

IT Investment Governance and Corporate Governance: Perspective and Approach

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Abstract – The change in economic scenario and emergence of new technologies, it has become important to put new perspective on IT investment beyond Net Present Value and productivity paradox. With changing regulation and new interconnected world over internet, corporate Governance, Business Plan & Strategy and it's alignment with IT investments has been a growing subject of discussion across globe. Cloud computing infrastructure with ITIL processes provides systematic guidelines to manage business, however, to make business and its processes deliver value, IT investment demands investment in more than technology and its components. IT investment available to build organization capability are directly linked with corporate strategy, business risk management, information economics, new business enabler, productivity tool and control systems. With need of new products and service development, innovation forms the center stage of IT investment planning, giving way to new IT investment assessment areas. With constant need to develop competitive advantage, adjust with competition in business environment and integrate with global economy, at the same time adhere to regulatory guidelines, the complexities involved in corporate governance and IT investments are increasing. Considering this situation, this paper provides the new perspective to assess IT investments and make IT investment decision. This paper also provides new perspectives and approaches for IT investment portfolio management.

Keywords – Technology Investment, Banking, Innovation, Cloud Computing, Economy

I. INTRODUCTION

With evolution of cloud computing model and cloud infrastructure support staff located across globe, corporation have not only saved cost in maintaining technology infrastructure, but also managed to keep pace with global technological advancements. The role of IT through cloud infrastructure has been more of the global capability to build business. For businesses operating globally, consistent development of technical capability located centrally at the same time unique for specific geography forms the area of focus and complexity. For Banking business to operate in this these environment, assessing organization strategy and IT investment is forming the key components to plan financial budgets. The changing role and use of technology is affecting corporations in below areas directly and demand newer capabilities [1] [2] [3]:

1. To maintain competitive advantage at market place at the same time provide technological capabilities to cloud infrastructure users

2. To be able to deliver business value, returns to stakeholders and government reporting needs without major changes to cloud infrastructure
3. To be able to innovate with business lines, products & services [11]
4. Develop data and information based business model
5. Support government with new reporting requirements
6. To be able to add and remove technology and its components (architecture agility) as and when required
7. To mitigate financial, people, operational and procedural risk (assurance services)
8. To act on formulated strategy
9. To promote collaboration among staff and develop negotiation skills at market place
10. To work within financial budgets for financial progress
11. To promote & develop productive and efficient work force
12. To lead organization through challenging times
13. To develop newer organization and business Policies
14. To improve geographic reach of business services
15. To measure and deliver Financial Goals
16. To keep business competitiveness and technology enabler in synchronisation
17. To build secure and cyber-attack resilient systems of future
18. To deliver desired outcome for business

Above areas highlight the diverse needs of business and changing role of technology. Based on areas business and related technology, investment plan for capability development are planned.

Corporate governance refers to set of principles on its basis board of directors operate organization to meet its objectives. Corporate governance principles are to manage business, strategy, risk, people, technology, regulators and government relationships. These principles reflect values

and culture in behaviours and conduct of an organization. These also forms the constitution of an organization.

IT governance are set of principles to manage relationship with organization and business in order to reflect corporate governance principles. IT investment governance is work within IT investment governance is to direct organization's financial resources to constantly support vision, mission, business plan and strategy of organization to reflect corporate governance with changing times.

The IT investment commitment reflects the value organisation plans to develop through technology [1].

With financial resources at stake and linked to corporate strategy, measuring and monitoring progress on IT investment forms part of financial reporting. Organizations historically have used financial methods (traditional capital investment appraisal techniques (CIAT) for IT Investment Assessment mainly Net Present Value (NPV), Internal Rate of Return (IRR), Return on Investment (ROI), Return on Equity (ROE), Return on Sales (ROS), Total cost of ownership (TCO) and Pay Back Period methods [5]. These method helped objective assessment, benefit realisation and relate financial benefits to justify investment.

The non-financial methods in the form of intangible benefits, intellectual property, product improvement, leverage with existing economy, competitive market position, organization performance, employee development, employee performance, customer development, innovation & learning, relation to organization's strategic planning for competitiveness and survival, enabler for new product and service development, operational benefits, research investment and infrastructure development (upgrade). In order to balance IT investment decision making, financial and non-financial methods (referred as hybrid methods) are commonly implemented.

