Everant Journals/AFMJ

Research Article

Account and Financial Management Journal ISSN: 2456-3374
Impact Factor: 4.614

Impact of IT Governance on the Performance and Sustainability of Enterprises

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ARTICLE INFO

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ABSTRACT

Increasingly, top management everywhere are realizing the significant impact that information technology (IT) can have on the success of the enterprise. Managements constantly look for ways in which IT can be utilized effectively for better benefits. In many ventures, IT has turned into an indispensable part of the business and is basic to help, manage and develop the business. Effective ventures comprehend and deal with the dangers and limitations of IT. As an outcome, boards of directors comprehend its key significance and place highest priority to IT administration. The use of IT has the potential to be the major driver of economic wealth in the 21st century. While IT is already critical to enterprise success, provides opportunities to obtain a competitive advantage and offers a means for increasing productivity, it will do all this even more so in the future.

Leveraging IT successfully to transform the enterprise and create value added products and services has become a universal business competency. IT is fundamental for managing enterprise resources, dealing with suppliers and customers, and enabling increasingly global and dematerialized transactions. IT is key for recording and disseminating business knowledge. An ever-larger percentage of the market value of enterprises has transitioned from the tangible (inventory, facilities, etc.) to the intangible (information, knowledge, expertise, reputation, trust, patents, etc.). Many of these assets revolve around the use of IT. Moreover, a firm is inherently fragile of its value emanates more from conceptual, as distinct from physical, assets. Good governance of IT therefore is critical in supporting and enabling enterprise goals. The aim of this study is focus on IT governance to investigate the extent to which, and the process through which the discourse of IT governance has come to occupy a place in organizations and society.

Through a thorough study of relevant literature, this paper presents an IT governance framework focusing on ensuring that expectations for IT are met and IT risks are overcome.

KEYWORDS: ***IT governance, IT and sustainability***

INTRODUCTION

It is a truism that chief executives have experienced many failures and disappointments with IT-enabled business transformations. Expecting strategic value from innovation, they have instead experienced project cancellations, business disruptions, rising customer churn, decreasing shareholder value, and many other

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1034

disappointments, including losing their have also prompted renewed soul-searching and interest into the "transparent" and smart IT governance. Nambisan (2013) concluded that in the last one decade or so, the nature of innovation has undergone considerable change in most industries. Innovation has become much more open, global, and collaborative in nature. The continued pressure to reduce the time and cost of innovation has forced many companies to adopt standardized innovation structures, tools, processes, and metrics. All of these changes have significantly enhanced the importance and relevance of IT—from digital innovations to product lifecycle management (PLM) systems to collaboration and social networking applications—and, in turn, they emphasize the need to incorporate IS-related theories and concepts as an inherent element in studies on any product/service innovation.

Boards and business executives have come to recognize that whereas traditionally they could delegate, avoid, or ignore IT decisions, today they cannot conduct production, marketing, or R&D without a robust IT and the IT function at some point in time. As business models and IT become virtually inseparable, managing their integration and co-evolution involves putting the right people in the right place to understand and take direct responsibility for making sure that the organization meets its strategic goals, and that all efforts, including IT, are directed toward that end. Executives recognize that "getting IT right" this time will not be about technology, but about (shared) IT *governance* jobs. Corporate responsibility, business sustainability, and governance reform are currently high on the strategic agenda in many companies. The growing scrutiny over shareholder interests, lingering economic growth, and corporate performance.

RESEARCH PROBLEM

Over the years, IT has become the backbone of businesses to the point where it would be impossible for many to function (let alone succeed) without it. Because of its increasing role in the enterprise, the IT

function is changing, morphing from a technology provider into a strategic partner. Concurrent to these changes, the IT infrastructure is moving towards a centralized, highly adaptive utility model. While there are best practices and certification programs for IT professionals and good systems designed to ensure that companies spend wisely, there is no recognizable measure of IT governance. Executives should be accountable for large investments in IT, and it makes it harder for them to delegate and abdicate their responsibilities in this area. A direct line connecting shareholder value to IT governance is still blurred, and there are ethical pitfalls in attempting to do so. From the literature reviews This study attempts to answer the following research questions from a detailed review of the literature:

1. Does IT governance deal with cross-border differences in the legal frameworks covering commerce? Is it hard to see how a compliance regime could apply to IT governance?
2. How to govern IT for sustained value remains an enduring and challenging question.
3. How can the IT function best support a complex organization, composed of diverse operating business units?
4. What and how much should be standardized, while still being able to respond to the specific needs of the different lines of business and strategic divisions?
5. How do we design a simultaneously transparent, efficient, and flexible model for IT governance?
6. How do we make it function effectively?
7. At the heart of many organizations, is there any need to find answers to tough, almost timeless, questions of governance?

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

The paper also attempts to provide a IT governance framework that will help organizations to

- take advantage of IT's enabling capacity for new business models and changing business practices
- To balance IT's increasing costs and increasing value of information to obtain an appropriate return from IT investments
- To manage the risks of doing business in an interconnected digital world and the dependence on entities beyond the direct control of the enterprise
- To manage IT's impact on business continuity due to increasing reliance on information and IT in all aspects of the enterprise
- To maintain IT's ability to build and maintain knowledge essential to sustain and grow the business.
- To avoid the failures of IT, increasingly impacting the enterprise's value and reputation

SURVEY OF LITERATURE

Uncover IT Issues

While investigating the process of IT governance, Tabach, A., & Croteau, A. M. (2017) found that higher level of business performance was achieved in terms of business processes, decision making, innovation and legal ethical compliance within organisations. However, no significant impact on the financial performance was directly found. Michael D. Cohn (2003) defined IT Governance as the mechanism by which companies establish IT investment guidelines, procedures, and objectives. Governance bodies must act as trustees for the company's IT function and the portfolio of technology investments to establish principles by which IT function will operate, launch processes that will guide organizational behavior over technology and private information. They set IT objectives that are congruent with the company's business goals.

There are four characteristics that require evaluation to establish an effective IT Governance model and select participants

1. Complexity – The complexity of IT function has both an internal and external profile, with supply partners and customers.
2. Budget Volume – Budget volume refers to total company IT expenditures. This should consider infrastructure, applications, and all IT consulting services
3. Scale of the organization – The scale of the organization refers to a quantitative measure such as total seat count, transaction volumes, server counts, number of business applications, etc.
4. Organizational Structure – This refers to the internal reporting lines for the IT function. Although many CIO/CTOs report to company presidents and CEOs, it is common for a CFO, COO, or COA to maintain accountability for IT.

