The Importance of Change Management in Managing IT Projects in the Public Service of Trinidad and Tobago

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Abstract: *The Trinidad and Tobago Government has recognised the power and potential of information technology (IT), the systems they facilitate, and their overall importance to the development of a modern and progressive society. Over the past decade, the government has made substantial investments in public service modernisation which looked at simplifying access and delivery of public services using IT as the platform. However, the expected benefits were not realised as IT projects continue to be delivered late, over budget and missing key features and functionality. This study identifies the factors that cause the failure of IT projects, determines the extent to which change management methodologies are used in IT project management, and presents an integrated approach to IT project management in the Public Service. A sample of IT professionals (drawn from across the public service) participated in an online survey which sought to identify the characteristics of IT project failure and the change management issues affecting IT projects. It was found that the timely delivery of IT projects was a major challenge for project managers, and the lack of change management practices in managing projects was amongst the top causes of IT project failure. In light of these findings, the paper proposes the integration of change management and project management activities to assist managers in the planning and execution of future IT projects in the Public Service of Trinidad and Tobago.*

Keywords: Change management; project management; information technology; integration; Public Service

1. Introduction

The Trinidad and Tobago Government recognises the power and potential of information technology (IT), the systems that they facilitate and their overall importance to the development of a modern, progressive society. It envisages a nation that is prominently positioned in the global information society through real and lasting improvements in social, economic and cultural development caused by the deployment and usage of information and computer technology (MPA, 2003a). In 2003, an e-readiness assessment was conducted to examine the current state of Information and Communications Technology (ICT) development and capacity in the areas of Economy and Finance, Government, Human Resources, Infrastructure, Policy and Legal in Trinidad and Tobago (T&T). The *Harvard+* e-readiness methodology was the instrument of choice which examined 19 different categories of indicators where each category was ranked by levels of advancement ranging from 0 to 4 (MPA, 2003b). As it relates to the Government, Figure 1 highlights the findings of three (3) categories, namely: e-Government, Government Information Management and Client-centric Government. In light of the Government's vision for Trinidad and Tobago, three (3) initial strategies were proposed to stimulate ICT usage and uptake:

- Facilitating improved access and affordability;
- Increasing promotion, awareness and education; and
- Accelerating ICT programmes with Government taking the lead.

"Harvard +" Findings

e-Government – Rating: 2.59
- Minimal e-Government functionality – even basic information is not regularly updated, there are few forms available for downloading, and there are no online services to speak of
- Little evidence that telephone service is effective – finding the right person to speak to can be very difficult, and even then only limited information is available
- Never experienced government service other than in person

Government Information Management – Rating: 1.75
- Have some information on desktop computers, but rules and regulations require that paper copies of all important records be retained
- Little information sharing within and across Ministries
- Document management system implemented for the Prime Minister's Office will be rolled out across government for Cabinet records

Client-centric Government – Rating: 2.00
- A mandate of the Ministry of Public Administration and Information is assisting public service agencies with changing attitudes toward delivery of services
- Some customer service training and standards being introduced
- Customer service improvement initiatives have not yet shown tangible results

Figure 1. National ICT e-Readiness Assessment Findings
Source: Abstracted from MPA (2003b)

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Over the period, 2003-2008, 69% of total ICT expenditure was spent on ICT projects. Of these, 9 of the top 10 ICT projects involved enterprise wide applications intended to improve internal Government efficiency (MPA, 2009) such as the Integrated Human Resource Information System (IhRIS) and the Government National Communications Backbone (GovNet). Trinidad and Tobago also improved its ranking in terms of e-readiness and ICT usage with a 19-place progression. However, the Public Service continues to be confronted with a need to change the way it operates and to enhance the quality of services it provides. The World Economic Forum GITR 2010/2011 Executive Opinion Survey ranked Trinidad and Tobago poorly in Government ICT use and Government Efficiency (i.e., rated 3.8 on a 1-7 scale), Government Online Service Index (rated 0.34 on a scale of 0-1)and the E-Participation Index (i.e., rated 0.13 on a scale of 0-1) (World Economic Forum, 2011).

The Opinion Leaders Panel Wave 15 Report showed that the majority of citizens (55%) described the services provided by the Public Service as corrupt, slow and poor (MORI Caribbean, 2010). Besides, the 2008 Public Service Employee Survey revealed that 53% of employees believed that the introduction of ICT has made no difference to their job (MORI Caribbean, 2008). This finding demonstrates that even with the introduction of initiatives to increase usage and uptake, more than half of the Public Service has not realised the full potential of ICT as it relates to their Job.

The mistakes of the past cannot be repeated. Citizens require seamless, speedy and simple access to essential government services. The Public Service must therefore become a professional and dynamic, efficient and effective, proactive and productive entity that is flexible, adaptive to change and innovative. The culture of the Public Service is one that is built around strict rules, regulations and traditional practices. It is this culture that has stifled innovation, impeded creativity and limited the extent to which the planning and execution of IT projects is successful. IT projects in the Public Service can either be transactional in nature or transformational. A transactional change affects the organisational climate, that is, people's perceptions and attitudes about the organisation whether it is good or bad. Transformational change affects organisational culture, that is, the deep-seated assumptions, values and beliefs that are usually difficult to change (Leadersphere, 2008). Therefore, it goes beyond only managing projects effectively. IT projects in the Public Service are challenged and managing them requires managing change.

