Enhancing IT Project Development and Implementation: Surveying the Trend of Success and Failure.

ANDEMBUBTOB, David Roland¹, APURU, Jonathan Iliya², AUDU, Kafwa Dodo³
¹, ², ³ Department of Mathematical Sciences, Taraba State University, Jalingo

Abstract: Increased success or less failure is the prevalent theme that runs through the fabric of the IT project industry today. Research works and studies have shown that the frightening rate at which Information Technology (IT) and business projects fail, even at global level, remains an issue of concern to stakeholders, especially clients and developers. Across the globe, projects performance seems to be sub-standard and almost always fail to meet the expected goals. Organizations do not appear to be delivering on their commitments. Analysis of some interesting statistics retrieved from documents around the world is outlined. This paper presents a critical review of factors that support the success of IT projects and possible reasons why some of these projects fail.

1. Introduction

It is obvious that projects developed and implemented either fail or succeed. More or less, the former is the case rather than the latter. Projects are usually unique, temporary tasks that have a defined scope that is carried out within a specific timeline. Projects try to achieve a specific goal, which is to solve a business problem. They are unique because they do not include repeating support or operational activities [47]. IT systems are integral part of our society. They contribute significantly to the design, production, implementation and delivery of vast products and services that we use as we live and work and no doubt their significance will increase in the near future [48]. Most Information Technology projects are ambitious in both goals and scale. Although, technology has enabled easy management of project execution, failure cannot be completely eliminated, particularly with respect to several unique projects [1]. Unfortunately, most experts do not agree on a complete and specific definition of success and failure [38]. Each respective expert makes his or her definition through subjective assumptions and conceptions. For most of them, success is said to be achievements that lead to on-time and within budgetary limit delivery. Failure, on the other hand, is coined to be the absence of success. Again, attaining success is relative. Each case depends on parameters base of the specific project. As it has been ascertain through numerous researches, IT project failures are almost so common as to be expected by planners and IT project managers [44].

When a project fails, the frequent approach by most organizations is to adopt a strategy for process improvement. In theory; by taking more robust steps for the planning, development, implementation and controlled executions of projects, success rates can certainly be improved upon. Process improvement is an idea that is more difficult to implement than it appears to be and a number of organizations that have attempted process improvement are no better off than they had been before undertaking the program [15]. Several reasons that cause the failure of process improvement strategies often boil down to the fact that the challenges that led to project initiative were poorly understood and hence the steps taken were misdirected in solving the organizations real needs.

The global reports of surveys on the development and implementation of IT and IT related projects has painted a grim picture of a sector that is, though improving, ailing under the burden of failed and/ or near successful projects. Africa and African countries including Nigeria share in the large portion of this technologically epidemic situation. This study tends to take an overview of the Global, African and Nigeria situation.

The Grounded Theory methodology was employed in this study [1]. This entails a method of data collection that gathers qualitative data from secondary sources [43].

2. Issues in IT project development and implementation.
3. Characteristics of IT projects

IT project characteristics can be defined as any attribute or characteristic of the project which has a direct bearing on the overall development and execution of the project [26]. These attributes or characteristics can refer to different aspects such as nature of the team: size, capability, location, levels of experience etc.; nature of the application being built: size, technology, complexity etc.; nature of the customer: domain/technology capabilities, customer’s involvement in the project, customer culture etc. A system (project) has been defined as an orderly grouping of interdependent components linked together according to a plan to achieve a specific goal where each component is a part of the total system and it has to do its own share of work for the system to achieve the desired goal [22]. Information System is an arrangement of people, data, processes, information presentation and information technology that interacts to support and improve day-to-day operations in a business as well as support the problem solving and decision making needs of management and users [21]. Most IT systems are characterized by their organization, interaction, interdependence, integration and a central objective. The proper arrangement of these components, their ability to function as a unit, though still separate entities to achieve a common goal is what results in a project being successful or not [35].

IT projects have characteristics that are common to all other projects in many endeavors; yet they also entail distinct features. Having a correct understanding of the project characteristics can aid substantially in predicting project challenges which can be well managed. [26] outlined the following as the characteristics of most IT projects in UK: Lack of constraints, Visualization, Flexibility, Complexity, Uncertainty, Software and failure, Supporting change [48].

