Insights from research

Holistic scorecard: strategic performance measurement and management in the software industry

G.S. Sureshchandar and Rainer Leisten

Dr G.S. Sureshchandar holds a PhD in Industrial Management from IIT Madras, India. He is a recipient of the prestigious Alexander von Humboldt (AvH) fellowship and is currently a post-doctoral research fellow at the Alexander von Humboldt (AvH) Foundation, Duisberg, Germany. Professor Dr Rainer Leisten was born in 1957 and gained a Diploma in mathematics with business administration and a PhD in Business Administration from the University of Cologne. He has three years' experience in bank controlling and is currently professor for business administration and production management at the Faculty of Business, University of Duisburg-Essen, Duisburg, Germany.

Summary

Purpose – *Though a few critics have questioned the effectiveness of the balanced-scorecard approach in measuring business performance this approach has taken the academic and business community by storm. However, the approach proposed by Kaplan and Norton is not all-encompassing as they have overlooked certain critical perspectives in their scorecard. The purpose of present study is to make a small, yet significant stride, to fill this lacuna.*

Design/methodology/approach – *The present work presents such issues and proposes a conceptual, theoretical framework, called holistic scorecard, for managing performance in the software industry. At the crux of the scorecard are six perspectives that portray a ubiquitous approach for strategic performance management.*

Findings – *Six perspectives, as well as critical success factors and key performance indicators, are provided. The relevance of these perspectives, especially from the software industry viewpoint, has been authenticated. With respect to each perspective, measures have been proposed that efficiently and effectively address the vital facets of an organisation's business excellence at both the macro and micro levels.*

Practical implications – *Provides an integrated scorecard for measuring and managing business performance.*

Originality/value – *The successful diffusion of performance enhancement measures and initiatives throughout the organization is necessary to achieve world-class competitiveness. The proposed framework aspires to provide a basis for achieving this.*

Keywords *Balanced scorecard, Computer software, Performance measures, Performance management, Management strategy, Critical success factors*

Paper type *Research paper*

Introduction

The adage "if you do not know where you want to go, any path will take you there" is more relevant in business performance measurement (BPM) than in any other field, the rationale being that the central tenet of any performance measurement system should be a tie-in with the logical success map focussing on goal congruence and organisational alignment. In today's era of intense competition, organisations around the globe have been more focussed in assessing their own performances on a number of criteria that are deemed critical for their long term survival and success.

Basically, performance measurement is the process of quantifying past actions (Neely, 1998). Over the years BPM as a field of study blossomed into prominence thanks to the vast inputs from management proponents on diverse approaches of measuring performance. Approaches such as shareholder value (Rappaport, 1986), activity-based costing (Kaplan and Cooper, 1997), balanced scorecard (BSC) (Kaplan and Norton, 1992, 1996), performance pyramid (Lynch and Cross, 1990), macro process model (Brown, 1996)

business score card (Kanji and Sa, 2002), performance prism (Neely *et al.*, 2002) and other business excellence models have provided objective frameworks to the radar screen of business and academia alike (Marr and Schiuma, 2003).

Organisations measure performance for a variety of reasons that include, among other things, identifying success, meeting customer requirements, understanding their processes, identifying problem bottlenecks, improvement opportunities and ensuring that decisions are based on facts (Parker, 2000). Thanks to diverse inputs from various disciplines, recent business performance approaches, have seen a meteoric rise with the result that organisations have started to view it as a panacea for their sustenance and growth.

It was not as though companies did not focus on their performance before. Towards the late 1980s there was a great interest in new measures of corporate performance, but most of them had shortcomings as they focussed on isolated initiatives. But, only in the early 1990s, a fundamental shift took place in the way organisations measured their performance. Instead of targeting isolated measures, management experts started to talk about developing integrated, rather than piecemeal measurement systems (Neely and Bourne, 2000).

Two of the early protagonists of such an integrated approach were Kaplan and Norton, who propounded the concept of BSC (Kaplan and Norton, 1992, 1993, 1996), which is essentially a multi-dimensional performance measurement framework. The BSC approach of Kaplan and Norton broke new ground by juxtaposing both the financial and non-financial perspectives for measuring business performance namely, financial, customer, internal business processes and learning and growth. The premise of the concept was to construct a single approach that could provide an operational as well as a strategic insight into an organisation's business, as well as serving as a management reporting tool (Sharif, 2002). Though a few critics have questioned the effectiveness of this approach in measuring business performance, the BSC has brought the concept of business performance measurement to prominence. This is evidenced by the fact that the most cited literature sources in the Performance Management Association (PMA) conferences so far were all publications of Kaplan and Norton. Therefore, it can be safely said that the BSC approach has been, in the last decade, and continues to be the most influential concept in the field of performance management (de Waal, 2003).

Given such widespread acceptance of the approach, exploring the effectiveness and applicability of it in the highly dynamic and diverse software industry would be a fascinating proposition. This is supported further by the fact that despite an increased interest from both the practitioners and theoreticians on the effectiveness of the BSC approach, conceptual if not empirical assertions on the adaptability of BSC approach to the IT industry remains scant. It is not quite sure whether the performance measurement framework proposed by Kaplan and Norton would measure up to the demands of the IT industry and so far, very little research work has been done on transforming the BSC principles to the IT scenario.

Furthermore, the software industry presents an intriguing test in that whilst the industry has many characteristics of the service sector, at the same time has a concrete end product – the software that is developed. Therefore, a judicious mix of the performance measurement principles of both the manufacturing and service industries are essential. Also, the BSC framework seems to have overlooked certain other perspectives, which might be of critical concern for IT.

Therefore, the present work attempts to further enhance the concept of BSC *vis-à-vis* the software industry and strives to conceptualise a theoretical framework to this end.

The objectives of this research are therefore three-fold:

1. to critically examine the concept of BSC, especially from a software industry perspective;
2. to identify perspectives that would holistically portray the concept of business performance measurement and management; and
3. to provide a conceptual, measurement framework for the above, specifically focussing on the software industry.