In the field of project management, change management usually refers to the process of controlling changes to a project since projects seldom run exactly according to the project management plan. According to PMI (2008), integrated change control refers to the coordination of the changes throughout the life-cycle of a project. The process involves:

- Identifying that a change needs to occur or has occurred;
- Influencing the factors that circumvent integrated change control, so that only approved changes are implemented;
- Reviewing and approving requested changes;
- Managing the approved changes when and as they occur, by regulating the flow of request changes;
- Maintaining the integrity of baselines by releasing only approved changes for incorporation into project products or services, and maintaining their related configuration and planning documentation;
- Reviewing and approving the recommended corrective and preventive actions;
- Controlling and updating the scope, cost, budget, schedule and quality requirements based upon approved changes, by coordinating changes across the entire project;
- Documenting the complete impact of requested changes;
- Validating defect repair; and
- Controlling project quality to standards based on quality reports.

In other circles, it is the process, tools and techniques used to manage the people-side of business change to achieve the required business outcome. It is a systematic approach to dealing with change, both from the perspective of an organisation and on the individual level proactively addressing adapting to change, controlling change and effecting change (Song, 2009). Therefore, to clarify the distinctions, the term *change control* is used in this study to describe change management as it relates to controlling changes to a project and *change management* is used to describe the people-side of change.

This paper investigates into the extent to which the adoption of change management activities impacts the management of IT projects in the Public Service of T&T. It also recommends the integration of project management and change management practices when managing IT projects in the Public Service. The rest of the paper reviews published works as it pertains to how IT projects are managed and the significance of the contribution of the paper to the field of project management. It explains the sample selection, describes the procedure used in designing the survey instrument and collecting the data, and provides an explanation of the procedures used to analyse the data. It also presents the results of the survey and examines the implications with a view towards integrating project management and change management practices in managing IT projects in the Public Service. The final Section recaps the findings and arguments presented in the paper.

2. Why Do IT Projects Fail?

According to Qassim (2008), a successful IT project is completed on-time and on-budget with all the features and functions as initially specified. This definition is consistent with the one suggested by the Standish Group (1995). However, it takes it a step further by classifying IT projects into three (3) resolution types to determine project success or failure. These are:

1. Project Success: The project is completed on-time and on-budget with all the features and functions as initially specified.

2. Project challenged: The project is completed and operational but over-budget, over the time estimate, and offers fewer features and functions than originally specified.

3. Project impaired: The project is cancelled at some point during the development cycle or never used.

It was reported that an average of 28% of IT projects have been successful over the period 1994-2009 (see Table 1).

Table 1. Success Rates of IT Projects.

	1994	1996	1998	2000	2002	2004	2006	2009
Successful	16%	27%	26%	28%	34%	29%	35%	32%
Challenged	31%	40%	28%	23%	15%	53%	19%	44%
Impaired	53%	33%	46%	49%	51%	18%	46%	24%

Source: Abstracted from Eveleens and Verhoef (2010)

A survey conducted by computerweekly.com together with the Oxford University in the United Kingdom produced a ranking of common risk factors that have a direct influence on project success (Qassim, 2008). A list of the 10 leading risk factors is given below:

1. Lack of top management commitment
2. Misunderstanding of objectives
3. Lack of user involvement
4. Changing scope
5. Poor planning
6. Inadequate project management
7. Failure to manage end-users expectations
8. Conflict among stakeholders
9. Change in senior management ownership
10. Lack of adequate change control

A close look at the findings reveals that most of the factors identified fall into two (2) areas of expertise, namely project management and change management. Factors such as a lack of executive support, little or no user involvement, failure to manage end-users expectations and conflict among stakeholders are related to change management, while factors like changing scope, poor planning and a lack of change control are project management issues. While most factors relating to project management are covered in great detail by popular methodologies (such as the Project Management Body of Knowledge (PMBOK) and Projects in Controlled Environments (PRINCE2)), the change management factors have not.

The PMBOK is the sum of proven traditional practices that are widely applied, as well as innovative practices that are emerging in the profession of project management (PMI, 2008). It identifies forty-two (42) sets of interrelated activities, and project management processes, to be performed throughout the lifecycle of a project or project phase. These processes are grouped into five (5) categories known as Project Management Process Groups, and mapped across nine (9) knowledge areas (PMI, 2008):

1. Project Integration Management
2. Project Scope Management
3. Project Time Management
4. Project Cost Management
5. Project Quality Management
6. Project Human Resource Management
7. Project Communications Management
8. Project Risk Management
9. Project Procurement Management

Notably, change management was not considered to be one of the key areas of expertise required when managing projects. According to the Project Management Institute (PMI. 2008), project teams are required to understand organisational culture; how the project affects people; and how people affect the project since cultures and styles have a strong influence on a project's ability to meet its objectives. However, this is just a simplistic view of change management since it offers no prescription regarding how to manage these issues over the life of a project.

