In other words, if it contributes to ensuring the long-term prosperities of the organization. An understanding of the effective and responsible use and management of information systems and technologies is important for managers, business professionals, and other knowledge workers in today's internet worked enterprises. Information systems play a vital role in the e-business and e-commerce operations, enterprise collaboration and management, and strategic success of businesses that must operate in an internet worked global environment. Thus, the field of information systems has become a major functional area of Business Performance. Further research is of course needed in the areas of Business Process Management (BPM), Key Performance Indicator (KPI), Business intelligence (BI), Balanced Scorecard, Business Activity Monitoring (BAM) in order to effectively increase the performance of Business.

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