As stated earlier, the BSC approach of Kaplan and Norton addresses four perspectives, namely financial, customer, internal business processes and learning and growth (earlier innovation and learning). The financial perspective deals with those factors through which an organisation can create sustainable growth in shareholder value, whilst the customer perspective defines the value proposition for targeted customer segments. The internal business process perspective aims to measure areas of internal excellence required to deliver customer satisfaction and the learning and growth is intended to measure a company's capacity to innovate, continuously improve and learn.

These perspectives though provide an excellent foundation for performance measurement per se; they are not holistic in the sense that they have overlooked some of the other aspects that might throw more light on the concept of strategic business performance measurement. In this age of turbulent and discontinuous economic development, with dramatic changes happening in the business environment, concrete measures to study, investigate, analyse and improve business performance are a perquisite for sustainable growth and development. Such measures should efficiently and effectively address all the facets of an organisation's business excellence.

This is more so in the software industry as it is characterized by a supremely volatile, dynamic and uncertain environment. This uncertainty, whether in terms of the competition, technology advancements or cultural issues, warrants the adoption of a more open system approach to management in contrast to the closed system approach advocated by the BSC (Hamel, 1998; Kelly, 1999). The BSC approach, like all other performance measurement frameworks, is a closed and highly goal focussed one. But, the goal congruence of such approaches has strong theoretical underpinnings. Therefore, it would be worthwhile not to dismiss the fundamental rudiments of BSC, but it is also highly imperative to take a different t approach when it comes to dealing with the IT industry.

The IT market is very turbulent and operates in a continually changing environment. Millions of dollars are pumped in on one side and on the other side the competition is so intense that there is no breathing space for relaxation. As markets and environments become more sophisticated and the external influences tend to have a major influence on the way software companies are managed, the factors behind performance measurement become more complex as well. Given these, the concept of performance measurement assumes a nebulous nature in the IT scenario. In view of this, it is argued here that the BSC approach needs strengthening on certain counts.

Firstly, the BSC has failed to explicitly define the perspective of learning and growth. Kaplan and Norton in their latest work on intangible assets (Kaplan and Norton, 2004) explain that this perspective describes the organisation's intangible assets and their role in the strategy. They further classify intangible assets under three broad categories, namely, human capital (consisting of employees' skills, talent and knowledge), information capital (that includes databases, information systems, networks and technology infrastructure) and organisation capital (encompassing culture, leadership, employee alignment, teamwork and knowledge management). It is not quite clear why a separate definition of intangible assets has been given that differs from the classifications that are well established in the field of intangible assets. Though Kaplan and Norton have vaguely addressed this aspect as a reflection of their learning and growth perspective in their latest work (Kaplan and Norton, 2004) it is quite clear that they are not using it to mean quite the same thing as other authors who specialize in the subject of intangible assets or intellectual capital (Marr and Adams, 2004). In a high-tech knowledge industry such as IT these subtle, but nevertheless critical assets, help organisations to drive capability differentials thereby driving sustainable competitive advantage as they reflect an organisation's core competencies (Hall, 1993). Therefore there is fundamental need to look at intellectual capital from a more traditional view as defined by experts in the field of intellectual capital or intangible assets.

Furthermore, the BSC approach has not addressed the needs and requirements of all the stakeholders. They have focussed primarily on shareholders (financial perspective) and

customers (customer perspective). The perspective of learning and growth, although addressing the skills of the employees, has not given sufficient attention to the other soft issues related to employees – who are also key stakeholders of the company. Like customers, employees play an essential role in any management philosophy. Though the employees' skills and knowledge, especially as an intellectual asset, have been discussed as part of the learning and growth perspective, one wonders why such an important dimension has not been dealt with separately, highlighting the importance of other employee related aspects. Aside from the competencies of the employees there are several other organisational behaviour issues that would form part of employee perspective. Employee related issues are so fundamental that they determine the degree of successful implementation of other management strategies.

Another perspective that seems to have been overlooked by the BSC approach is the responsibility of an organisation to the society in which it operates. Termed as the social perspective this dimension emphasises the fact that organisations do not operate in vacuum but have a huge responsibility to the society in which they operate. In fact the criticality of the societal issues has been accentuated in the total quality management literature as well for some time now (Sureshchandar *et al.*, 2001a, b).

Therefore, there is a need to look at identifying additional measures for performance measurement that explicitly focuses on the nuances of the IT industry. It is also necessary to reorganise the different perspectives identified by Kaplan and Norton. In essence the present approach develops:

- the addition of new perspectives so as to more holistically depict all the dimensions of business performance; and
- a reorganisation (which measures should appear in which perspectives) of the existing perspectives in order to throw more clarity on the issues that are being addressed.

Even Kaplan and Norton recommend that the BSC should be considered just as a template, not a straight jacket and no mathematical theorem requires that the four perspectives are both necessary and sufficient (Kaplan and Norton, 1996). In other words, the specific contents of the four perspectives must be adapted to the circumstances of each organisation (Kanji and Sa, 2002). It is further stated that the BSC approach is only generic and each company should have its own version of the scorecard. Different companies should have different measurements, from the viewpoint of achieving their company's strategies (Gautreau and Kleiner, 2001).

Therefore, the IT industry, being so different from other industries, warrants a different framework for performance measurement. In light of the above discussions, it is being proposed here that any performance measurement system, especially in the software arena, should be looked upon as a framework made of six perspectives, namely financial, customer, business process, intellectual capital, employee and social.

Further, such an approach has to be holistic in terms of addressing all the aspects of business performance in its entirety so that the real upshots of the approach are total and complete. Moreover the scorecard should not just be a repertoire of results, rather a framework that serves at least three purposes, namely, strategic measurement, visionary forecasting and strategic management. Hence, the framework proposed here has been called the holistic scorecard (HSC) to drive home the point that it focuses on the different facets of business performance in totality and also serve as an effective measurement regime for the same.

The perspectives of HSC

In view of the above discussions it is postulated here that any strategic performance measurement and management approach in a software industry should encompass the following perspectives:

1. financial perspective;
2. customer perspective;

3. business process perspective;
4. intellectual capital perspective;
5. employee perspective; and
6. social perspective.