The author also provided a roadmap for building the IT governance body. IT executive management commits to the formation of an IT governance function, the roadmap for success consists of four major steps.

First, Evaluate and Measure the Corporate Environment, Relative budget volume and complexity will guide the setting of principles, drafting of participants, and establishing the operating model.

Second, Draft the Governance Body Participants. Drafted members tend to focus on the task and not contemplate extraneous issues.

Third, Establish the IT Governance Body Objectives and Principles. Together these form the mandate and parameters for operations.

Lastly, Operationalize the Model that will empower the governance body to oversight into approval policies and procedures.

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

Jairak and Praneetpolgrang (2013) studied the current situation and the future improvement for IT governance and controls in developing country like Thailand and generated the strategic IT governance guidance for Thai universities and a method for applying IT governance balanced scorecard metrics and importance-performance analysis. Wim Van Grembergen (2001) wrote an article about the balanced scorecard and IT governance and how the IT balanced scorecard satisfied the requirements of IT governance. IT is fully involved in the business processes of the bank. The Business BSC (balanced scored card) shows a marketing strategy of reaching more and new customers through alternative distribution channels. Proper alignment of IT/business process and the IT governance process is shown in the IT Strategic BSC and the IT Development BSC. The different balanced scorecards drive the business and IT strategies on measurement and follow-up. In this way, there is assurance that the IT organization returns some business value and does not invest in bad projects.

Steven De Haes and Wim Van (2004) said that IT administration is the obligation of the Board of Governors and Management. Effective IT governance is also determined by the way the IT function is organized and where the IT decision-making authority is located within the organization. IT governance should be an integral part of enterprise governance and, in this respect, a primary concern of the board of directors that is responsible for governing the enterprises. The board as well as the business and IT management have to play an important role in assuring the governance of IT. The CIO is an important, but certainly not the only, stakeholder in the IT governance process

Ocasio and McDonnel (2014) showed that the CEO-only structure is more likely to occur in firms in which a higher proportion of insiders predate the CEO, and in which the CEO has greater formal power and agenda control. We also find that powerful CEOs are more likely to realize the structural change following institutional opportunities, such as the passage of Sarbanes-Oxley (SOX), and organizational contingencies, such as positive changes in firm performance. The CEO has primary responsibility for carrying out the strategic plans and policies that have been established by the board, and he/she should ensure that the CIO is part of, and accepted in, the senior-level decision-making process. The CIO and the CEO should report on a regular basis to the board, which is the independent overseer of business performance and compliance. Operational integration covers the internal domain and deals with the link between organizational infrastructure and processes and IT infrastructure and processes.

Eulerich et al (2015) found that the Internal Auditor's self-perception is a central element of the governance structure. A significant interaction between the IAF and the AC is positively linked with the efficiency and effectiveness of the governance processes, internal controls and risk management. Bodnar (2003) gave an overview of the concept of IT governance as it is documented in the internal audit literature. Maturity models, critical success factors, key goal indicators and key performance indicators are the four components of COBIT that indicate the business goal of IT governance. They add value by balancing risk versus return to insure the delivery of information that addresses the required criteria of effectiveness, efficiency, confidentially, integrity, availability, compliance and reliability. Bodnar (2003) gave guidelines to point out that IT governance has become a necessity and critical dependency in information technology. Reporting on IT governance involves auditing at the highest level in the organization. The guideline indicates that the IS auditor should state terms of reference, the scope of work and the reporting line to be used. IS auditor should consider whether his or her organizational status is appropriate for nature of the planned audit. Documentation of the

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

process used to administer the current system portfolio should be reviewed. IT governance is a well-defined concept in the internal audit literature. However, a look at the outside world reveals that the term itself is neither commonplace nor well established.

Alan Rodger's (2002) major motivation was to assist with control of the costs of operating its Management Information Systems (MIS). Within the IT Governance process, business cases for proposed investments in internal systems are viewed in the context of the strategic objectives and plan to verify their alignment with agreed business goals. A preliminary business case must initially be sponsored by a business manager, before assessment by an administration team, If this assessment determines that the investment represents clear business improvement, at low cost, with no identifiable risks, then the development team immediately assumes responsibility for the proposal under a 'Fast Track' system.

This entails enhancement of the information on costs and benefits arising from the proposal, as well as a statement of deliverables that will be required during the development and implementation process, and a forecast of expected timescales. The operation of the IT Governance process is the responsibility of the Operating Board. After implementation, a quality review process conducts a review of the development relating to each business case. The objectives of this review are to assess the accuracy of the earlier estimates of the cost and timescales for implementation, the satisfaction of business users with the results of their investment, the achievement of benefits that were stated, and to gauge whether any lessons were learned. One of the benefits of operating the IT governance process is that the Operating Board retains visibility of the priorities of business cases relative to stated business objectives in terms of the expected benefits. This ability to assess a statement of costs prior to commitment of investment enables spending to be controlled more closely, and to be avoided in cases of uncertainty.

Management Addresses the IT Issues

Nada Korac-Kakabadse and Andrew Kakabadse (2001) concluded that viable IT administration needs to give instruments that empower IT supervisors and providers to create integrated business and IT designs, designate obligations and accountabilities, organize and arrange IT activities. Consequently, IT administration practice ought to guarantee that the IT underpins business objectives, augments on interests in IT, and suitably evaluates IT related dangers and openings by endorsement of choices on asset designation, endeavor asset arranging (ERP), endorsement of web based business assets and its utilization fitness and capacity advancement reviews. This procedure would-

a. guarantee security, protection, encryption, trade, unwavering quality and respectability of key data.
b. secure the venture's interest in data innovation, including frameworks and systems.
c. guarantee that suitable shields are connected to the partnership's data resources, which are vital to the proceeded with progress and survival of the organization itself.
d. Guard against its monopolistic conduct providers.
e. Promote IT moral benchmarks.
f. raise assorted variety of partners in the commercial center, each seeking after real plans.
g. decidedly impacts on the accomplishment of IS/IT objectives.
h. upgrade corporate execution which is significantly influenced by its type administration display used as far as directions, principles, organization culture, and so forth.