Similar to that of the PMBOK (PMI 2008), PRINCE2 (OGC 2002) provides a structured method for effective project management. The method was first established in 1989 by the Central Computer and Telecommunications Agency (CCTA) and adopted as the standard for the government information system. According to the Office of Government Commerce (OGC, 2002), the methodology provides the organisations with:

- Controlled management of the change control framework;
- Active involvement of users and stakeholders throughout the project to ensure that the product(s) will meet the business, functional, environmental, service and management requirements; and

- An approach which distinguishes the management of the project from the development of the product(s), so that the management approach is the same whether the project is to build a ship or implement new working practices.

The model consists of eight (8) management processes spanned over the life of a project and tailored to the needs of the project, namely: starting up a project; directing a project; initiating a project; managing stage boundaries; controlling a stage; managing product delivery; closing a project; and planning. According to OGC (2002), projects are usually set to deal with change. However, not much emphasis is placed on managing change and the use of techniques, such as motivation, delegation and team leadership.

On the other hand, the model does make mention of the need to manage stakeholder expectations given its impact on project results and suggests that such interests be captured and managed at the project board level by involving stakeholders in the decision-making process. Both PMBOK and PRINCE2 share similar insights on the need to manage the people side of change when undertaking projects. Issues such as stakeholder management and the role of organisational culture and its impact were mentioned, but they offered little or no guidance with respect to how change management can be integrated with project management. While both the PMI and the OGC offer existing and proven methods for managing projects, many IT projects are challenged or impaired.

The traditional phases of a project include starting the project, organising and preparing, carrying out the project work and finishing the project (PMI, 2008). However, because projects vary by industry and complexity, project managers may be required to modify traditional project management methods to meet their needs. Some popular models in the IT industry include the waterfall model, the spiral model, the incremental build model and the prototyping model (Schwalbe, 2010). They are as follows:

- The waterfall life cycle model has well-defined linear stages of requirements, design, coding and testing, system integration and support. This model assumes that requirements will remain stable after they are defined.
- The spiral life cycle model was developed based on experience with various refinements of the waterfall model as applied to large government software projects. It recognises that most software is developed using an iterative approach with emphasis on risk analysis. This model has four phases: planning, risk analysis, engineering and evaluation. Each project repeatedly passes through these phases in iterations.
- The incremental build life cycle model provides for progressive development of operational software with added capabilities.

- The prototyping life cycle model is used for developing software prototypes to clarify user requirements for operational software. This model requires heavy user involvement.

Regardless of the choice of methodology, the focus is usually placed on the technological solution being implemented or developed and little or no focus on change management issues. User involvement is just limited to determining requirements and end-user support. However, the Public Service issues (such as resistance management, organisational readiness and reinforcing behavioural change) have implications for the success of IT projects. Some of these challenges were encountered during the implementation of an enterprise resource planning software in the Public Service of T&T.

3. IT Project Management in the Public Service of Trinidad and Tobago: The Case of IhRIS

In 2001, the Trinidad and Tobago Government embarked on a programme to implement a vanilla version of the PeopleSoft software that would enable the effective, efficient and consistent management of its human resources and payroll. The IhRIS (Integrated Human Resource Information System) and IGP (Integrated Global Payroll) components were implemented over five (5) phases at an overall cost of TT $127 million (approximately, USD 20 million). The project management methodology adopted by Price Waterhouse Coopers (PwC), the consultants hired to implement the project, followed a six-step approach (TATA 2007). These steps are:

1. Strategy: Business drivers and objectives for the project are assessed.
2. Planning: The project mission, objectives, performance measures and scope of the project are identified based on the strategic objectives and business drivers for the project.
3. Structure: Gaps are identified and documented.
4. Construct: New system is configured to address gaps identified.
5. Transition: User acceptance testing, performance tests and parallel tests are carried out to verify the functionality of the system.
6. Deploy: Implementers support the system in the short-term and next step opportunities are identified.

In 2007, an evaluation review of both the IhRIS and the IGP projects was conducted by TATA Consultancy Services in partnership with Espirit Consultancy of T&T. The scope of the evaluation included an assessment of areas such as project management, project governance and change management. The findings of the review revealed that certain aspects of the project were well managed and the project phases were completed on time and within budget (TATA, 2007). However, there were a number of challenges and implementation issues

experienced that impacted the extent to which the projects were able to meet its objectives and which ultimately led to stakeholders' dissatisfaction.

The review revealed that the project charter for IhRIS was well documented which clearly articulated the project objectives, critical success factors, project assumptions, challenges, project risks, scope, project methodology and organisation chart (TATA, 2007). The project charter also identified project teams for each phase of the project and clearly identified roles and responsibilities. A steering committee was also established to monitor the project deliverables, timelines, costs and scope creep. This committee comprised high-level executives across key Public Service agencies to provide the executive support and sponsorship; resolve escalated issues; approve project strategy and overall direction; and approve overall project scope and changes to project scope.