A detailed discussion on the relevance of these six perspectives in the IT scenario is furnished in the subsequent sections.

Financial perspective

Every business exists in order to make profits. In the huge money churning software industry, the importance of the financial perspective is very well acknowledged. Therefore, it is all the more easy, to accentuate the importance of this perspective. Financial performance provides the ultimate definition of an organisation's success. Financial strategy describes how an organisation intends to create sustainable growth in shareholder value (Kaplan and Norton, 2004). Financial performance measures indicate whether an organisation's strategy, implementation and execution are contributing to bottom line improvement (Kanji and Sa, 2002). Measures such as profits, revenues, assets, return on investments, return on equity, turnover, etc. have traditionally been used for measuring a firm's financial performance.

One of the major criticisms of the traditional financial measures is that they do not include the cost of capital. Economic value added, which is defined as the difference between a company's net operating income after taxes and its cost of capital, aims to address this aspect. Although economic value added is criticised in some quarters for not being very different from traditional financial measures, there is considerable consensus in its ability to provide a better understanding of the value creation capability of the organisation (Yeniyurt, 2003).

According to Peter Drucker (1992), "Profit is not the explanation, cause or rationale of business behaviour and business decisions, but the test of their validity". This test can also be adopted when evaluating the benefits of management initiatives in a broad economic sense. Therefore the financial performance parameters would eventually emerge if the organisation excels in other perspectives. It shows the results of the strategic choices made in the other perspectives (Amaratunga *et al.*, 2001). In other words the financial performance indicators reflect an organisation's output criteria and should include not only traditional monetary measures but the idea of value creation in general.

Customer perspective

The motto "customer is the king" has got more merit in the software industry than in any other industry because customer perspective in the software industry assumes astronomical proportions, due to the fact that customers play the decisive role in determining the quality (or lack of it) of the software. Typically in a software industry, most softwares are customized to meet the requirements of one customer and if their needs are not addressed effectively, the system is bound to be a failure regardless of its technical capabilities (Caroll, 1995). This is in contrast to other industries wherein the services are designed to cater to the needs and requirements of a bigger population.

Companies would not know how good their services are until they ask the customers (St. Clair, 1997). Although this viewpoint is nothing new, rarely does customer aspects being systematically measured and analysed (Kueng, 2000). The BSC emphasises the need for organisations to translate their basic mission statement on customer service into specific measures that reflect the factors that are of importance to customers. In order to increase information sharing with customers, customer satisfaction and loyalty, organisations have to have closer relationships with them (Kaplan and Norton, 1992). Greenberg (2001) argues that while advance in information technology allow companies with large number of customers to deal with them individually, customer relationship management (CRM) is not just about technology. The success of any CRM methodology would depend on the establishment of a customer focussed business strategy that would retain customers and prevent the competition from gaining them. Such customer-centric business strategies enable the exploration of the best mutual opportunities for customers and

companies with the result inspiring employees to focus their efforts toward the overall purpose and direction of the organisation (Curry and Kkolou, 2004).

Aside from trying to influence the customer's market and other competitive drivers, organisations can also aspire to leverage the environmental drivers of customers to its own advantage. Nevertheless, little is known about aspects that customers would use to evaluate the environment. In a rapidly changing environment such as IT, the customers would appreciate if organisations apart from educating them on the product/service would also educate them on the environments in which these products or services operate (Waite *et al.*, 1999; Cooper, 2000). Logman (2004) argues that the advent of new marketing concepts such as experience marketing, responsibility marketing implies that the environmental factors have started to play a crucial role in the customer management process.

This is further confounded in an IT industry by the fact that the customers themselves are not sure of what their expectations are. This situation is basically due to two reasons: the outstanding technical superiority of softwares, thanks to the technological innovations, makes it extremely hard on the part of the customers to explicitly state what they expect from the final product, with regard to the features that it should possess; and most clients of software organisations are not the end users and they themselves do not know what the exact requirements of end users are. Deming's (1986) question "Who is the customer and how can we better serve him?" has more relevance in the software scenario as it is the responsibility of the software organisations to understand the needs of not just their clients but also the end users of their product whom they may never meet.

Like financial measures, customer focus has been the result of any business initiative. Businesses compete against each other in venturing into new markets, enlarging the customer base apart from retaining the existing customers. From a software industry perspective such measures highlight the company's ability to diversify into associated market segments, as IT is an industry that evolves exponentially over time. The customer perspective should ideally reflect the organisation's ability in addressing the various factors of satisfying existing customers and acquiring new customers, thereby resulting in increased return on relationships and market share. Central to the concept of customer satisfaction is the need to effectively address all aspects that constitute to customer satisfaction. Accordingly the four aspects – the core service (or) the service product (the features that make up a software; human element of service delivery); systematisation/standardisation of the service delivery process (non-human element); and the "softwarescapes" (which refers to the infrastructure, facilities, etc.) – act as key performance indicators (KPIs) for the measurement of customer satisfaction. The criticality of these four factors in influencing customer perceptions has been well acknowledged in the customer management and service quality literature (Sureshchandar *et al.*, 2002).

With the recent upsurge in the application of software in almost all spheres of the business domain, delivering what the customers want may not pass muster. The real competitive edge may only come from addressing not just their expectations (stated requirements) but also addressing both the implied needs (requirements that are not explicitly stated, but the customers would definitely expect them from the product or service) and the latent needs (expectations, customers themselves are not aware of, until brought to light and delivered by the software providers). The ultimate key is in understanding and satisfying both the expectations (which are conscious, specific, surface level and short term) and needs (unconscious, global, deep and long term) of the customers. In any performance measurement approach, it is vital to bring these aspects to the data warehouse as otherwise soft assets such as goodwill, brand equity, loyal customers and perceived future earnings would not be brought into account (Gummesson, 2004).

The ultimate recognition for business excellence is improved bottom-line profitability. Satisfied customers come back more and encourage business associates, family and friends to do the same. It is the vote of the customers, and not those of an award committees or certification boards, that eventually counts. In today's competitive business environment, initiatives must be justified economically.