Furthermore, [14, 15, 16] show that the work in an IT project is dominated by decision making. The majority of the steps known as “tasks” in a technology project are actually “decision making” activities. The task of strategy development through writing software code actually is “decision making” which is the fundamental activity that is carried out that saps most of the energy that goes into an IT project. He related that though the “task centric” view and the Gantt chart are status quo in our thinking about projects, it should rather be a set of interdependent tasks, which confirms the fact that IT projects are complex network of interrelated decisions (as in the Figure below).

So ubiquitous is decision making that we often don’t think about our work in that way. CEO, Insurance organization opined that “a project is a failure if it has not fulfilled its objective of improving the decision making capabilities of the management team. Projects may overrun in terms of cost and schedule, but these can be overshadowed if the desired impact on business improvement is achieved”

The pivotal role that decision making plays means that the degree of success a project team achieves is directly proportional to the effectiveness of the project team’s collective decision-making capabilities. The several decisions made in IT projects and the intricate interactions and dependencies existing between those decisions, portray many magnitudes of complexity beyond the simplified representation of a project shown in a Gantt chart.

Among other things, the characteristics of IT projects are such that; since projects take long to complete not much attention is given to immediate feedback on the decisions taken, most projects are unique, thus making identifying repeated patterns more challenging, complexity in projects makes isolating out specific cause and effect relationships hard to do, long projects do not allow participants the exposure to repeated patterns for greater experiences and most IT project teams work under constant pressure so are unable reflect on performance or retrospect accordingly heed warning signs [15].

3.1 Components of IT projects

IT projects consist of various components that make them unique and workable. A project is defined as sequence of tasks planned from beginning to end which is bounded by time, resources, & required results. Defined outcome and “deliverables”, having a deadline and with budget which limits number of people, supplies and capital [17]. They went on to enlist components of a project to include Conceptualization, Feasibility, Preliminary Planning, Detailed planning, Execution, Testing, Termination. These components could be applied to most types of projects development and implementation including IT projects. The DIT in Michigan State developed a project management methodology template to assist in IT project development and implementation. The template was outlined as follows, Project Management Overview, Project Initiation Phase, Project Planning Phase, Project Execution Phase, Project Control Phase and Project Closeout Phase [39].
3.2 Challenges of IT projects

[10] outlined in their writing several challenges that face IT project development, implementation and management. These include unclear requirements, unclear risks and issues, undefined project dependencies, project methodology, time-driven projects, undefined roles and responsibilities, revision of estimates and timescales, poor source code quality, insufficient domain and technical knowledge and too many meetings [10].

4. Factors Responsible for Failures in IT Projects

Despite more than 50 years of history and countless methodologies, advice and books, IT projects keep failing. [30]. [1] asserted that very little research had attempted an in-depth investigation into failed projects, particularly to identify exactly the factors behind the failure. He gathered that three factors were discovered to be responsible: unbalanced ecosystems, lack of delivery strategy and poor project management practice [1]. Several reasons are put forward for the failure of software/IT projects such as Failure to collaborate and interruptions [49, 50].

[40] in a study conducted in Ghana, taking the global view into account as well, showed a link between project failure and culture. He concluded that the reasons for project failure vary, but as shown in the study they cannot be insulated, one from the other because they are interdependent and intertwined. An incisive and careful analysis of these factors reveals a subtle layer of thread that transcends almost all the reasons outlined by the respondents as the cause of project failure. This factor could be named as the collective programming (i.e. thinking, feeling and acting - of the mind), which influences the attitudes and behaviors of people in an organization or business setting [18]. This layer of thread is known as culture.

According to Gartner who studied about 50 projects that are on public record as having experienced total failure, have been gravely compromised or have overshoot their IT budgets significantly. His analysis showed that most organization’s refusal to address complexity is the main reason. Complex projects with unattainable goals, unproven teams and almost no accountability at all levels of the management and governance structure, means no one is responsible for failure [30]. The existing software engineering literature on software failures indicates that the causes of failures are commonly caused by the project environment, tasks, methods, and people. The causes of failures occur in various processes, which include management, sales & requirements, and implementation [27, 29]. In 2005, Global IT Project Management Survey revealed that unclear/ change of scope requirements, poor project management processes and lack of executive sponsorship and buy –in were the three main reasons identified for project failure [40]. Project failure can happen to anybody – and to any project. One of the interesting reports we read recently proved the point that just 30% of projects executed in the US are successful, and a huge 70% have failed to achieve all the stated project objectives. [10].