On the other hand, there was a lack of effective ownership for the IhRIS Project which led to lost interest by users and the non-usage of the system. There was an absence of post implementation support for the IhRIS and IGP projects which resulted in the user population lacking confidence in the use of the application. Besides, no one took ownership for monitoring and evaluating the performance of the system, process changes and customisations. The steering committee failed to make timely decisions regarding funding for activities such as change management, establishing post implementation support and project communication. As it relates to change management, the project was conceptualised as a Human Resource (HR) transformation project but the Request for Proposals (RFP) focused mainly on a technology solution (TATA, 2007).

Although there was an understanding of the need to deal with people, process and technology issues simultaneously, many of the challenges encountered were change management challenges. The methodology followed by the project team incorporated elements of the change process in its overall plan but the execution of the change plan was not effective. The change management team lacked change management experience and team members resorted to learning while on the job. There was little or no training conducted to build change management skills, in particular with the change sponsors and change agents, so that they would understand their roles better. Furthermore, this team reported directly to the project management committee as opposed the steering committee. As a result, the change management issues were not regarded as being significant enough and were neglected.

4. Approaches to Change Management

Both in theory and practice, it seems that issues relating to change management account for some of the challenges faced today as it relates to IT project management. These issues are addressed to some extent by existing and proven change management approaches. The Kurt Lewin model describes the change process in three (3) stages, namely, unfreezing, moving and refreezing (Burnes, 2004). The 'Unfreeze' stage is intended to prepare the organisation for change by creating a sense of urgency for change. Therefore the more change is desired, the more motivated people is to change or to support change. The transition stage involves coaching, training and mentoring persons as they move into the unknown. The final stage, freeze (refreeze) is about integrating new behaviours and attitudes and stabilising the changes (Mind Tools 2012a, 2012b). This approach is based on a static, simplistic and mechanistic view of life which is not relevant to today's organisations (Burnes, 2004) and more specifically, the Public Service.

The McKinsey 7-s model identifies seven crucial variables that exist within any complex organisations and suggests that any change in one organisational variable would have an impact on another. It provides tools and techniques for analysing, understanding and predicting the impacts of change within the context of the organisation. While this model allows the project team to design appropriate change management strategies to mitigate any risks associated with the implementation of any given IT project and its impact on the entire organisation, it is just the beginning of the change process.

Change management is not a one-off activity; it is a series of activities throughout, and at times, beyond the life of a project. Kotter (1995) offers an 8-step process for implementing change in the organisation, and argues that a wholistic approach must be adopted to see the change through. The approach is focused primarily on securing buy-in from internal stakeholders.

1. *Create a sense of urgency* – Establishing a sense of urgency is necessary to gain the cooperation to drive a significant change effort. This can be achieved by finding opportunities in crisis, behaving with urgency every day, dealing with resistance and engaging stakeholders.
2. *Creating the Guiding Coalition* – The business of change cannot be handled single-handedly. The model suggests the formulation of a team with the right skill-sets to lead the change initiative to increase the likelihood of success. The team as a whole should reflect:
   a. Position Power: Enough key players should be on board, so that those left out cannot block progress,
   b. Expertise: Relevant points of view should be represented, so that informed intelligent decisions can be made,
   c. Credibility: The group should be seen and respected by those in the firm, so that the group's messages can be taken seriously by stakeholders,
   d. Leadership: The group should have enough

proven leaders to be able to drive the change process.

3. *Developing a Change Vision* – Clarifying how the future will be different from the past. The vision must be imaginable, desirable, feasible, focused, flexible and communicable.

4. *Communicating the vision for buy-in* – Ensuring that as many people as possible understand and accept the vision.

5. *Empowering people and removing barriers* – Removing as many barriers as possible and unleashing people to do their best work. This is achieved by recognising and rewarding people who make change happen, identifying people who are resisting the change and help them see that it's needed and take action to remove barriers.

6. *Create short-term wins* – Nothing motivates more than success. These wins must be both visible and unambiguous to get the desired results.

7. *Do not let up* – Some change projects fail because short-term wins are celebrated as the long-term change. However, the achievement of quick wins is just the beginning of success.

8. *Make it stick* – The change must become part of the organisation. As such, change leaders are encouraged to talk about successes, recognise those that contributed to the effort and reinforce new norms and values.

The correct application of this model increases the likelihood of success since it addresses the issue of user involvement and the need to have a clear vision and objectives. However, it does not provide a framework for understanding the impact of the IT project on the organisation and it falls short of showing where each step fits into the project management process.