Business process perspective

Whilst, perspectives such as employee and customers deal with output criteria of business performance, the core business processes are instrumental in ensuring a healthy connection between them. The processes help to create and deliver the value proposition for customers through the use of employees and other strategies.

Output measures such as customer-based measures can be enhanced only by translating them into measures of what the company must do internally to meet its customer's expectations. Therefore, it becomes mandatory to think of an organisation as an interrelated set of processes or put in simply the need for the recognition that all work is process. Process excellence can only be achieved by putting in place a good information system that allows the identification of the root causes of problems when they arise. Further, employees need to feel responsible for the management of those processes in which they are involved and have the requisite experience and expertise to solve problems that may arise (Kanji and Sa, 2002). The business processes are a mechanism through which performance expectations are achieved (Amaratunga *et al.*, 2001). The performance of internal processes is a leading indicator of subsequent improvements in customer and financial outcomes (Kaplan and Norton, 1996).

Traditionally, while discussing performance measurement, three aspects have been considered: cost, time and quality (Kitchenham, 1996). Kueng (2000) states that normally it has been argued that process performance should be measured in terms of quality, effectiveness, efficiency, timeliness and costs. The author believes that process performance should not be focussed on just these generic aspects, but rather on those people who have an interest in the business process; in other words the stakeholders. Such an approach of stakeholder driven performance measurement lends greater credence to our approach of the HSC that essentially aspires to address all the requirements of the stakeholders and with strategies that will enhance business performance in its totality.

There was a time when the business community was debating whether the performance of business processes should be increased by a fundamentally different business process reengineering (BPR) approach or a more incremental continuous improvement (CI) approach. With the passage of time, today, there is some conformity to the fact that both approaches have their own benefits and some companies do integrate these two approaches to a successful degree (Kueng, 2000). In essence, the author believes that process performance measurement is a necessity for a modern process-oriented organisation.

The process-dependent software organisations can only remain competitive by applying efficient methods and techniques to its development processes. In the IT industry the technology is advancing in leaps and bounds but on the flip side because of that guaranteed system behaviour remains a quandary. Technology is so multifaceted that there's no way to simulate it exhaustively or test how it will perform in the real world scenario (Schwartz, 1996). In these circumstances the only way to ensure some sort of consistency of results in the software development process is through structured processes that will help in standardization, right from the requirements gathering phase to the final testing phase. The importance of processes in the IT scenario can never be better exemplified than this. Therefore the key to successful business performance is to reckon processes as a means to transfer knowledge thereby responding to the customers faster than the competitors. Given the fleeting nature of the IT industry, apart from the regular business processes, two aspects that warrant special mentioning are knowledge management (KM) and risk management. These two aspects have to be embedded in the overall business processes, and not be a marginal ''add-on'' to the core processes.

Knowledge management (KM) has always been an important aspect of organisational life. The original vision for a KM repository was relatively simple but KM should not be perceived just as a technique for better utilisation of the vast knowledge resources. The IT industry is over reliant on knowledge and its efficient utilisation depends on the strong emphasis on techniques that would provide potential leverage for establishing competitive advantage in

the long run. KM should be looked upon as an innovation or change to an organisation's operations and thus should be regarded as an intervention on the organisation's culture. Regarding it as an intervention enables the principles and practices for managing change processes will be considered in implementing knowledge management (Gooijer, 2000). One of the key enablers of KM is the requisite IT support. A good and efficient IT back up is not a sufficient, but a necessary condition for the success of KM (Arora, 2002). KM is considered as part of the business processes, instead of part of the intellectual capital because, for the knowledge based IT industry, it is extremely essential to have a structured system in place in order to make optimum use of the expertise and knowledge that are available.

Risk management is another dominant area of an organisation's business processes. Organisations need to gear themselves to face threats even during turbulent situations. Such threats could be either internal or external (which is outside the purview of their control). The various categories of risk include technical, quality or performance risks; project management risks; organisational risks or external risks (PMBOK, 2000). Since the software industry has to encounter numerous uncertainties in the form of new technology, lack of expertise and experience of the project team members, software and hardware obsolescence, vague customer requirements and plenitude of change requests, etc. (Barki *et al.*, 1993; Cafasso, 1994; Jiang and Klien, 2000), proactive management of risks (that include features such as risk management planning, risk identification and analysis, risk monitoring and control) is necessary to control and manage time, effort and cost overruns; levels of security and integrity; criticality of the mission and application. In order to minimise risk and maximise performance, there needs to be an identification of fit with related organisational processes, strategy and company wide initiatives (Sharif, 2002).

Business processes enable us to transform an organisation's strategy and vision into business results through operational procedures and methods thereby determining how exactly value is created and sustained.

Intellectual capital perspective

Traditionally, organisations excelled by creating value when they evolve and implement strategies that would effectively respond to market opportunities by exploiting their internal resources and capabilities (Penrose, 1959; Andrews, 1971). Consequently, management need to have a better understanding of their key resources and drivers of organisational performance and value. For several decades, these resources were physical, such as land and machines or financial capital (Marr and Schiuma, 2003). With the advent of the new dimensions to management thinking and strategy formulation the concept of Intellectual capital has emerged in recent years. This concept has been found to be the key ingredient for value creation and business performance (Itami, 1987; Nahapiet and Ghoshal, 1998; McGaughey, 2002; Teece, 2000).

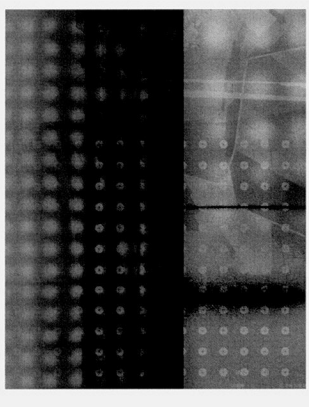
Central to the development of the IT sector is the shift from natural resources and physical assets to intellectual capital. It has become the source of innovation, growth and value. Consequently, in today's world, it becomes absolutely essential to building, preserving and leveraging organisational knowledge through the proper handling of intellectual assets (Arora, 2002).