Considering this, the IT investment continues to be area of important but low on priority for an organization's strategic plan. Below are the areas which make investment in IT more relevant for organisation and business [4] [6] [8]:

1. Able to drive Innovation for future products & services [11] [14] [19] [30]
2. Ability to respond to changing business operation [5] [31]
3. Comparison to existing technology:
 - a. Current and future benefits, ease of integration, existing difficulties, experimental approach and ability of supervise / monitor [22]
 - b. Resource (time and people) requirement to implement, ability to communicate with

diverse groups and regions, ability to replicate in various locations, financial gains, acceptance from employees and 3rd party vendors, reputation, utility, ease of use, outcome, ability to show expected results, visibility

- c. Marketing and business development, pricing, technology benchmarks of global standards, technology simplification, technology support / grant / subsidies, industry competitiveness
4. No. of employee actively using technology, unengaged resources (human capital and financial resources)
5. Industry peers / Competitors analysis using similar technology
6. Strategic Direction - strategic willingness and awareness through technology
7. Degree of sensitivity and significance of sensitivity to business with technology
8. Workforce Characteristics (education qualification, technical skills, managerial skills, work place behaviour, total no. of work experience) [30]
9. Ability to receive and respond to new communication methods, ability to receive and respond through new information
10. Adoption and response to - competition, industry concentration, research & development, financial gains, technology intensity, rate / speed of technical changes, competition pressure
11. Receptive to innovation, knowledge about innovation, Diversity of Knowledge, Tasks

Above identified areas help provide detailed justification for investment in technology relevant for an organization. With shareholder's value, corporate governance [40] and future strategic goals in sight, IT investment requires approach that is relevant to existing economy and available technology.

The paper has been organised by highlighting the current IT investment assessment methods, challenges with exiting methods, need and importance of information system (IS) assessment with IT assessment and various factors that play crucial role in IT assessment to achieve desired result. The value delivery of IT investment [1] and framework to IT investment assessment [7] provides background of exiting work completed this field of research. The mathematical fuzzy model [3], and real option theory [10] provides more financial (numeric) approach for IT investment assessment. The impact of IT investment assessment on firm's market value [12], perception of IT investment and business value [11] and

importance (and role) in government of IT Investment assessment [32] provides detailed view of IT Investment's relation to other aspects of the organization.

II. CHALLENGES WITH IT INVESTMENT ASSESSMENT METHODS

With multiple areas of assessment to make right decision for IT investment, the organizations develop multiple assessment framework to ensure IT investment in line with corporate strategy. Below are processes which organization's follow to assess IT investment decision in general [24] [26] [33] [34] [35]:

1. Opportunity for development and / or problem identification: This area is typically for several known problems (software, hardware or architecture) to improve existing IT infrastructure capabilities.
2. Investment strategy formulation: Ongoing business process changes demanding change in technology infrastructure provides scope for IT investment assessment.
3. Information economics [3] [19] [22] [36] [37]: The increasing volume and flow of information demanding new methods and technical capabilities for IT investment assessment.
4. Multiple objective / multi-criteria methods: Economic value [36] [37] analysis and critical success factors to measure intangible benefits

In order to increase success rate of the investments [1] [26] and achieve desired results in business processes, organizations use all or combinations of the above mentioned processes.

Despite having robust governance framework [40] and methods (policies and procedures) around IT investment, organizations struggle while making decision for IT investment due to constantly changing environment. Below are challenges organization deal with IT Investment:

Challenges with current IT investment assessment system:

1. Difficult to Quantify investment [3]: Considering the innovative nature of technology (presentation layer, application layer, external interfaces), commercial & legal requirement, it is becoming challenging to objectively (read financially) quantify the benefits of IT investment. The new technologies may not provide all the details at initial investment assessment stages.
2. Lack of available techniques of assessment [3]: Apart from known financial and non-financial investment appraisal methods, based on underlying technology, it is difficult for an organization to decide whether to focus on financial aspects (and returns – RoI). In the event of only financial assessment organizations may

miss out on non-financial aspects and importance of IT investment.