The change management process put forward by Prosci (2009) categorises change management activities into three (3) phases – preparing for change, managing change and reinforcing change (Prosci, 2009), which allows for easier alignment to the project lifecycle.
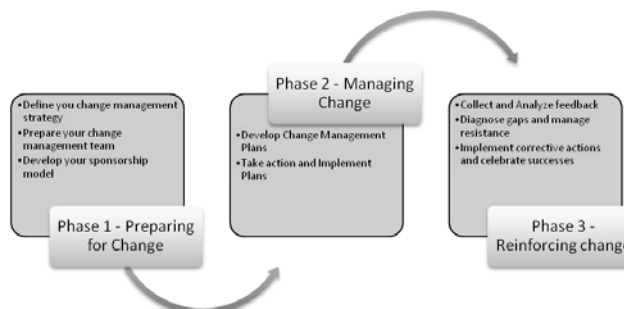

Figure 2: Prosci Change Management Process
Source: Abstracted from Prosci (2009)

Preparing for change involves activities to prepare the change leader and change management team, to enable your sponsors to support the change and to architect a change management strategy. Managing change involves the design of change management plans and activities, and the implementation of those plans throughout the organisation. Reinforcing change includes analysing the results of change management activities and implementing corrective action. A distinguishing feature of Prosci's (2009) model is its recognition of the importance of change management in managing projects.

According to Prosci (2009), projects using effective change management processes and tools have a much higher probability of achieving their objectives, on time and on budget. The use of this model provides a return on investment by directly impacting: how quickly change is adopted into the organisation and how well the project stays on schedule; the overall level of participation and ultimate utilisation of the new processes and tools; and how employees perform in the new environment (Prosci, 2009). However, the model does not provide a framework that prescribes how both change management and project management techniques can be integrated to increase the likelihood of success when managing IT projects.

The project management methodologies presented and the case discussed allude to the importance of change management in the undertaking of any IT project. Unfortunately, change management issues were not dealt with sufficiently in both theory and practice. The factors associated with IT project failure such as a lack of executive sponsorship and lack of user involvement suggest that this exclusion accounts for the high failure rate of IT projects. The factors identified for IT project success imply that the integration of both project management and change management is needed to enhance the chance of success when managing IT projects. The subsequent sections of this paper explores an integrated approach to managing IT projects that incorporates both change management and project management principles.

5. Methods and Procedures

The population for this study comprised IT professionals in the Public Service who have been directly or indirectly involved in the planning and execution of IT projects in T&T. The Draft Estimates of Expenditure for 2012 and the position management records of the Public Management Consulting Division (PMCD) were used as the sampling frame from which the sample was drawn. The estimates comprised data relating permanent IT positions in the Public Service, while the PMCD's position management records identified the contract positions. The two (2) sources were considered an ideal sampling frame since:

- the units had a logical numerical identifier,
- the units could be found,
- every element of the population of interest was

present in the frame, and

- every element of the population was present only once in the frame.

The sampling frame was calculated to be 453 IT employees. At a confidence level of 90%, with a margin of error of ±5% and a response distribution of 95%, the required sample size was set at 43. The simple random sampling method was used since it allowed every unit of the population to have an equal chance of selection. This particular method produces precise estimates of the population and sampling error, and allows for simple sample design and interpretation. On the downside, it requires a complete and accurate population listing. It is believed that the sampling frame used in the study reduces the negative effects of using this method.

The survey instrument used in the study was divided into four (4) sections. In the first Section, respondents were asked to rate, using a 5-point likert scale, the three (3) characteristics of IT project failure according to how often they occur. These symptoms were identified based on the Standish Group's (1995) characteristics of a failed IT project, namely: over budget, delivered late and missing scope/features. The second Section examined the causes of IT project failure by asking respondents to select from a list of failure factors, those factors they believed to have caused IT projects to fail. Respondents were then asked to indicate the factor that had the most impact on IT projects in the Public Service of T&T. The third Section comprised fifteen (15) change management issues where respondents were asked to indicate, using a 5-point Likert scale, whether the issues affected the efficient and effective management of IT projects in the Public Service.

In the Final Section, an open-ended question was used to solicit further comments and other considerations the respondents may have that were not covered in the previous sections. The survey questionnaire was the main data-gathering method. This method facilitated the collection of data by asking the sample to respond to the same questions. The survey instrument was designed using Survey Monkey, an online survey tool for creating questionnaires, collecting data and preparing reports. Responses were collected by creating an e-mail Invitation Collector and a Facebook Collector to send the survey via email and social media (such as Facebook). This facility allowed respondents to complete the survey online making it easy and convenient.

In the rare cases where the online survey was not convenient, paper-based surveys were administered and subsequently entered online on Survey Monkey. Survey Monkey's filtering tools were used to organise and view subsets of data for advanced analysis. This was done by creating filter criteria to find patterns in the data. Crosstabs were also created for side by side comparisons of how respondents answered a particular question compared to others.

In Section One, each characteristic of IT project failure was treated as ordinal data, analysed using descriptive statistics by means of percentages and compared with each other to determine in which area IT projects are most likely to fail. In Section Two, a multiple-response question format was used to measure the importance of the failure factors listed. The percentage of respondents who selected each item in their top 3 was calculated. This result was further refined by calculating which failure factor the respondents viewed as impacting IT projects the most. Some of the factors listed were pre-coded as change management related factors. These included: *lack of user involvement, lack of senior management support* and *lack of communication*. Both Sections One and Two are aimed to verify the problem statement: *"IT projects in the Public Service are challenged and managing them requires managing change"*.