Although many researchers and authors authorise the significance of intellectual capital as a resource influencing organisational performance, there is considerable lack of consensus on a precise definition of intellectual capital (Marr and Schiuma, 2003; Marr and Adams, 2004). However it must be realised that the concept of intangible assets or intellectual capital is discussed from various perspectives, including accounting, strategy, human resource management, information systems and knowledge management. Therefore depending on the perspective, different emphasis has been given to the definitions (Marr, 2004). Therefore, from a business performance management viewpoint and the software scenario in mind the following explanation of intellectual capital is presented here. Hall (1992) defined intangible assets as those assets whose essence is an idea or knowledge and whose nature can be defined and recorded in some way. It is further stated that it is the sum of intellectual property (those assets for which an organisation has property rights) and

knowledge assets (those assets for which an organisation does not have property rights (Marr and Schiuma, 2003)). In other words intellectual capital is the grand total of everything everybody in an organisation has that would provide a competitive advantage in the organisation's market place (Stewart, 1991).

Based on the review of literature the following definition of intellectual capital is suggested: intellectual capital is the sum total of all the abstract, intangible and cerebral assets that would form the essence of the business competitive differentiators which in turn would increase the life span of the capability differentials. Yeniyurt (2003) states that despite the discrepancy, all definitions have in common two aspects of intellectual capital: organisational capital and human capital. Organisational capital implies the intangible assets embedded in the organisation culture, processes, and procedures as well as brands, patents and copyrights. Human capital is related to the intellectual abilities the human factor possesses in an organisation. The present work adopts these aspects in its definition of intellectual capital because it is believed that these two aspects represent the crux of the concept of intellectual capital, which is an idea or knowledge. The human capital reflects the cerebral aspects of the humans in the organisation, whilst the organisational capital reflects the cerebral aspects of the organisation a whole. Other aspects of intellectual capital that were defined by other authors such as relationship capital, information capital and process capital are captured in other perspectives such as the customer and business process perspectives.

As mentioned earlier the BSC approach (Kaplan and Norton, 1992, 1993, 1996) though deals with this concept of intellectual capital/intangible assets, it does not refer to it in the same way as some of the pioneers of the concept did. IT being a high tech knowledge industry with rapid transformations taking place in market scenarios, technology and working conditions the concept of intellectual capital as defined above assumes staggering proportions as they are highly dynamic in nature and are instrumental in creating value.



Given the importance of intellectual capital it becomes mandatory that they are protected legally through intellectual property rights. Intellectual property are those assets to which the organisation has property rights such as patents, trademarks, brands, registered designs, trade secrets, processes and copyrights that afford legal protection to the their owners (Hall, 1992, 1993). In today's high tech organisations patents and trade secrets have become a key element of competition and in fact have become more critical than ever before to competitive advantage (Grindley and Teece, 1997). They represent the enablers by which a company can gain a protected competitive advantage (Marr and Schiuma, 2003).

In a rapidly developing economy such as IT, such intangible, yet forceful elements help organisations to develop immunity towards technological growth, changing socio-economic, business and political contexts. This concept is challenging the supremacy of short-term financial capital (Edvinsson and Malone, 1997; Sveiby, 1997; Olve *et al.*, 1999; Edvinsson, 2002).

Employee perspective

Though the software industry is a technology driven one, the importance of the human resource issues is no less significant. In fact given the volatile work atmosphere, characterised by features such as "high pressure" "race against time and competition", "overtime working", "tough yet mandatory delivery schedules" that engulfs most software companies, human resource issues are probably more important than in any other industry. Organisations have a tendency to become eager and enthusiastic for economic development to the extent that they are inclined to place greater emphasis on technology, completely overlooking the fact that it is the human resource that makes the capital, technology and other resources productive. But, if the technological advances lure the organization to consider technology as a substitute for human beings, instead of using it as a tool, it may prove disastrous for them (Sureshchandar *et al.*, 2001a, b).

Employees are crucial stakeholders of any organisation. It is highly surprising to note that the BSC approach has failed to acknowledge the significance of such a significant aspect explicitly. Though certain aspects of the employees such as their skills, knowledge and

talent have been captured as part of intangible assets in their learning and growth perspective (Kaplan and Norton, 2004), ignoring other soft issues such as recruitment, retention, training, corporate culture, employee satisfaction, communication effectiveness, employee empowerment, change management, career growth, grievance redressal, is devoid of sound logic.

For decades the human resources have been identified as key assets (Penrose, 1959). Almost all quality improvement and business models have treated the employee related issues as a key indicator of business performance (Sureshchandar *et al.*, 2001a, b). The software industry is experiencing massive and rapid alterations in technology, culture – thanks to the globalisation, work environment, prospects of growth, and so on. Added to this, the employee turnover in the software industry is the highest among all industries. Certain researchers argue that these issues which are popularly referred to as "people ware" are so important for acquiring and sustaining the competitive advantage as the software industry is a manpower industry (Arora *et al.*, 2000; Karthik, 2003). Therefore, it is prudent that the software industry must be treated differently in managing the human factors.

The availability and optimum utilisation of competent people, coupled with providing conducive environment for their professional growth and satisfaction, are key for the survival of software organisations in a highly competitive global market place. Therefore, it is indispensable for firms, especially software organisations to look upon the human resources as a source of competitive advantage.

Employees are the most precious of any organisation. Given the ever-increasing turn over rate in the IT industry, it is imperative to allocate sufficient time, and effort on the selection, recruitment and retention of valuable resources. The high tech, multi-dimensional and cross-cultural nature of the software industry implies that sufficient and effective training and education of the workforce is a prerequisite rather than a luxury. Employee satisfaction is as significant as in any other industry for the organisation's growth and development. Further, a software organisation needs to effect and sustain an organisational change in order that all management initiatives become effective. The culture that is prevailing in an organization ultimately determines whether such a change is accomplished.