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

i. recognise that the governance of technology is a critical success factor in enterprise business success.

Fichman et al (2014) found that managers can enhance PLM deployments by employing configurational thinking. This means treating PLM technology as just one part of a larger system of reinforcing elements related to the creation of new business capabilities. They identified two distinct layers of configurational thinking the mindset layer and the toolset layer and derive six principles spanning these layers that embody configurational thinking on PLM projects. Alan Earls (2003) writes about how IT departments which have brought efficiencies to each corner in an organization but still operate a craft business without an exception.

Mike James (2003) says that IT Governance is inherently tied into corporate or enterprise governance, and will both reflect and help shape the changes that organizations undergo over a period of time. CRM allowed organizations to provide better levels of customer service, to outface their operations, to globalize their front office applications. ERP systems tied together the back-office operations in a similar manner. Integration, amongst other requirements, tried to tie these front and back office systems together and Web services is starting to force a reconsideration of the way that organizations offer their services. Organizations are spending millions on these three areas alone, but still someone had to question the three aspects of this spending such as –

a. who is involved in the decision-making process and the level of responsibility?
b. what checks, controls, and measurement practices are put into place to oversee these huge implementations?
c. who is the person overseeing these and bears the ultimate responsibility for failure?

Constantinides and Barrett (2014) examined how different actors frame the infrastructure as a collective action good and explore their ideological positioning and developed contributions on the collective action challenges in infrastructure development and suggest how a polycentric approach to governance might be further developed to promote the ongoing cultivation of information infrastructures from the bottom up. Mathias Sallé (2004) explains the fact that IT Governance, IT Service Management and IT Utility cannot ignore each other whilst trying to bring about the new vision of a highly adaptive IT infrastructure. The author suggests that ensuring the ability of this new infrastructure to align business objectives will be the key to its success. He remarked how the evolution of IT organizations from technology providers into service providers requires taking a different perspective on IT management. The author suggests that strategic alignment can be achieved in a utility infrastructure by introducing the discipline of management by objectives (MBO). A management by objectives system leverages from the knowledge of the business objectives to assess various management options (options to solve a problem, options to allocate resources, etc.) with regards to their strategic alignment and to determine the best aligned option. Such a system therefore ensures that the decisions taken within the automated systems of the utility are informed of the business expectations therefore resulting in a better aligned usage of IT resources.

Rebollo et al (2015) empirically evaluated a security governance framework adapted to cloud computing that leads to a secure cloud service deployment and found that such a framework matters in a comprehensive manner whilst being aligned with an enterprise's strategy. The overall objectives of IT governance activities are to understand the issues and the strategic importance of IT, to ensure that the enterprise can sustain its operations and to ascertain it can implement the

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

strategies required to extend its activities into the future. Enterprises must consider the best ways to offer flexibility to customers and trading partners, yet ensure security of critical information and systems for all its users. To exercise effective enterprise and IT governance, boards of directors and executive management must have a clear understanding of what to expect from their enterprise's information security program. They need to know how to implement an effective information security program, how to evaluate their own status with regard to the security program in place and how to decide what security program is desired.

Guragai et al (2015) summarised AIS and ethics research and called attention to gaps in the literature and provides directions for future research. The ETHOs framework, which categorizes factors as environmental, technological, human, and organizational, provides a model for researchers to examine ethical issues related to the AIS functions of recordkeeping, reporting, and control. Helen Gray (2004) concluded that in a public organisation whose shareholders are effectively the public, the need to ensure that governance is undertaken in an open and transparent way and that public officials are accountable for their actions is of prime importance to develop and maintain confidence and trust.

In terms of accountability, they said that there should be clear accountability of persons and functions associated with the controls within an organization. For particular information and functions an independent view on the efficacy of these controls should be obtained. Attributes in this area that can therefore be derived are: Quality of information to stakeholders– information produced must be comprehensive, timely and accurate for both executive and stakeholders. Clear reporting lines– information and responsibility reporting lines should be unambiguous and clear within the organisation, with defined roles for all staff Independent audit of information and function– to enable stakeholders to have confidence in the information and activities of the organisation, there should be mechanisms to allow key information or functions to be audited by external bodies. He defined IT governance in this way, When governance is spoken of in ISD it is often coupled with project and programme management. LSC staff outside of ISD have little knowledge or understanding of what IT governance is or what benefit it might be.

Self-assessment of IT Governance Practices

Eugene Lacey (2002) finds out IT governance has a directly traceable impact on company profits and lack of it will offer clear reason for investors to avoid buying the stock of certain companies. There is no recognizable measure of IT governance There are best practices, certification programs for IT professionals, good systems for competitive tendering designed to ensure companies spend wisely, and even BS 7799 (a British Standards accreditation for security professionals). IT professionals are acutely aware of the threats to business continuity and profits of outages and cyber attacks. And if possible to have investment portfolios based on environmental concerns, then why not have one based on a preferred IT governance regime too? But the problem is what will the recognizable best practice in IT governance be?

Dr Gary Hinson (2004) mentions Corporate governance can be defined as modern buzzword for old-fashioned management controls which includes appropriate management structures, Management control frameworks, with clear accountability and responsibility, Ethics in the business context, and social responsibilities, Risk management and Management oversight and controls review. Reports such as Cadbury were widespread discussion on the subject of corporate governance and written by senior quasi-governmental committees. They use the response

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

from commercial, governmental and academic groups in a form of cross-industry benchmarking. Those groups who are interested should discuss their perspectives on recent management control failures and propose generic improvements the committees findings primarily relate to large publicly listed limited companies although the underlying principles, if not the full details, are more generally applicable. The recommendations are not formally enshrined in British law but organizations are well advised to comply. Everyone in the organization should be responsible in proper management and control of the organization's assets. The Governance Director plays a role as an executive board position that acts as a co-ordination, alignment and strategic leadership function. The management hierarchy of a typical organization invests a great deal of power and influence in senior management. With a clear view governance is more likely to be defined and applied consistently across the corporation. Ethical standards of the top team influence the entire organization. Their tacit or explicit acceptance of unethical policies and working practices can easily lead junior managers and staff astray. In conclusion the author believe that there should be more than enough governance-related work to be done in any large organization to justify the full-time leadership position of Governance Director

Phil Ogilvie (2002) suggests that a similar issue facing the IT director is how to ensure alignment with the business. Numerous studies cite business and IT alignment as one of the top issues facing IT directors. Most organizations cannot adequately measure its performance and operationally focused, inwards looking and also, at best, loosely related to the business. Merely having an IT steering committee is not IT governance. Governance is inevitably weak if performance cannot be adequately measured IT measures like total cost of ownership (TCO) tend to focus on cost rather than return or value. Other operational measures, like system availability, mean little in the real world. Without a strong system of performance measurement, the board and senior management will tend towards gut feel when assessing It's performance, and, according to a survey of US CEOs, 68 per cent were either "completely displeased" or only "somewhat satisfied" with the information they received from their top IT executives. It's not just IT suffering from governance and alignment problems, however. The same methods that businesses are using to better define and communicate their strategies and objectives, and to improve governance and alignment, can be employed by IT as well.