Example: Data mining tools & technology to develop data driven business model may demand other input from data sources, this will make the current investment techniques not relevant or complex.

3. Assess through performance [3]: The hardware and software technologies which follow identified use and life cycle are easy to assess based on performance (data processing capacity, no. of connections, no. of users supported / load handling, capacity utilization). This help in identifying payback period [5] and revenue model for business. However, for the technologies which are a nascent stage of development (machine learning algorithm, medical genetic decoding programs, quantum computers / processors, data compressing techniques) are hard to assess performance and are driven by adoption by market and usage. These scenarios make assessment through performance challenging. In the event of assessing data migration, new data centre establishment, product version upgrade and increasing functional capacity of existing application / digital platforms, assessing performance is possible only after implementation and investments. These types of investment are mostly driven to upgrade end of life technologies and add huge capital expenditure to financial plan.
4. Insufficient true skills [3]: New technology architecture and interrelation with business model requires gaining new insights of capital and ongoing cost consumption areas for financial assessment of IT investment. In any type of IT investment requires new skill development within an organization or outsource skill requirements for IT investment decisions. Insufficient skills delays in making IT investment decision.
5. Lack of structure for assessment [3] [17]: The IT investment decision making process has top down approach (Board of director to operations (and project manager). The formal structure makes IT investment aligned to origination business plans and strategy [5] [11] [22] [30]. However, when the individual departments are given financial budgets to manage, IT investment decision lose centrality [14]. This delays and hinders the progress in IT investment decision. IT contract services also require structural control [23] [30] for ongoing IT delivery support which makes IT investment decisions complex.
6. Detailed business plan with embedded methodology [17] [32]: The design of the business model with embedded technology requires collaboration and detailed information on business and technology components. Designing such detailed model for objective evaluation of IT investment assessment poses challenge in decision making.

The importance of IT Investment assessment, relation to achieve organization's goals and challenges to make sound decision also highlights importance of IT investment assessment.

III. NEED AND FACTORS FOR IT INVESTMENT ASSESSMENT

The key areas identified for systematic analysis for IT investment assessment and corporate governance as part of this paper are:

1. Business Operations and Financial Planning
2. Business Model
3. Economics and External Factors
4. Government and Compliance Requirements
5. Human Capital
6. Human Psychological Factors
7. Technical Project Management Skills

The above mentioned factors and their inter-relation provide guiding principles, interdependency to plan governance and investment to gain competitive advantage.

1. Business Operations and Financial Planning

- a. Along with the need of IT investment assessment, assessment and risk of not proceeding to invest in future technologies help prepare organization for adverse scenario.

Example: The financial and non-financial estimation of the technology replacement provides guidelines with time required to complete the projects and help make correct IT investment decisions.

- b. The goals to meet financial results for an organization demanding cost control provides estimation for technology selection and possibility of experimentation.

Example: In Banking and Financial Services Corporation, IT infrastructure upgrade and replacements add to system outage and business impact. The cost and time involved in this projects provides guidelines for an organization to make IT investment decisions.

- c. IT investment leading to competitive advantage, technology in accordance with prevailing economic conditions and available skills within organization to develop this technology capability forms the central area of business planning. Though technology differentiation [9] [16] [19] [32] can be copied / imitated by competitor, organizations should plan first movers advantage by reaching customers and delivering value.

- d. The global technology outsourcing model and participation of several technology vendor partners require timely engagement for IT investment assessment. The vendor selection and their competencies add value to an organization.

- e. With development of networking technology and high speed internet connection for data transfer (5th Generation technology), the business planning around specific technological advancement will help remain synchronised with domestic and global economy.

Example: The major information systems in Banking and Financial Services Industry are payment systems which receive information round the clock, however, with global pandemic of Covid-19 2020, chat messenger and video calls have become new data consumers and lifeline for people; to envisage changes which will make simpler system future critical and an organization readiness becomes new priorities in IT investment and corporate governance.