4.4 Factors Responsible for Successes in IT Projects

To begin with, success is in the eye of the beholder [32]. One of the basic challenges of projects, especially IT projects is when to term a project a “success”:. It is noted that ‘a standardized definition of project success does not exist nor is there an acceptable methodology of measuring it’ as cited [7]. Also cited by [7], it is observed that ‘Project success is a topic that is frequently discussed and yet rarely agreed upon. The concept of project success has remained ambiguously defined. It is a concept which can mean so much to so many different people because of varying perceptions, and leads to disagreement about whether a project is successful or not”’. Therefore, the criteria or factors for measuring the status of a project must be spell out at the onset. Thus these are used as yardstick to term a projects rating at the start, during and completion of the project.

Generally, as observed by so many empirical studies and surveys, it has been established the IT project are prone to fail from the on-set, are failing and some may be entirely abandoned as it will not achieve its objective [11]. Nonetheless recent gives some ray of hope as rate of success is gradually improving. Vin opined that “a lot of time was spent examining why software/ IT project fail. He proposed that it is equally important to understand why some projects succeed and gave this short list; Commitment; People - The right team; Goals. The project has clear goals that everyone understands and accepts; Communication. Frequent and open communication is encouraged; Focus: Learning - Everyone has the opportunity to learn and grow during the course of the project; Change- The team deals with change effectively. That means they don’t try to block change; Environment. The team has the right environment for getting the job done. He concluded though every project is unique, but these traits are common to most successful software projects whatever method is chosen [50].

Project Management Institute (PMI) showed in a survey that success rates for IT projects are on the rise after years of stagnation. The IT project success
and project failure rates have improved. In 2013, a survey conducted by cloud portfolio management provider Innotas shows that 50 percent of businesses surveyed reported an IT project failure in the last 12 months. Three years on, those numbers had actually increased. However, the 2016 Innotas Project and Portfolio Management Survey, which polled 126 IT professionals between January and March 2015, revealed 55 percent of respondents reported they had a project fail, up from 32 percent in 2014 [42]. Measures of project success may involve internal and external indices. The internal factors are such measures as compliance with cost and time projections while the external factors involve client’ satisfaction and cost effectiveness of use. The latter factors cannot be overemphasized because the importance of a project to its user should be actually regarded as one of the most important indices of project success [36]. The summary of the conditions for project success is, “A project that meets the technical performance specifications and mission, and which enjoys a high level of client satisfaction is a successful project” [7]. Gartner stated that five sets of attributes were noted as key to successful projects: planning, project management, consultant/system integrator (SI) expertise, user management and soft skills. To increase the chances of project success, stakeholders need to pay attention to all five set of attributes; avoiding or downplaying any one of the attributes dramatically increases failure rates [45]. Contrary to the usual thinking, IT project teams have to focus, not on only one or two factors, but on a variety of attributes to ensure success of a project. A number of attributes, each contributing a little less than 10%, add to the success of the project. IT project stakeholders need to pay attention and use the whole lot of them. An ICT project implementation can only be perceived to have succeeded if the perceived benefits are realized [13]. Gichoya in his submission put forward best practices that will guarantee success in IT project development and implementation. These are:

a. Do not underestimate or downplay the complexity of the environment in which ICT programs evolve. ICT projects are usually believed to have only a technology focus.

b. Select a project that will yield the greatest benefit for your target group.

c. Staff should be ‘re-skilled’ to expect the changes that come with an ICT structure and new responsibilities.

d. Identify the right technologies.

e. Align the organizational process with the intended technology.

f. Efficient program and project management is essential to develop and implement successful ICT solutions.

g. Never underestimate the total cost of ownership (TCO) of an ICT project.