Marios Damianides (2004) Having weathered the storm of legislation such as Sarbanes-Oxley Act of 2002 that broke in the wake of corporate wrongdoing enterprises are beginning to rebound and get back to new (or may be to the old) by these words the author started his article.he discussed how Sarbanse-Oxley has had a strong impact on corporate governance and IT governance , he said the prominent role of IT in creating business value has accelerated to the establishment of the concept of IT governance as a high priority for boards of directors and executives management. In response IT governance practices need to focus on insuring that the expectation of It are met and that It risks are mitigated .Sabances-Oxley focus on enhancing corporate governance through measure that will augment internal checks and balance and ultimately strengthen corporate accountability.

Elia et al (2014) showed that the alignment of the governance choice with an extended transaction cost economics approach leads to better performances. However, the impact of a possible misalignment: (1) is asymmetric, as only the failure to undertake a captive mode negatively affects performance; and (2) negatively affects service quality more than cost saving.

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

Stuart L.Gillan, Jay C. Hartzell, and Laura T. Starks (2003**)** Explain IT Governance Boards, Bylaws, and Charter Provisions They provide arguments and present evidence that corporate governance structures are endogenous responses to the costs and benefits firms face when they choose the mechanisms that comprise these structures. In particular, an industry's investment opportunities, product uniqueness, competitive environment, information environment, and leverage help explain its governance. Examining groups of similar IT governance mechanisms shows that firm and industry factors can have quite different associations in strength and direction with the monitoring capabilities of the board of directors versus the shareholder orientation of corporate charter provisions. Although industry factors play a dominant role in explaining an index of total governance, they find that firm and industry factors contribute almost equally in explaining the variation of sub-indices capturing aspects of board structure and charter provision use.

Francisco Magno and Ramonette Serafica (2001) wrote about the role of IT in good governance and how information systems could raise the quality of governance in ways that would satisfy citizen demands. His article surveys the various efforts exerted by national line agencies and local government units in the Philippines to integrate IT in the implementation of policy and administrative reforms. The drivers and hurdles to such initiatives are likewise examined. He also identifies areas for extending analytical inquiry and policy action in the terrain of electronic governance, he mentioned that Information technology contributes to good governance by (1) increasing transparency, information, and accountability, (2) facilitating accurate decision-making and public participation, and (3) enhancing efficient delivery of government services.

Marianne Broadbent (2002) says understanding effective IT governance requires understanding its components, how they can be represented and what makes for effective IT governance. Most views on governance are based on anecdotal evidence. Enterprises achieving above average returns from IT investments deal with the increased complexity by clarifying who is able to make critical decisions and who is accountable. That is, they have thoughtfully designed their IT governance, rather than focusing only on how IT is Managed. IT governance specifies the decision rights and accountability framework to encourage desirable behavior in the use of IT. It is not about IT management and the detail of particular IT decisions and their implementation. Rather, it is about the arrangements for who makes critical decisions and who is accountable. IT governance applies principles similar to financial governance to IT, such as who is authorized to commit the enterprise to a contract or authorize a payment. However, business and IT governance are poorly understood. IT governance "just happens" in many enterprises. IT governance is not actively designed to achieve business objectives and desirable behaviors. Defining desirable behaviors and harmonizing IT governance with business objectives takes time, effort and a clear focus. Governance processes involve decisions about major IT domains, that is, those areas, such as IT investment, IT principles etc. IT governance should be thoughtfully designed to encourage desirable enterprise behaviors. However, too often, business and IT governance just happen.