- f. With only technologies acting as an advantage in market place is belief of the past. Today, IT investment assessment considering technology version upgrade adds to the process of assessment. Example: In Banking and Financial Services Corporation, the banking applications delivering basic banking services will help retain existing capabilities and advantage at market place. The identification and management of key technology components and drivers of business help IT investment assessment.

- g. The balance between financial budget driven approach and actual technological needs provides sound decision on IT investments. Purely financially driven approach will restrict organization's ability to implement useful and relevant technology. Conserving cash at the same future capital planning forms the part the IT investment assessment.

- h. The accounting methods, depreciation and amortization of assets over a life cycle IT project needs careful handling to confirm to financial accounting standards for adherence to financial budget and accounting year [4] [5] [16] [28] [41] [42] [43] [44].

Example: The actual availability of technological components and method of depreciation & amortization for these technological assets due to use /

consumption needs IT investment assessment.

- i. The balance between financial benefits of IT investment and value creation for business and stakeholder (employees and shareholders) to consider the broader impact to organization and contribution to community [15] [22] [23] [34] will confirm the overall IT investment assessment process is considering factors that affect organization directly or indirectly.
- j. The impact of digitization and data driven business model has been interlaced in people's lives, IT investment assessment has to include digitization strategy as a part of their assessment to remain abreast with areas and methods of economic activity.
- k. The IT investment assessment and their link to business performance indicators will help take timely actions to meet intended objectives for an organization.
Example: In Banking and Financial Services, one of the key indicators for retail banking is new home / mortgage loan applications. This parameter is mapped to total new applications received in bank applications.
- l. The history of past investments and current state of enterprise architecture will help know complexity and areas of development required. The familiarity with past investment decision help organization to retain existing technology and business processes and derive value out of it to avoid incorrect investment decision.
- m. The nature of business activity, standard business processes and available technological tools help to identify areas that needs technical upgrades and hence the investments. This assessment ensure the need of IT investment focused on required and strategic goals of an organization.
Example: In Banking and Financial Services Industry, account opening methods are examples of repetitive business and technology processes; this method of distinguishing helps organization plan IT investment carefully.
- n. IT investment in digital driven business capabilities that promotes ability of user to apply analytical and logical abilities promoting creativity in changing economy demand organization to invest in technology applications and infrastructure.
- o. The IT investment assessment should focus on capacity utilization, simplification of business processes, ease of technology post

implementation and innovating with newer technology tools for maximise returns on IT investments.

- p. Critical Success Factor (CSF) [1]: The elements (CSF) of the projects will help link immediate benefits (Tangible financial, intangible) from IT investment with organization goals. This help focus on executing the implementation in specific project management method.
- q. Investment assessment by independent body (Internal or external project consultants) to assess both business strategy and technological capabilities will help meet organization goals as expected from IT investments.

1.1 Cost factors:

The IT investment assessment process deal with not only procurement, license and implementation cost, but also with subsequent costs that are attached to IT assets [1] [3] [4] [5] [7] [11] [12] [15] [21] [22] [28] [46]. Below are few cost elements in general and become ongoing cost for an organization.

- i. Build / Development cost of the IT infrastructure
- ii. Transformation, migration, training and Transition cost of IT infrastructure (and people).
- iii. Operating, maintaining and support cost of ongoing system usage.
- iv. Integrating and Expansion cost for future goals.

The above cost elements needs backward planning for an organization to keep cash flow cycle in place for end to end support to the organization strategy.

2. Business Model:

- a. The IT investment assessment also have to assess exiting business process to save cost of training employees and maximize use of exiting human and technical capabilities. The business process changes and improvements supporting new technology will add to organization's competence. This assessment help create re-useability of exiting assets [1] [9]. The IT investment assessment process should promote the new working methods and creative solution development to remain competitive at market place. Example: In Banking and Financial Services Corporations, business process and recording same activities in technology system go hand in hand. However, basic account keeping services do not require technology and business process change. This proactive planning will help

save IT investment and promote efficient governance.

- b. The impact of IT investment on organization's product development & service capability need assessment to mitigate change in business operating mode and mitigate friction arising in future. IT Investment leading business model change need separate assessment to prevent any adverse scenario.

3. Economics and External Factors:

- a. The country profile, development stage of economy and skill & cost advantage an organization can use should be added to IT investment assessment. The effect of global technology delivery model forming assessment area will keep IT investment assessment leveraged to global economic development.