5. Global Perspective

5.1 Case Studies: Facts and Figures

Between 1992 and 2004, a survey carried out by Standish group revealed that only 29% of over 50,000 IT projects could be classified as successes globally. The re-occurring fact that rates of project failure in the IT industry are consistently higher than for other types of projects has been well documented [15]. According Chaos Chronicles 3, about 34% of IT projects executed by Fortune 500 companies are successfully completed i.e. almost two thirds of the 13,522 IT projects suffered from one of the following: total failure, cost overruns, time overruns, or a rollout with less features or functions than promised[9]. Below is a summary of recent studies that looked into the success / failure rates of some projects.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>McKinsey &amp; Co. and the University of Oxford (2012): Study of 5,400 large scale IT Projects</td>
<td>- The common problems with IT Project Management are persisting. Nearly 17 % of large IT projects are fatal. They even threaten the existence of the company. - Large IT projects run 45% over budget, 7 % over time, and deliver 56 percent less value than desired.</td>
</tr>
<tr>
<td>2</td>
<td>Geneca:2010 /11 - Interviewed 600 people involved in software development projects</td>
<td>- Stakeholders expect their projects to fail before they even start! - Due to “unclear business objectives, excessive rework and out-of-sync stakeholders” 75 % of project participants do not confidence that their projects will succeed. - An amazing 78% of those surveyed reported that the “Business goals are usually or always out of sync with project requirements”</td>
</tr>
<tr>
<td>3</td>
<td>Dr Dobbs Journal (2007, 2011): 586 respondents to email survey</td>
<td>- 70% of respondents participated in a project they knew would fail right from the beginning - success rate for traditional approaches, 63%. Success rates for Agile projects 72%</td>
</tr>
</tbody>
</table>
| 4   | KPMG (2005) - Survey of 600 organizations globally | - In just a period of a year 49% of corporations had suffered a recent project failure - Within the same time frame only 2% of organizations indicated that all of their projects achieved the desired
goals.
- 86% of firms reported a shortfall of at least 25% of desired benefits across their portfolio of projects.
- Many firms do not measure benefits so they are unable to grasp their true status in terms of benefits achieved.

### 5.2 African perspective

Failure of ICT projects is not an uncommon thing. Most statistics seem to show a failure rate of between 50% and 70%. So Africa is not on its own in having these failures [41]. Recent survey evidence from developing countries, which include most African countries, is very limited. One overview observed that, "successful examples of computerization can be found, yet frustrating stories of systems which did not meet desired intention are more frequent" [5]. Survey and poll results produce the following working estimates about e-government initiatives in developing/transitional countries:

- 35% are total failures
- 50% are partial failures
- 15% are successes

A few specific multiple-case studies have been done, examples are summarized below:

- Africa’s World Bank-funded public sector IT projects: most were partial failures and the systems folded up after a year of operation [31]
- South Africa's public sector’s Health Information Systems (HIS): epidemic partial failure of costly systems with little use of data [8]

Reports from developing countries shows failure to be the dominant theme [52]. So what are the factors responsible for the failure or the successes of these projects especially in Africa?

### 5.3 Nigeria perspective

Mr. Mithat Kulur, Project Lead Advisor of UNIDO said countries including Nigeria, invest...
millions of dollars on projects, bring on board the services of international expatriates using local resources to meet the compelling demands of those projects, yet experienced over 60 per cent project failure within the framework of governmental systems. “He said: “In project management, a project fails not only when the project delivery refuses to meet the use or the needs of the project or when the project’s product refuses to satisfy the end-user, but when the project is not accomplished within the allowed time frame, project budget, scope defined for the project and even when the outcome of the project is rejected by the stakeholder.” [33]. Furthermore, Mr Mark Engelhardt, Consultant and Trainer for UNIDO said that projects are vulnerable to failure because of myriad problems including lack of initiative and proper planning. Though Engelhardt acknowledged that the problems of project failure are not peculiar to Nigeria, he said projects success in the last 20 years have been within 38- 39 per cent. “It is a problem, a universal problem and it is universal problem because projects are complex and unique, it requires specific skills to manage these problems.”[33]

5.4 Reasons for the failure of IT projects in Nigeria

When we consider the rate of development and implementation of IT-Projects in Nigeria, it is important to understand the dynamics of IT-Projects and have a proper grasp of features of IT-Projects which is critical to the correct implementation of IT-Projects [34]. In Nigeria these features are usually taken for granted. Thus most projects are doomed for failure from start due to poor understanding of client, stakeholders and user requirements.

Often, the reason a project fails is the lack of ability on the part of the Nigerian government to keep politics out of professional demands on Projects. In addition several Nigerian agencies and ministries are void of departments focused on ensuring projects success [37].

The reasons for failure are many. They could be political, environmental, cultural factors, poor design, technical problems such as poor project conceptualization, and economic problems that are associated with their implementation. The design of a project is most important, and is definitely linked to the conceptualization of the idea that gave rise it. Most often poor design eliminates the chances of deriving maximum value from a project, because functionality is eventually lost. Poor design could lead to quick dilapidation (of hardware) and minimum utility life [36].

The disturbing rate of Information Technology (IT) project failure, even globally, continues as major concern to stakeholders, especially users, in under-developed countries like Nigeria since infrastructure per capita is low [34].