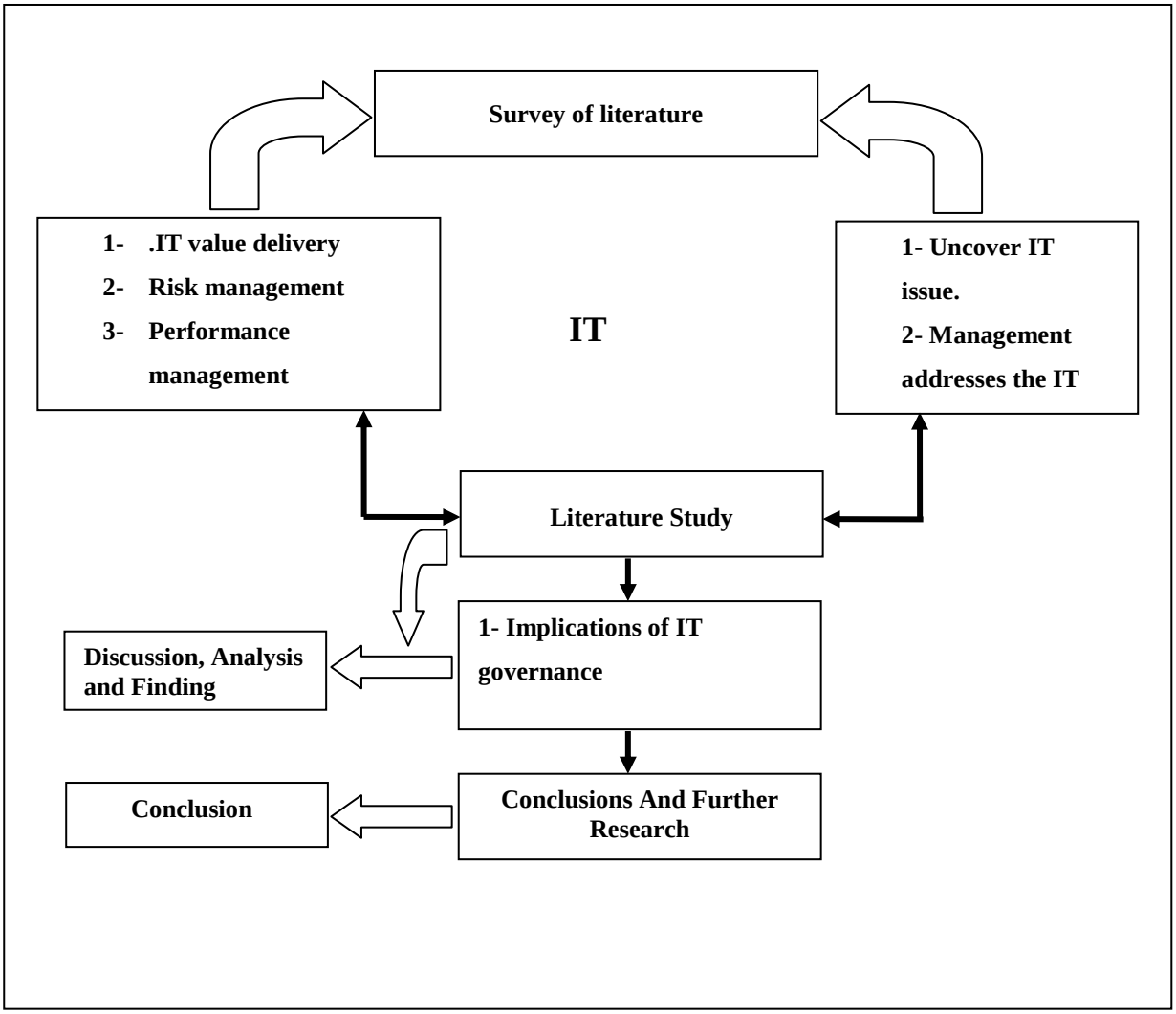
MSV Rao (2003) says Technology is so embedded in internal functions and in the external value propositions of most modern organizations, that it has assumed a strategic role. According to Arun Netravali's predictions that, intelligent devices worldwide will 'talk' to each other and bandwidth will be a commodity free like air, may soon prove to be true. This will translate explosion of technology involving major transformation of

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

the Internet into a mega High-IQ net will influence the very nature by which IT is used in many enterprises. IT has grown up so fast from a mere supportive role to an enabling role, and in some business areas, to a critical success factor interwoven with the other business processes of the enterprise. Technology has become so much in demand in the internal functions and the external value propositions of a modern organization, at least in some sectors, that it has assumed a strategic role.

RESEARCH METHODOLOGY

Secondary research data was gathered from journals listed in Emerald and ProQuest research databases and after a thorough analysis of the relevant literature, a framework for IT governance is proposed (Fig 1) below:



DISCUSSION, ANALYSYS AND FINDING

IT administration, as other areas of management, is the obligation of the Board of Directors and managers. It isn't a separate subject or function, but instead is fundamental to big business management. It comprises of the authority and hierarchical structures and procedures that guarantee that the undertaking's IT maintains and broadens its strategies and goals. Fig 2 illustrates the level of managerial involvement across the organizational chain

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

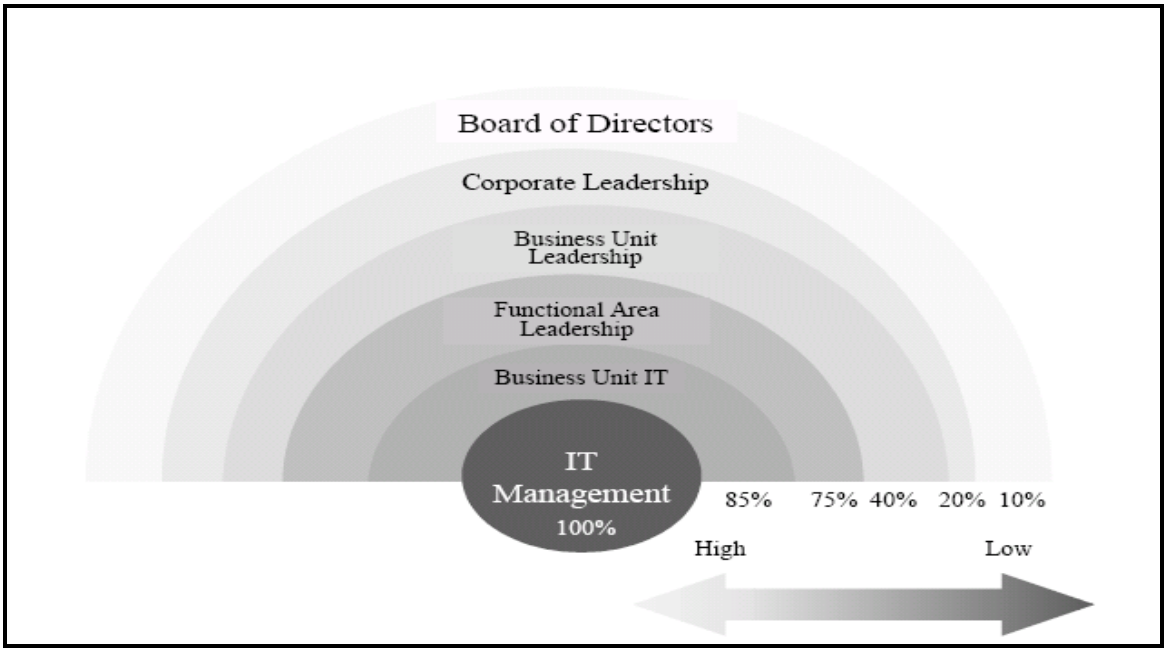


Figure 2: IT Governance: Approximate Probability of Participation

IT governance is also a process in which the IT strategy drives the IT processes that monitor the process outcome, performance, risks mitigated and accepted, and resources consumed as illustrated in Fig 3. These IT reports should either confirm that the strategy is properly executed or provide indications that strategic redirection is required IT governance entails a number of activities for the board and for executive management, such as becoming informed of the role and impact of IT on the enterprise, assigning responsibilities, defining constraints within which to operate, measuring performance, managing risk and obtaining assurance. Typical subjects covered by these activities include the objectives of IT, the opportunities and risks of new technologies, and the key processes and core competencies.