Example: With India becoming hub for call software application development hub for several US based organizations, the political activities in Asia Pacific region, technological advancements in India, any threat of war or natural disasters and governments initiative on 5G network roll out for telecommunication development becomes part of country profile assessment activities.

- b. Business cycle in economy, their synchronised activities with IT investment and IT project planning cycles will lead to coherence of IT asset creation and business capability. This may prove IT investment assessment worthless.

3.1 Risk related decisions:

The risk in IT investment assessment include considering factors which are both internal and impacted by externalities. These include:

- a. Firm specific monetary risks [23]: The change in economic outlook and recessionary pressure that affect funding of ongoing IT Investment.
- b. Project Implementation: The unavailability of technical resources [26] that hamper progress of implementation and directly adds to costs & timelines of implementation.
- c. Application Functionalities that enable business lines, product & services and reporting.
- d. Organizational (political) hierarchy, power struggle and group dynamics that delay IT investment decision.

- e. Risk of competition to acquire technological developments quicker than organization.

- i. External Risks linked to Market Risk in the form of Environmental changes, systemic (trade barriers, import and imports of goods and services), technological advancement that make past investment decision unviable.

Above factors needs to be considered while making IT investment assessment leading to long term achievement of business goals.

4. Government and Compliance:

- a. The need to add additional application functionalities to execute new business lines, and to respond to economic scenarios [34] [37] also demands adherence to government regulation and compliance requirements. The objective evaluation help define scope of development, limit on investment and duration which will provide delivering business value [17].

Example: If new application functionality is to provide special products features with improved computation method of interest rates and charges, then computational formulae are in guidelines with government requirements are confirmed to customer.

- b. The financial assessment of IT investment process must include the certain assurance services that confirms to meet desired outcome without leakages or faults in systems and processes. This confirms the need of IT investment assessment process adhering to internal audit [24] and assurance requirements.

Example: In Banks, as part of IT audit, all projects and business as usual activities undergoes assessment to ensure adhering to compliance and regulatory requirements. The change in business model and integrated IT infrastructure demand continuing to meet internal audit requirements. IT Audit, though forms an ongoing cost to Bank, but any failures in IT projects again demand ongoing cost. This wat over all financial impact of project is more than actually budgeted.

5. Human Capital

5.1 Human Engagement

- a. Organization hierarchical structure [22] [23] [30] involving several team members across the business lines / units makes the IT investment assessment process longer and complex. The several views and concerns expressed by involved members makes the investment decision making processes inconclusive.

A holistic and time bound approach will make IT investment assessment process objective oriented.

Example: In Banking and Financial Services Corporation, a dedicated product & process innovation fund will demand, promote and invite collaboration across business units. This will help bring diverse skills on funding model and help deal with organization hierarchies in more holistic way.

- b. The clear procedure and commitment from management to link business planning and IT project appraisal will expedite IT project implementations activities to meet strategic goals of an organization. This way an organization will attain future states in an economy in a defined way.
- c. The above points show importance of relationship between Business line owner and IT infrastructure owner demanding commented behaviour and attitude attainment of future business process and improved IT infrastructure through investment. In order to meet strategic goals of an organization within corporate governance framework [40] forming IT investment assessment as key performing indicator of job function will add need of commitment from engaged work force.
- d. The IT investment leading to change in technology, business processes and employee roles in turn leads to job insecurity among employees. This affects organization culture, however, training employees on new technology and changed business processes help to mitigate these insecurities and develop organization for future business environment and economy.
- e. Technology provides solution to specific problems in an organization, this necessitates engaging relevant business users to assess the technology and IT investment. This engagement from all perspective is reflected in corporate governance. The timely engagement ensures timely fund flow to avoid risk of project cost run over and project completion. Different level of people in an organization supports varied level of engagement confirming the need of IT investment assessment by all impacted stakeholders.
- f. Introduction to new technologies promoting “Work from Home” affects the organization culture and employee engagement. These factors needs assessment if implementation of IT affects employee’s profession directly or indirectly.
- g. The assessment of IT investment requires more than technology expertise. The innovative nature of technology demands risk taking abilities and entrepreneur skills. Developing human capital for right attitude and leadership roles forms a part of IT investment and assessment process.
- h. IT Investment after completing investment and implementation life cycle need to follow the

complete path of benefit realization to maximise benefit from investment. The timelines to realise benefit and actual results help re-evaluate historic decisions. The parameters to assess benefits of investment vary depending on IT investment areas however, step to assess the information systems and business value created is required.