This was achieved by first, highlighting the areas in which IT projects fail in the Public Service and then, identifying the change management related factors among the top three (3) causes of IT project failure in the Public Service of T&T. In Section Three, descriptive statistics by means of percentages were used for each item. Each was analysed separately and then grouped with the other statements to create a score for the group of statements. As such, the higher the score, the greater the impact the change management issue has on the IT project management. Additionally, to simplify the analysis, responses were reduced to nominal levels of agree versus disagree. That is, strongly agree and agree were added to create "agree" and *vice versa*. The analysis methods used for the individual items include the use of pie charts and central tendency summarised by mode. The findings from the survey are presented and analysed in the next section.

6. Findings and Analysis

The results of the survey revealed that IT projects in the Public Service of Trinidad and Tobago are generally challenged. That is, they are completed and operational, but over-budget, over the time estimate and offers fewer features and functions than intended. The findings showed that of the three (3) characteristics, *time* was of the greatest concern with an average rating of 3.91. In total, 58% of the respondents indicated that IT projects are often not completed on time, and another 16% stated that they are always late. The next area of concern was *missing scope/features* with an average rating of 3.47 then followed by *over budget* with a rating of 3.44 (see Figure 3).

Regarding the factors that cause IT project failure, *changing requirements* was the most popular among respondents with twenty-six (26) responses. This was followed by *lack of senior management support* with twenty-two (22) responses and a *lack of communication* with twenty-one (21) responses to round-up the top three (3). Other frequently cited factors included *lack of user*

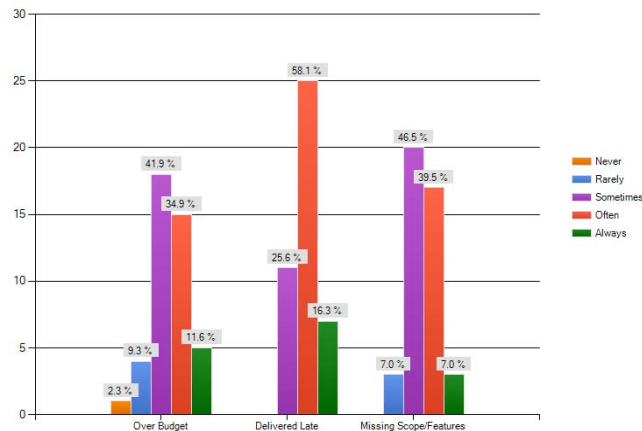*involvement, poor project management*, and *unrealistic time/budget constraints* (see Figure 4).

Figure 3. Characteristics of IT Project Failure
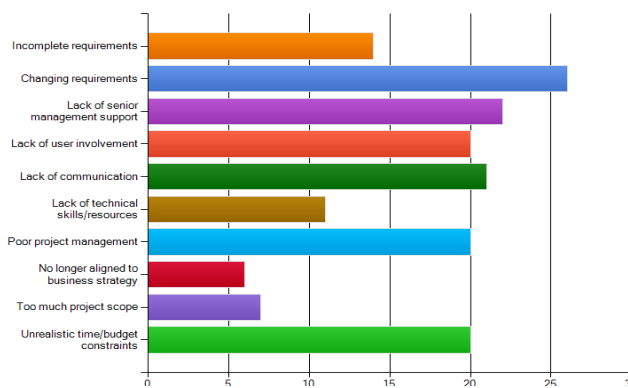

Figure 4. Causes of IT Project Failure

When respondents were asked to identify the factor that had the greatest impact on the success of IT projects, the majority (i.e., 41%) of the respondents stated that there was a lack of senior management support. Some 13% of the respondents indicated incomplete requirements, while another 10% indicated a lack of user involvement.

A comparison of the results to similar studies in the private sector showed that factors such as changing requirements, user involvement and a lack of senior management support were also highlighted among top risk factors identified by Qassim (2008) as well as the Standish Group (1995). Besides, the majority of respondents (i.e., 41%) considered a lack of senior management support to have the most impact on IT projects in the Public Service. This too was substantiated by Qassim (2008) who cited executive support as the most important risk factor for IT project success.