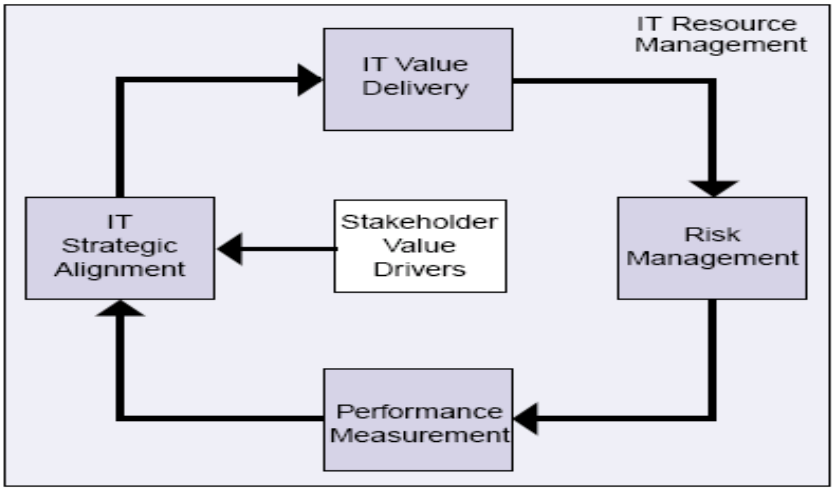


Figure 3: Focus Area of IT Governance

IT Strategic Alignment

The key question is whether an enterprise's investment in IT is in harmony with its strategic objectives (intent, current strategy and enterprise goals) and thus building the capabilities necessary to deliver business value. This state of harmony is

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

referred to as "alignment." It is complex, multifaceted and never completely achieved. It is about continuing to move in the right direction and being better aligned than competitors. This may not be attainable for many enterprises because enterprise goals change too quickly, but it is nevertheless a worthwhile ambition because there is real concern about the value of IT investment. Alignment of IT has been synonymous with IT strategy, i.e., does the IT strategy support the enterprise strategy? For IT governance, alignment encompasses more than strategic integration between the (future) IT organization and the (future) enterprise organization, as illustrated in Fig 4 below:

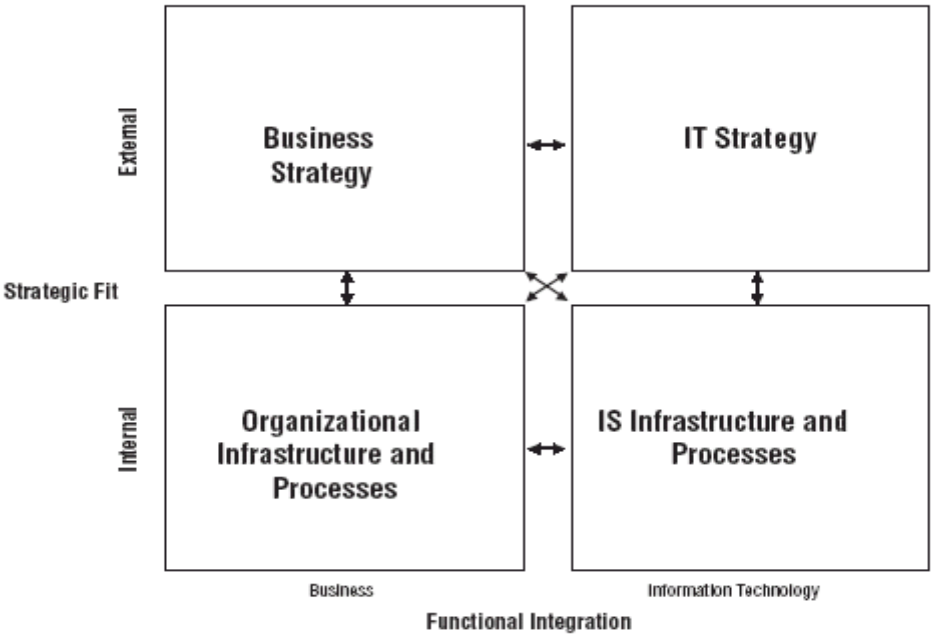


Fig 4. Strategic alignment model

Value Delivery

The basic principles of IT value are the on-time and within-budget delivery of appropriate quality, which achieves the benefits that were promised. In business terms, this is often translated into: competitive advantage, elapsed time for order/service fulfillment, customer satisfaction, customer wait time, employee productivity and profitability. Several of these elements are either subjective or difficult to measure, something all stakeholders need to understand. Often, top management and boards fear to start major IT investments because of the size of investment and the uncertainty of the outcome. For effective IT value delivery to be achieved, both the actual costs and the return on investment need to be managed.

To be successful, enterprises need to be aware that different strategic contexts require different indicators of value. This means that it is important to establish the value measures in concert between the business and IT. This implies, as is recommended below, that the IT balanced scorecard should cover these measures and be developed with input and approval from business management. It should also be mentioned that the public sector has different value drivers/indicators than the private sector. In the public sector, measures like compliance and due diligence take prominence over financial measures such as profitability.

Risk Management

The universal need to demonstrate good enterprise governance to shareholders and customers is the

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

driver for increased risk management activities in large organizations. Enterprise risk comes in many varieties, not only financial risk. Regulators are specifically concerned about operational and systemic risk, within which technology risk and information security issues are prominent. The BIS, for example, supports that view because all major past risk issues studied in the financial industry were caused by breakdowns in internal control, oversight and IT. Infrastructure protection initiatives in the US and the UK point to the utter dependence of all enterprises on IT infrastructures and the vulnerability to new technology risks. The first recommendation these initiatives make is for risk awareness of senior corporate officers.

Resource Management

Elia et al (2014) showed that the alignment of the governance choice with an extended transaction cost economics approach leads to better performances. However, the impact of a possible misalignment: (1) is asymmetric, as only the failure to undertake a captive mode negatively affects performance; and (2) negatively affects service quality more than cost saving. A key to successful IT performance is the optimal investment, use and allocation of IT resources (people, applications, technology, facilities, data) in servicing the needs of the enterprise. Most enterprises fail to maximize the efficiency of their IT assets and optimize the costs relating to these assets. In addition, the biggest challenge in recent years has been to know where and how to outsource and then to know how to manage the outsourced services in a way that delivers the values promised at an acceptable price.