5.2 Cultural Factors:

- a. Group dynamics and Authority [17] [18] [22] struggle: The decision for actual use of financial resources to fund IT projects, accountability for projects success (and failures), risk involved and organization change involves several members from organization hierarchy; their authority and control acts as trigger mechanism which promotes right conduct of teams involved in projects. The collaboration required is enormous and group dynamics play a crucial role to achieve organization corporate governance and strategic goals.
- b. Technology adoption and usage form the key part once the IT investment is completed and projects are gone live. The risk of low level of adoption and uncertain future of usage leads to project failures. The accountability and failure management mechanism in this scenarios makes it critical for sustainability of an organization. IT investment assessment needs to work on these scenarios as part of their planning.
- c. The centralised decision making to approve the IT investment decisions provides final outcome of the assessment process. This help to deal with technical and human resource related challenges. The centralised decision making and collective feedback form members involved may lead to conflicting outcome, however, long term vision of an organization keeps the focus.

6. Human Psychological Factors:

- a. IT projects once gone live needs assessment for failure and success scenario to develop learnings from historic decisions. The review of past decisions paves way to improve for future decision making capabilities. The growing conservatism and investment outlook towards IT as a cost needs to be handled carefully to keep balance between price and value of IT for an organization.
- b. The cost and complexity of IT infrastructure implementation has shifted the outlook of company management / board members. The IT investment acting as a cost has changed value appeal in an organization. This puts lots of accountability for success of IT investment.

7. Technical Project Management:

- a. Technical project Planning has a low priority due to need basis incident resolution approach to IT investment. The passive approach leads to high number of incidents and escalations, often resulting in failures to meet corporate governance goals.
- b. Poor project planning and lesser time allocation will lead to poorly designed scope of IT improvements and will reflect in low coherence with corporate strategy. To maximise utilization of IT investment, time and resource allocation has to be complete, appropriate with project status / progress checks in place.
- c. The development of new business process must be in sync with IT planning and IT investment assessment [1] [11] [15] [18 to deliver intended objectives. Only IT capability without business process will not bring desired change an organization seek to achieve.
- d. The availability of relevant skills [3] within organization confirms to possibility of achieving desired goals of IT investment. The clarity of corporate governance backed by human resources increases the chances of achieving desired results. This way human resourcing plays critical role in approving the IT investment.
- e. Business and Economy rely a lot on forecasting of the events and future scenario. In the event of unforeseen circumstances and situation out of control of an organization, the priority of the organization may change which will delay or stop the IT investment. An organization should consider this scenario while planning IT investment.

7.1 Grey Areas to take projects:

- a. An organization's right to risk with financial resources, the risk areas and impact to an organization involved diligence from organization leadership / board of directors. The IT investment assessment team should be able to clearly understand these risks.
- b. With need to deliver Returns on investment (ROI) to shareholders, IT investment cycle and financial reporting cycle needs to be sync for shareholder reporting.

IV. CONCLUSION

The paper has described the details about corporate governance for an organization and its relation of IT, IT investments, need of IT investment, assessment of IT investment decision and various parameters related to IT investment decision. The paper provides detailed approach for IT investment assessment, current challenges and procedural gaps. With an organization constantly evolving with economy and market conditions, IT investments will be constantly under assessment. The relation of IT investment to Finance, Accounting and Investment

planning, relevant technically skilled staff, technological advancements and several indirect processes attached makes IT investment critically important for an organization to achieve its strategic and governance goals.

V. FUTURE SCOPE

This paper describes the various elements attached to corporate governance, their relation to IT investment assessment and IT governance. With an interrelation to several parameters within a business domain, further research can be conducted to study specific parameters and their relations. Also, further research will be required on post IT project implementation and success rate of key IT investment decision for an organization. This paper provides high level overview of measure and evaluation criteria for IT investment assessment and corporate governance, an extensive research can be conducted detailing about each measures given in this paper.