Social perspective

The social perspective is defined as the inclination and ability of the organisation to lead as a corporate citizen and to promote ethical conduct in everything it does. In other words, the social capital represents the quality and value of relationships enjoyed with the larger society through the exercise of corporate citizenship, as a responsible member of local, regional, national and global communities (Allee, 1999). This subtle, but nevertheless forceful, element sends strong signals towards improving the organisation's image and goodwill and consequently influencing the customers' overall evaluation of the quality of service delivered by the organisation. This highly abstract aspect is extremely significant in these times of economic liberalisation and globalisation as more and socio-economic, cultural and political factors start playing a dominant role in the way software organisations are managed.

No doubt, a business or industrial enterprise exists to make profits. This can be achieved by fulfilling its mission. At the same time, an organisation must also grow and have a good image – it should meet its social and community obligations. In other words, the concept of corporate citizenship should come into fore if an organisation is to be successful and progress towards achieving business excellence. With the entire world undergoing an upheaval – a business revolution – it is this attitude that will certainly give an organisation a competitive edge in the long run, over many others who vie for greater honours in terms of profits, Return on Investment, market share, in effect ignoring the fact that they are accountable to the society in which they thrive (Sureshchandar *et al.*, 2001a, b).

With the advent of several quality management initiatives such as TQM and other quality management models and certifications, societal issues have started to find its deserving place in discussions of the corporate board rooms. For instance, the EFQM model (The European Foundation for Quality Management, 2000) advocates that the impact of business

decisions or operations on society fit into the result criteria whereby it concerns what the organisation is achieving in satisfying the needs and expectations of local, national and international society as appropriate.

The phenomenal rise in demand for software in all aspects of business life has implied that it is not just the business environs, but the entire society that is increasingly dependent on large and complex systems. These developments mean that the operations of software organisations will have a more profound and visible influence on both the business and society as a whole.

The balanced score card has been criticized for overlooking the demands of multiple stakeholders that are a significant feature of modern business environment or complex eco system (Neely *et al.*, 2002). Though Kaplan and Norton, in their latest works have addressed this aspect as part of the internal business perspective, the factors that are addressed and the importance that has been given to them are inadequate considering the significance of this perspective in providing a congenial environment for business excellence.

Business processes are not executed in an isolated world where only process managers, process actors and process customers interact. Measuring societal aspects of a business process means both measuring the impact a process has on its society and measuring how the impact is perceived (Kueng, 2000). A truly dynamic whole system view of the enterprise extends far beyond the boundaries of the company. This will also help in society and nation building; as otherwise these organisations would just be pockets of financial power centres. Companies do not exist in a social or environmental vacuum, but rarely do business models include dynamic exchanges with the larger society or with the earth or its resources. But, of late, there has been increased attention to the fact that the enterprise is viewed from a more sociological perspective (Allee, 1999).

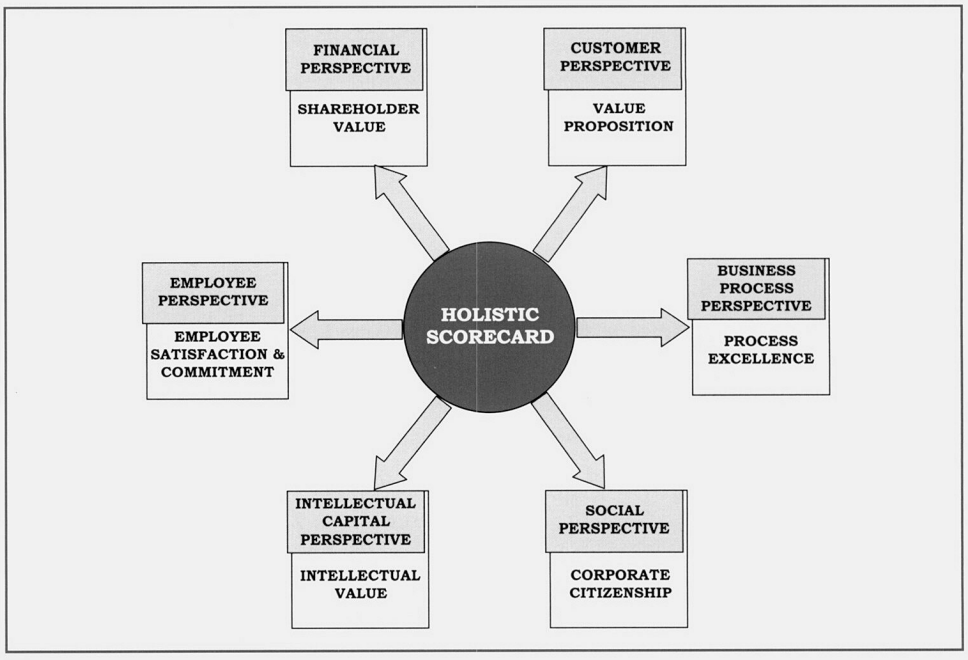
Societal issues reflect an organisation's status *vis-à-vis* society at large. They can be broadly classified in two: political image and social image. Political image reflects an organisation's compatibility and understanding with the national government (for their backing and support) and other national and international organisations (for knowledge sharing, support and development). Membership and active participation in national and international bodies, associations, societies and communities is the order of the day, especially in the software arena, thanks to the increased interdependency among organisations in terms of knowledge sharing, obviating common problems and tackling similar issues. Social image reflects the goodwill and image of the organisation among the general public and community. Social image is garnered through contribution to the society in terms of welfare activities, educational and career counselling, employment opportunities for the less privileged and so on.

A framework for HSC

Although the utility of performance measures was never in doubt, they were also a subject of much cynicism and scepticism over why, how and when they should be used. The staring point is to determine what to measure. Whilst this may sound very simple, it is often not that straightforward. It is not prudent to create a wide range of measures that covers all of the organisation's activities, which will be wasteful of time and resources and can be distracting. There must be a clear focus on those things that are really significant – the measures adoptive must be selective depending on their organisational vision, mission and strategy (Parker, 2000).