Performance Measurement

By using the balanced scorecard, managers rely on more than short-term financial measures as indicators of the company's performance. As shown in Fig 5 below, they also take into account such intangible items as level of customer satisfaction, streamlining of internal functions, creation of operational efficiencies and development of staff skills. This unique and more holistic view of business operations contributes to linking long-term strategic objectives with short term actions. Tallon (2013) found that data governance practices that maintain a balance between value creation and risk exposure is the new organizational imperative for unlocking competitive advantage and maximizing value from the application of big data. He discusses how projection models can help individuals responsible for data handling plan for and understand big data storage issues:

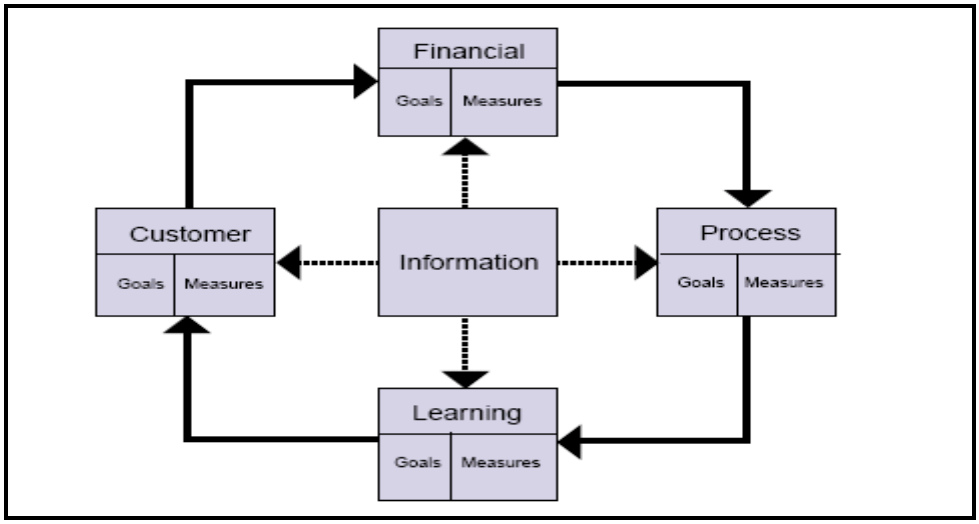


Fig 5: balanced scorecard dimensions

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

IT not only contributes information to the business scorecards and tools to the different dimensions being measured, but also—because of the criticality of IT itself—needs its own scorecard. Defining clear goals and good measures that unequivocally reflect the business impact of the IT goals is a challenge and needs to be resolved in co-operation among the different governance layers within the enterprise.

IT governance and accountability

IT governance exists within the context of corporate governance, and the principles are essentially the same. IT governance is an accountability framework and management process that helps to define and communicate what must be done and provides the rigorous oversight to ensure that it is. It drives interactions and provides feedback mechanisms that encourage communication and desirable behaviors. The accountability framework is typically made up of well-defined roles and responsibilities reflecting decision rights among the participants in the IT management process and is reinforced by effective reporting. Making sure decision rights are clearly defined is critical to resolving a myriad of issues around strategy, standards, monitoring and change introduction.

Implementing Governance - Key Steps and Critical Success Factors

Although IT governance can be defined to include only "the assignment of decision rights and related accountabilities," in practice it should address a variety of oversight responsibilities, control and decision criteria, management activities, and decision rights assignments. IT managers who set out to develop a more-effective IT governance process should start by regarding IT governance as a collection of individual processes to achieve specific and individual goals, rather than as a "group noun" describing a single homogenized set of responsibilities. The contemporary view of IT governance is comprised of three elements: structure, principles and process. However, from an implementation viewpoint, principles need to be addressed first, and then process design and development must be used to define IT governance steps as shown in Fig 6 and roles and responsibilities of concerned employees.

Senior Management Buy-in and Sponsorship: A necessary precursor to developing principles and a governance design is obtaining senior business management buy-in to the importance of effective IT governance. If IT governance is being practiced ineffectively in enterprise, it should not be difficult to identify dysfunctional areas and build a business case for change.

Governance Principles: IT governance principles will define the role that IT will play within and across the organization. These principles must be defined in the context of business strategy. IT is normally targeted at supporting business operation strategy, as defined and developed at the business entity level, to ensure the successful management of the business model. In enterprises with multiple business units, this means identifying strategy support needs for each business entity and developing principles that guide how IT will support them, collectively on a shared-service basis or individually.

Governance Areas: Next, identify areas that require IT governance policies and processes, and specify goals for each area. These goals should include the business value, along with metrics that measure the achievement of goals, not just the mechanics of the activities to get to them. IT governance areas can be grouped under two main categories:

Supply Side: IT Governance Over the Provision of IT Services. This category, which affects the "how" of IT activities and scope, includes:

- Security policy
- Business continuity policy
- IT architecture
- Development standards

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

- Supplier policies
- Centralization vs. decentralization of IT management and resources
- Ownership and usage policy of data and processes

As IS organizations become leaner and more agile in their efforts to support changing business objectives, they increasingly outsource their IT resources (skills, knowledge and innovation capacity). As a result, a growing area of IT governance is sourcing governance. To facilitate this trend, some enterprises have implemented a "sourcing office" as a derivative of the successful project office.

Demand Side: IT Governance Over Decision Processes. This category addresses the "what" of IT services and includes:

- The alignment and integration of business and IT planning
- The total amount of financial and other resources to be devoted to IT in an enterprise
- The allocation of IT spending and resources between business units
- The criteria for assessing the value of proposed investments in IT-related projects
- The relative priorities to be established for investment alternatives
- Accountability for realizing the benefits of investment projects
- New IT investment funding, and usage and chargeback policy

Clearly Defined Governance Processes: The next step addresses the most-problematic area in IT governance implementation - developing a complete and practical process for achieving goals. The place to start is at the end, defining the goal for each selected aspect of IT governance. Examples of goals are an effective decision on whether a specific project should be approved and its relative priority, how to fund the creation and implementation of a new IT infrastructure capability, and how funding will be structured for new enterprise application development and deployment. Next, define how, within the realities of your organization and management culture, a governance decision would be reached, working back through the necessary series of process steps with defined inputs, outputs, activities, roles and associated responsibilities and authority. This exercise is intended to clarify:

- When an individual is required to make a decision
- When decision making must be shared, and the type of forum that is most effective for collaboration
- The type of information required for decision making
- Which advisory forums must inform decision makers
- The activities and responsibilities of operations management and staff specialists
- Which staff support activities will be required to make the process work
- The specific deliverables that are required to pass from step to step

Developing and supporting the IT governance process is usually the responsibility of a project management office, reporting to the CIO, which coordinates the processes and participants and acts as a "gatekeeper" to ensure that IT and business activities are coordinated with the IT governance process.