Table1. IT investment assessments and the characters of methods

Business Operations and Financial Planning	Business Model	Economics and External Factors	Government and Compliance	Human Capital	Human Psychological Factors	Technical project Management
Mitigate the failure scenario of not investing in information systems	Increasing use of technology to shape business model	To meet changing customer needs	Meet regulatory requirements	Focus on deriving benefits and / or channelize resources towards use of IT infrastructure	The growing conservatism towards IT investment may act as roadblock in achieving future avenues of growth.	Poor Planning for end of life cycle of technologies leading to technology obsolesce
To deliver shareholder value, reducing share on financial resources and little or no room to experiment with new technological advancements.	To create re-useability of exiting IT Assets and maximum utilization of available capacity	To respond to economic scenarios	The organization leadership / board of directors work with care & diligence	Future State of skilful resources	IT as cost has shifted outlook by company management / board members	Planning has a low priority due to firefighting approach to IT investment
Limitation not leading to competitive advantage of organization	New Customer service model to make it specific to organization	The speed and intensity of data for digital business model	Investment assessment in Audit to ensure all factors has been considered while making investment decision	Organization hierarchical structure, complex decision making processes and Group dynamics		Poor planning and time allocation will lead to lack of scope of IT improvements
Selection of projects is performed on the basis of financial case rather than continuous business need	The need to add additional application functionalities to execute new business lines, launch new products & services	Insufficient time for IT planning and IT investment assessment		No strong commitment or clear procedures exist to link business planning and IT project appraisal activities		The relevant skills, knowledge and expertise in business and technology of personnel involved
The cost and benefit analysis of innovative technologies		Desynchronization between the business and IT project planning cycles		Poor relationship between Business owner and IT infrastructure owner		The unavailability of technical resources
Financial accounting perspective to manage depreciation of IT assets		The need of business operating model changes and feasible technological solution		Organizational culture through “work from home” policies		Application Functionalities that enable business lines, product & services and reporting.
Ongoing support and maintenance activities adding to cost of implementation		The relevant knowledge of technology and it alignment to business help to mitigate uncertainty		Group dynamics and Authority struggle		If-Then-Else / Cause & Effect
Financial benefits vs. the overall value creation for business and stakeholder (employees and shareholders)		The nature of business activity and volume of standard and repetitive business processes		The involvement of various employees with diversified skills		
To link IT investment assessment parameters and business performance indicators		IT investment focuses on change in economy that will require organization to response with available applications and infrastructure.		The social and ethical philosophy to manage work place		

Business Operations and Financial Planning	Economics and External Factors	Human Capital
The link between key performing indicators (KPIs) for business and key value drivers (KVD) through IT investment	Developing stages of economy and need to consider country profile	Organizational (political) hierarchy, power struggle and group dynamics that delay IT investment decision.
The historical investment cycle to understand complexities and need	The change in economic outlook and recessionary pressure that affect funding of ongoing IT Investment.	Investment assessment by independent body (Internal or external project consultants)
The risks arising out of no investment decision and mitigation plan to help eliminate fear and uncertainty over future economic and business scenarios	External Risks linked to Market Risk in the form of Environmental changes, systemic (trade barriers, import and imports of goods and services), technological advancement that make past investment decision unviable.	
Adoption leading to maximum usage as per capacity plan and help design implementation for maximum returns on investments.		
Business units / department level planning than organization planning		
Digitization strategy as a part of IT assessment		
Risk of unknown and uncertain outcome after investment decision		
To deliver Returns on investment (ROI) to shareholders		
Transformation, migration, training and Transition cost of IT infrastructure (and people).		
Operating, maintaining and support cost of ongoing system usage.		
Integrating and Expansion cost for future goals.		
Risk of competition to acquire technological developments quicker than organization.		
Critical success factor (CSF) to realise immediate benefits (Tangible financial, intangible) for an organization		
Benefits realisation and opportunity creation for benefit realisation to shape business model		

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