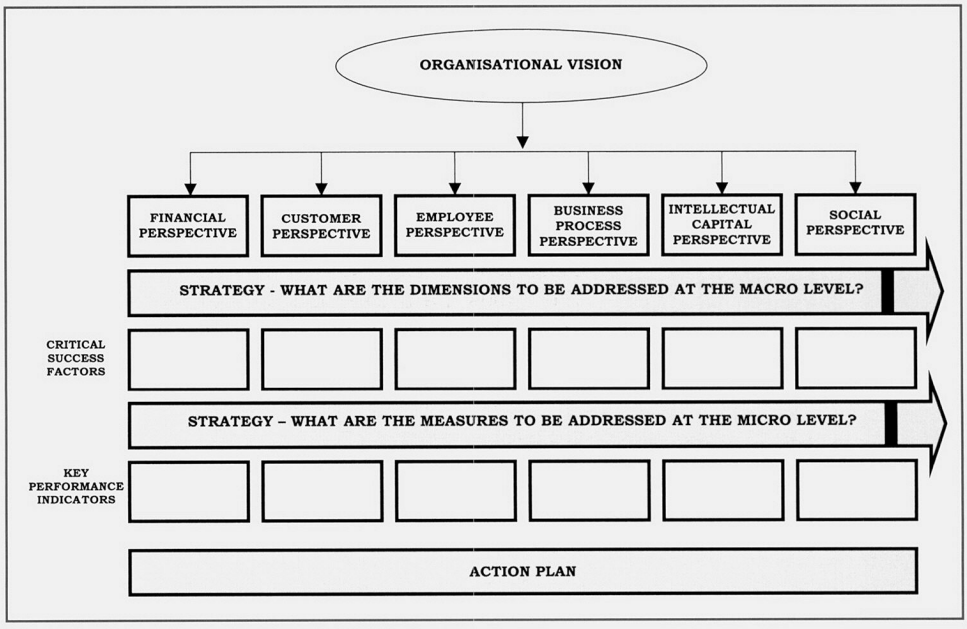
In a nutshell the six perspectives proposed here address the different goals of any organisation as shown in Figure 1. The present HSC approach advocates the need for addressing the needs of all the stakeholders instead of targeting only those stakeholders who have direct bearing on the organisation's financial prospects in either a direct or indirect fashion. Thus all the stakeholders, namely, shareholders (financial perspective), customers (customer perspective), suppliers (business process perspective), employees (employee perspective and intellectual capital perspective), and the society (social perspective) are included in the framework of HSC.

Figure 1 The HSC



The framework for performance measurement should focus on executing the strategic goals of the organisation by effectively mapping those goals with the six perspectives. Further, the perspectives must be fragmented into some macro-level dimensions called the critical success factors (CSFs) and further micro-level measures called the KPIs. Both the CSFs and the KPIs should be linked to the strategic intent of the organisation. A structured action plan should be put in place that would set goals for each measure and a blue print on how to accomplish them. In view of this the methodology for the HSC in depicted as shown in Figure 2.

Figure 2 The HSC methodology



Performance measurement is too important and too costly to get wrong. The actual efficiency of any performance measurement system would depend on simplicity and automation. The basic idea is to ensure that only things that matter are measured. There has been a change in the face of the measurement crisis over the years. In the 1980s and early 1990s the fundamental problem was due to the measurement of wrong things, but now the problem lies in measuring too much (Neely and Bourne, 2000). This is especially true in a software environment where far too often and in far too many organisations, there have been complaints of difficulties with measurement because practitioners sometimes feel overwhelmed with data as they get quantitative feedback on a variety of attributes, and in many a time it is hazy as to which attributes should be dealt with in order to enhance business performance. Hence there have been many prescriptions to combine measures, into a single summary measure (Fenton and Pfleeger, 1996). This observation was also made by other authors (see Moller and Paulish, 1993) who have emphasized the need for the use of a limited number of metrics.

Therefore, fundamentally, any performance measurement regime should focus on both the aspects – "measurement of right things" and "brevity". It is highly pertinent, from a software industry perspective, to limit information overload by targeting only on the measures of relevance and usefulness. In other words, any measurement regime should serve two purposes: first to determine what measures are important (filtering) and then to determine which measure should go to what perspective (clustering).

In essence, it is highly pertinent to be particular about minimising the measurement and concentrate on those aspects where there will be a real impact. One has to tune to the fact that measures arise, wherever feasible, as part of the normal process and not something that has been emerged as a separate process for the sake of measurement. Such add-on activity will be resented and rejected (Parker, 2000).

Table I gives a snap shot of the HSC and its associated CSFs and KPIs with respect to a software industry scenario. Both the CSFs and the KPIs have been identified from a vast review of literature on performance management and also from various other disciplines such as accounting, economics, human resource management, marketing, operations management, psychology and sociology that contribute to the field of business performance. Care has been taken to ensure that these CSFs and KPIs are both generic (in holistically representing performance measurement of any business) and also specific (wherever required so that they capture the nuances and niceties of the software industry scenario). The CSFs for each perspective have been chosen so that they vividly represent that particular perspective from a macro-view point and on the other hand the KPIs attend to the micro level details of the perspectives. It has to be noted that the suggested KPIs are only sample measures and that organisations need to identify their own measures depending on the organisational goals and vision.

Any strategic scorecard can be devolved into scorecards at lower levels in the organisation (Kaplan and Norton, 1996). Ultimately, each operative can have a scorecard that can be rolled back to the strategic scorecard for the organisation as a whole. Such an approach would enable employees to clearly see their area of involvement within the bigger organisational context. On the other hand, this is not true with respect to all the objectives as certain scorecard objectives tend to become very fragmented at the lower levels and sometimes the employee's understanding of the higher level scorecards may become tenuous (McAdam and Neill, 1999). Therefore there must be a balance in assigning responsibilities and tasks to sub units of the organisation with respect to the measurement regime.