In Section three (3) of the survey, respondents were asked to indicate their agreement with fifteen (15) change management issues that affect IT project failure in the Public Service. Eighty-one per cent (81%) of the respondents agreed that an IT project is likely to fail when the change management plan is not integrated with the project management plan with an average rating of 4.11, the highest in the group. The next issue that most respondents agreed to have a substantial impact on IT projects is the failure to identify anticipated areas of resistance. Similarly, many respondents agreed that projects usually fail because there is not an appreciation of how the change will take place. Both issues scored an average rating of 4.03. Although, an attempt was made to differentiate among the change management issues, the results showed that most respondents tended to agree that the change management issues identified affect IT projects in Public Service with average ratings ranging from 3.18 to 4.11. Figure 5 depicts the main findings.
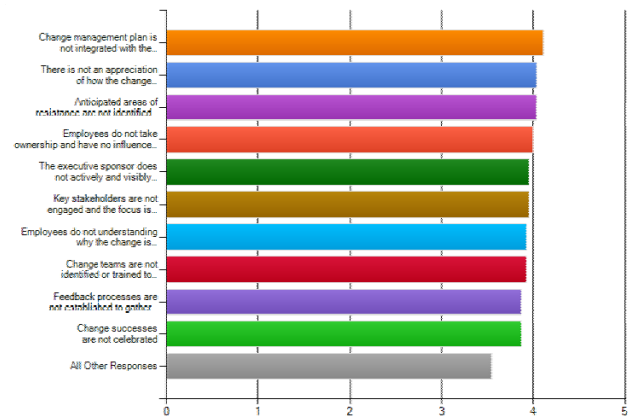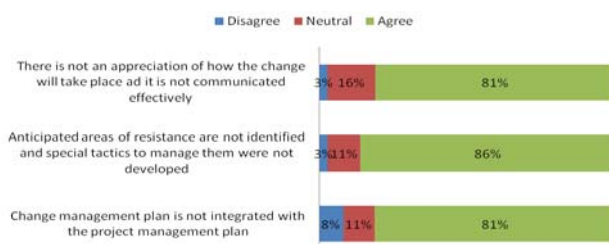

Figure 5. The impact of change management issues on IT project failure

Some of the popular project management methodologies alluded to the importance of change management in the undertaking of any project. However, none showed how it can be applied to project management. This shortcoming was highlighted when 81% of the respondents agreed that a lack of integration between the change management plan and project management plan was a leading cause of IT project failure. For the IhRIS and the IGP projects, attempts were made to introduce change management. Unfortunately, the change team lacked experience and there was a lack of funding for change management activities. Change management assistance was only sought after resistance emerged in the projects. Furthermore, the change team reported directly to the project management committee as opposed the executive steering committee. This led to the sidelining of change management issues since they were regarded as insignificant.

Moreover, some 86% of respondents agreed that when anticipated areas of resistance are not identified and special tactics are not developed to manage them, IT projects are likely to fail. This finding suggests that

change management activities must begin at the initiation stage of the project lifecycle and not simply used as a tool for damage control. Most respondents (i.e., 81%) also agreed that there must be an understanding of how the change will take place and it must be effectively communicated to stakeholders if the project is going to be successful (see Figure 6). This finding calls for collaboration between the change management team and the project management team in the development of the communications plan for the project. These findings confirm that change management cannot be viewed as an add-on or as a tool to be used only when resistance arises. It calls for the need of integrating both bodies of knowledge for managing IT projects in the Public Service of T&T.

Figure 6. The impact of change management issues on IT project failure – Nominal Levels

In the Final Section of the survey, respondents were given the option to make further comments or suggest other factors that may affect the planning and execution of IT projects in Public Service of T&T. Using text analysis, the majority of respondents made reference to the need for senior management support throughout the life of the project. Some cited reasons such as the length of time for executive approval and no buy-in. Others reiterated the importance of change management and the need to manage the people issues associated with IT project management (like coaching, training, and reinforcement).

The findings of the survey verify that IT projects in the Public Service are challenged and that managing them requires managing change. Most respondents agreed that there is a need to focus on the people issues associated with planning and executing IT projects and not just the technological solution.

7. An Integrated Approach to Managing IT Projects

The results of the survey stressed the need to address the people issues associated with the changes that the planning and implementation of IT projects bring to the culture of the Public Service. Prosci (2009) change management model is one that would be best suited for the project management environment as it organises change management activities into three distinct categories, namely, preparing for change, managing change and reinforcing change. The approach proposed

integrates the change management activities of Prosci (2009) change management process with the traditional project life cycle. It takes into account the change management issues that have an impact on IT project success and highlights where in the project lifecycle they should be addressed. Although it does not provide all the details associated with each activity since they are already covered extensively in other literature, it does highlight the change management activities to be done at each stage of the project life cycle.

Participants in the 2007 Best Practices in Change Management benchmarking study shared when they started change management activities and when they would suggest starting change management activities in the future. Most participants recommended starting change management activities at project initiation although in practice many participants started later in the process (Prosci 2009) (see Figure 7).
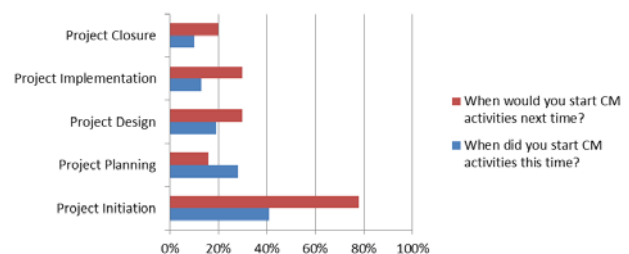
Figure 7. Results from the 2007 Best Practices in Change Management Benchmarking Study (Source: Prosci 2009)

Depending on the nature of project or industry, project managers may opt to use variations of the traditional project life cycle. For instance, one project manager may begin with project initiation and another with conceptualisation. As a result, it may be difficult to prescribe change management activities for a specific project life cycle. Nonetheless, irrespective of the choice, they generally focus on planning which is referred to as project feasibility and delivering the actual work also known as project acquisition (Schwalbe, 2010).