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

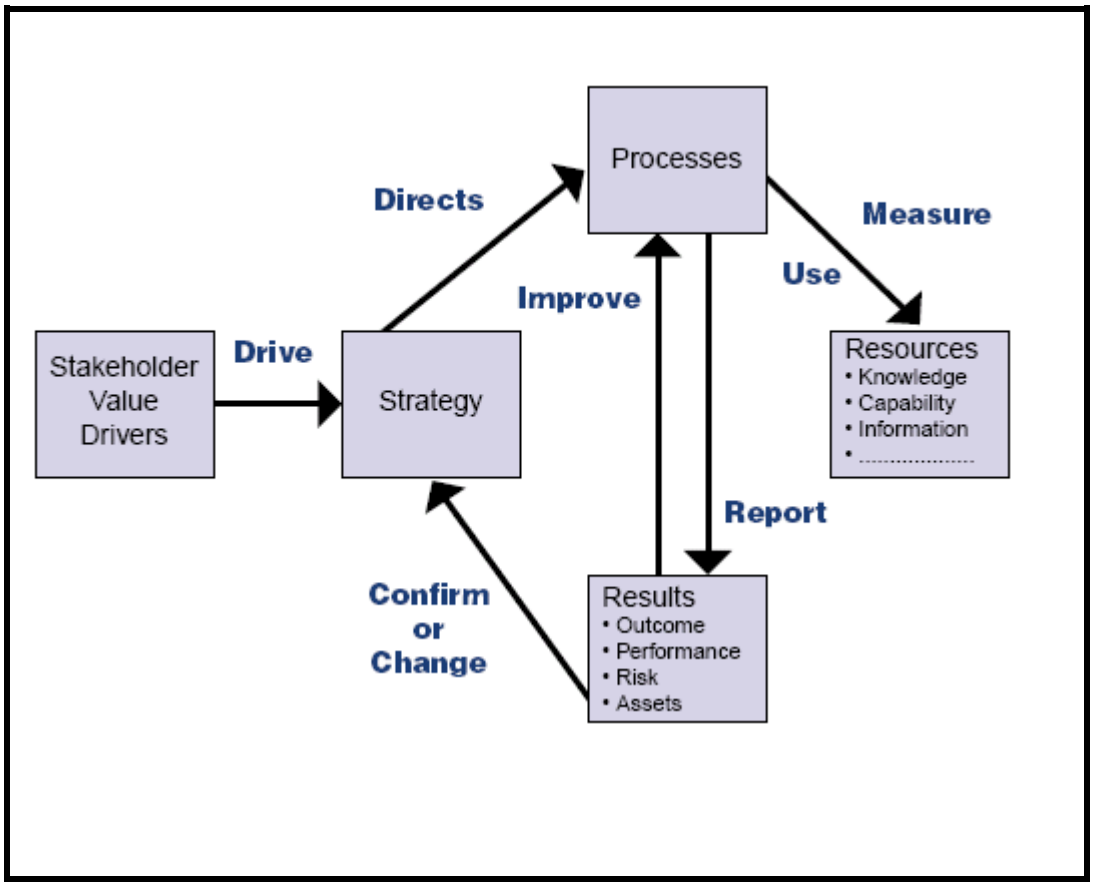


Figure 6: IT Governance process

The above proposed IT Governance Process could get derailed due to three main factors. Which cognizant managements should watch out for, if they want to establish a robust IT governance process in their organisations.

Inadequate Participation by Business Management: Many aspects of governance require business management to actively participate and, in some cases, assume primary responsibility. IT managers must present a strong case for IT governance by demonstrating its link to improved business performance, or senior business management will likely regard IT governance as an "IT activity" and deny it the priority and support it needs. This is required to overcome such issues as a perceived negative impact from IT governance on the speed of business decision making. Implementing IT governance, therefore, is a shared responsibility between the CIO and senior business management.

A Lack of Clearly Articulated Goals: Participants who don't understand why it is in their interest to participate in the IT governance process will offer token gestures of support, rather than use IT governance as a tool to achieve business goals.

A Lack of Clearly Defined Governance Processes: It is important that a clearly defined and practical process be created to achieve the goals set for IT governance. This process must recognize the decision-making style, culture and practices of the enterprise; and must identify action steps, roles, responsibilities, and final and intermediate deliverables.

CONCLUSION

The proposed IT governance framework helps Boards of Management to understand the issues and strategic importance of IT. It provides a route map to ensure that expectations for IT are met and IT risks are addressed. IT governance fits in with

Volume 2 Issue 11 November 2017
DOI: 10.18535/afmj/v2i11.03
Page no.1014-1032

the broader governance arrangements that cover relationships between an organisation's management and its governing body, its owners and its other stakeholders. It provides the structure through which the entity's overall objectives are set, the method of attaining those objectives is outlined and the manner in which performance will be monitored is described.

To get its IT governance initiatives headed in the right direction, an enterprise needs an effective action plan that suits its particular circumstances and needs.

First, it is important for the board to take ownership of IT governance and set the direction management should follow. This is best done by making sure that the board operates with IT governance in mind:

• Making sure IT is on the Board agenda
• Challenging management's activities with regard to IT, to make sure IT issues are uncovered
• Guiding management by helping it to align IT initiatives with real
business needs, and ensuring that it appreciates the potential impact on the business of IT-related risks
• Insisting that IT performance be measured and reported to the Board
• Establishing an IT strategy committee with responsibility for communicating IT issues between the board and management
• Insisting that there be a management framework for IT governance based on a common approach (e.g., COBIT)

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Volume 2 Issue 11 November 2017
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Page no.1014-1032