Clearly the findings from the study point out that IT and software projects in Nigeria face the same global problems cited in the survey from the literature reviewed. Due to the fact that IT and software sector is still at the infancy stage in Nigeria like most other developing countries, thus software project failures are likely because of both technical and non-technical factors. These factors include improper application of IT/software engineering practices and poor communication, organizational/management factors and undefined roles and responsibilities of personnel involved in the projects [12].

6.0 Enhancing the development and implementation of IT projects

The fact that most IT projects fail on at least one criteria of success, and that billions of dollars is reported as wastage each year, suggests that there is a critical need for improving the way we manage these projects.

Let’s look at a few factors that will enhance the successful development and implementation of IT projects.

1. The first thing we learn from our findings is – learning from history ours or others. The sobering truth is that the secret to more successful project management has been right in front of us the whole time – learning from the past (retrospect). A retrospective (postmortem evaluation) is a formal method for evaluating project performance, extracting lessons learned, and making recommendations for the future. A comprehensive retrospective considers three process-based measures of project success: meeting time schedule, kept development and implementation within budget-cost, and if the requirements (product) were met. This evaluation also considers three outcome-based success measurements: was the product or service useable, was it used, and finally, did the organization learn to the point where the project improved the application efficiency or effectiveness of the client organization for the future [32].

2. Enhancing and improving the success rate of IT projects is possible by putting significantly more focus on general-management activities. Accurate planning, defined goals, clear assignments and effective communication, will aid even the most challenging project. Simply knowing where potential pitfalls lie can help prevent backlogs and costly delays in the future [32].

3. A critical factor that has been over-looked all this years is a healthy work place; a convenient, comfortable IT compliant (with good ergonomic ethics) working environment. This enhances IT
projects successes. A survey showed worker’s disposition towards a healthy workplace is a serious problem. 75.8% indicated that having a healthy workplace is more important than delivering on time and on budget. Although, 80% of IT managers, and 70.3% of project managers, put the needs of their staff over being on time and budget, but the worry is that this is not the practice on ground as only 53.3% of other stakeholders wanted a healthy workplace for IT staff. Until these figures get closer to 100%, we still have a problem [2].

4. To meet the development needs of IT projects, those involved in the design and development, implementation and management of IT-related projects in the developing countries have to improve their capacity to address the definite contextual characteristics of the firm, sector, region or country within which their work is located. As literatures reviewed suggests, developing countries still lag behind in implementing successful implementation of ICT projects (especially e-Government, e-commerce and e-economy) [4, 13].

5. Rein-forcing the culture of training and re-training of IT personnel must be imbied. In an age of ‘jet speed’ advancement in research, discovery and application of new methods and ways of doing things, all IT related personnel must be ‘up-dated’ to cope with changing trend. Therefore, since availability of the right technology and expertise is identified as a factor that affects project success, institutions and professional bodies should endeavor to churn out more trained persons, who must in addition to qualifications, possess the skills/know-how really needed for project delivery. This is a necessity to improve and enhanced IT projects [36].

6. Proper sourcing and remuneration of IT personnel is observed to be a notable factor in enhancing IT projects. Lack of experienced IT/ software developers due to poor reward schemes that eventually result in young programmers preferring other highly paid jobs [12].

7. The process of user – developer cooperation is an ineritable tool for project success. Isolation of users from developers throughout the project development and implementation process is dooms day practice. The users find it difficult to express what they really want and since the developers are not available to aid the benefactors of the finished product, requirement definition is usually vague and in some cases, incomplete.

8. Mitigating risk. This is one area that most IT project practitioners tend to over-look. Risk is something that might go wrong (as opposed to an issue which is something that has already gone wrong). There is a tendency for the most enthusiastic to get carried away with risk identification and use their imaginations to suggest all sorts of potential catastrophes. Keep it real and practical [51].

9. Combating volatility, unknowns and uncertainty in project management

7.0 Conclusion

The best way to achieve success for IT development and implementation is to have all the attributes for success with no occurrence of others for failure. However, in the real world that is not completely possible. Given such a situation, actions to increase the chances of success are required and should be encouragement [13].

Reference


BETWEEN MIS Quarterly Executive Vol. 4 No. 3 / September 2005


[35] NWAOCHA, V., ADVANCED SYSTEMS ANALYSIS AND DESIGN Courseware - National Open University of Nigeria, Lagos


[45] TAN, S. and RAMOS, C., 2011. How to Increase Your IT Project Success Rate


[51] Wellington Project management Increase Project Success Practical tips for your organization www.wellington.co.uk