Organisations do not have to provide equal weight to all the measures. In fact, the degree of importance should naturally vary from company to company depending on its own orientation and its business model in the IT marketplace. It is practically impossible to provide a panacea for the problems associated with measuring business performance. The framework that has been proposed aims to be ubiquitous to the maximum extent possible, but at the same time there should be a word of caution in applying any such frameworks in

Table I CSFs and KPIs for HSC

Sl. no.	Perspectives	Critical success factors	KPIs (sample measures)
1	Financial	Traditional measures	Turnover; profit; revenues; assets; ROI; return on equity
		Value creation	Economic value added; internal rate of return; understanding and compatibility with alliance partners; shareholder management
2	Customer	Customer satisfaction	Core service; service delivery – human dimension; service delivery – non human dimension; softwarescapes
		Customer acquisition	Number, percentage and size of new accounts over a specific period; robust strategies for acquiring new customers
		Return on relationships	Loyalty; repeat purchases; market share in core and allied markets; brand image
3	Business process	Regular business processes	Process design; fool-proof processes; simplified and standardized processes; regular monitoring and control; benchmarking; documentation effectiveness; extent and effectiveness of tools and techniques; softwarescapes – technology and infrastructure; productivity measures; measurement and metrics framework; customer involvement; quality certifications like ISO, CMM, CMMi, etc.; continuous improvement
		Risk management process	Risk management planning; risk identification; risk analysis; risk response planning; risk monitoring and control
		KM process	Knowledge repositories; expertise locators, virtual communities; ad-hoc groups; knowledge innovation; knowledge management map
4	Intellectual capital	Human capital	Employee competence; skill sets; qualifications; expertise; experience; intellectual agility; attitude
		Organisational capital	All intellectual organisational assets; patents; copyrights; brands; registered designs and processes; trade secrets; research publications
5	Employee	Recruitment, selection and retention	Effectiveness of the recruitment and selection procedures; retention strategies especially for precious resources; structured and rewarding career paths
		Training and education	Training in technical, hard and soft skills, new technologies; training effectiveness; mapping of training programmes with the company's long term goals
		Corporate culture	Trust, openness and good relationships; top management commitment towards all initiatives; visionary leadership; co-operation and co-ordination among people at different levels, functions and departments; communication effectiveness; change management
		Employee satisfaction	Empowerment; career growth; pay and perks; rewards; recognitions; grievance redressal
6	Social	Political image	Compatibility with regulatory bodies and local government; aid and subsidies, infrastructural support, tax exemptions, special favours, etc., from government; active membership in national and international software associations, institutions, societies and communities
		Social image	Corporate citizenship; contribution to the society; goodwill, general image among the common public

real life situations. Care should be taken to understand that the measures proposed here are also generic and that organisations should view performance measurement from its own point of view and within its own context. Nevertheless, the present framework can be kept as a guideline by software organisations for pursuing their own goals.

Measures can assist the top management and leadership in the setting of the vision and strategy. It can obviously not replace them. A risk free and predictable business in a market economy, created by exact metrics cannot exist; it is an oxymoron (Gummesson, 2004). The

advantage of a measurement scorecard lies in the very process of building the scorecard through CSFs and KPIs, a process which is an effective means of expressing the organisation's vision in tangible terms and to percolate it throughout the organisation (Olve *et al.*, 1999). Although, it is theoretically possible to churn out a long list of performance measures, it is up to the individual firms to be selective as regard to choosing the KPIs that are in tune with the organisational strategy. Like the BSC of Kaplan and Norton, the HSC represents a strategic management system that would enable organisations to accomplish their vision through the management of strategy in the long run.

Sometimes the scorecard approach does fail. This may be due to the following reasons: incorrect identification of non-financial drivers (the CSFs), poorly defined metrics (KPIs), failure to adequately address the requirements of all the stakeholders, non-existence of a deployment system that breaks down high-level goals down to the sub-process level where actual improvement activities are carried out; failure to adopt state of the art improvement practices and non-existence of the links between non-financial and expected financial results (Schneiderman, 1999). These failures can be categorised under three broad headings – political, infrastructural and focus (Neely and Bourne, 2000). The crux of the matter then is to overcome the aforementioned shortcomings by the formulation of a long range vision for the organisation, propagating the vision throughout the organisation, devising and developing a plan of action and finally stimulating the entire organisation towards the accomplishment of the vision (Sureshchandar *et al.*, 2001b). That is visionary leadership in a nutshell. Like any management initiative, the HSC approach would as well warrant the impetus from the top.

Summary

The word measurement is derived from the Sanskrit word "*maya*" that means fantasy, illusion, delusion, hallucination or mirage. It is ironical that numbers that are supposed to throw some concreteness to the otherwise abstractness of the characteristics being measured has got such a root. But, perhaps it also reveals a subtle indication of the fact that measurement, if not substantiated by solid concepts and theory, would be nothing but witchcraft. In an environment of rapid change and fierce competition attempting to measure and manage performance is obligatory.

The past two decades are witness to phenomenal upheaval in the domain of performance measurement. This is an era of measurement revolution. Long marathons can transmogrify organisations only when they are completed. Undertaking such an effort needs patience and perseverance. The collective wisdom that has been developed and published on the subject of BSC over the last decade is clearly considerable, but most of the existing works focused on studies related to its use and organisational performance. Not many of the past works have discussed on the relevance of new measures for the scorecard approach, especially in a software industry set up.

A deepening in the understanding of all the factors that contribute to the adoption of a holistic performance management system in complex organisations is mandatory for the development of the concept of business performance management. The present research strives to add value to such a thought.

This study advances a holistic conceptual framework for strategic performance management. Central to this postulation are six perspectives that portray the divergent facets of measuring and managing business performance. Aside from that, it provides reliable and robust measures both at the macro level (CSFs) and at the micro level (KPIs) that are in tune with the circumstances of the software industry. Further empirically work would establish the reliability and validity of the proposed measures thereby throwing light on their practical usefulness. Causal relationships among the different perspectives could also be explored which would provide further insights on how the different perspectives interact.

The life force of the business competitive differentiators is diminishing overtime with the result shortening their life span. Therefore, organisations need to equip themselves with vision, measures and strategies that can predict the future and support them in posterity. The present research work is a small, nevertheless momentous step, towards that direction.

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