The same principle can be applied to Prosci's (2009) change management process by grouping activities that focus on planning change (preparing for change) and grouping those that focus on implementing the change (i.e., managing and reinforcing change). Grouping the activities in this manner allows for better alignment of project management and change management activities regardless of the project life cycle used. For example, activities related to planning the project can be linked to activities that prepare the organisation for the change, while project acquisition activities can be aligned to activities that focus on implementing the change. Figure 8 illustrates how change management activities can be aligned to some of the project life cycles.

A successful IT project is one that is completed on time, within budget and fully functional. Some may argue that an IT project is not successful until the intended benefits are realised. While this definition falls outside the scope of this study, it is an important consideration for government to see real and lasting improvements in social, economic and cultural development caused by the deployment and usage of IT. Emphasis must be placed on reinforcing the change associated with IT projects as it is not limited to the project life cycle. This may also require managing resistance and taking corrective actions long after the project is complete.
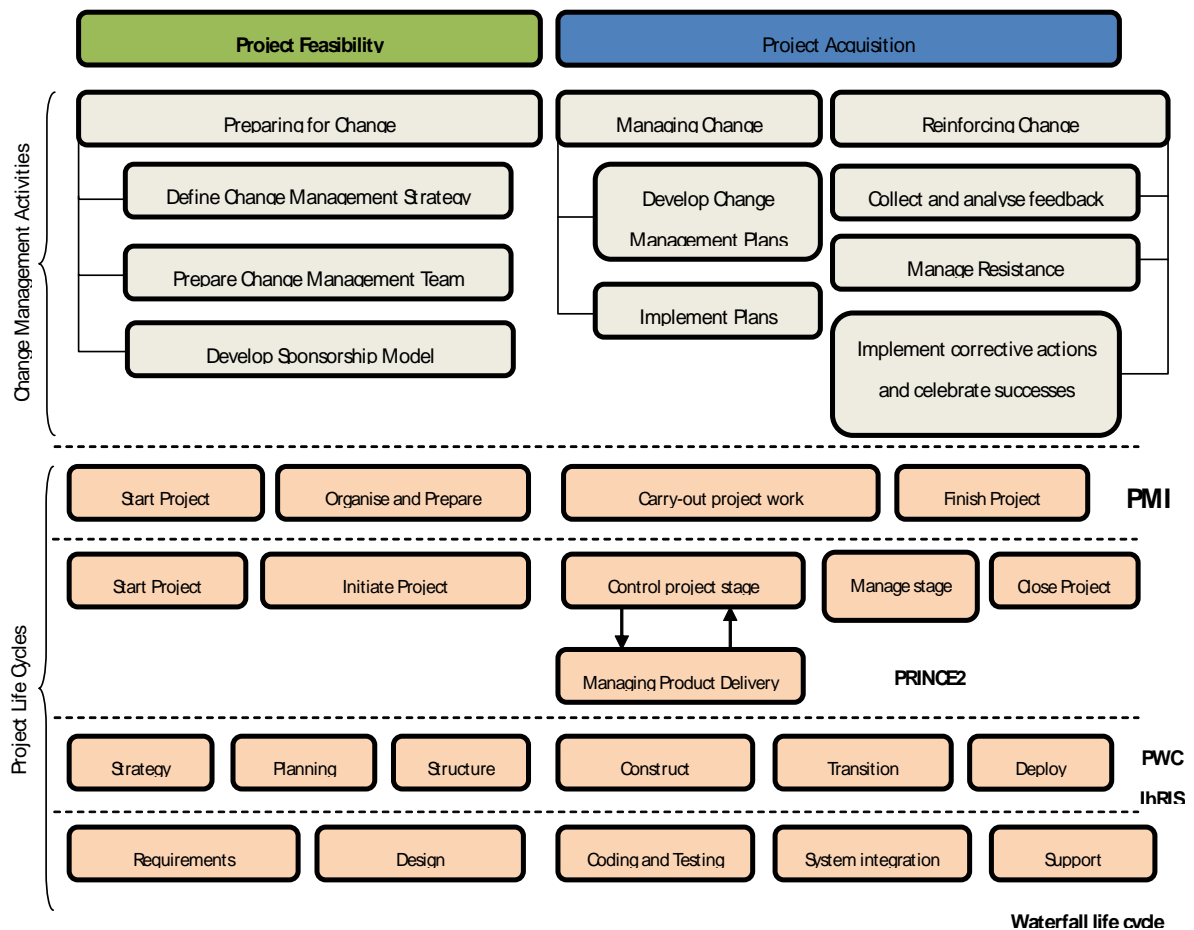

Figure 8. Alignment of change management activities and various project life cycles

8. Discussion

Overwhelmingly, respondents to the survey shared that *a lack of senior management support* was the main cause of IT project failure in the Public Service. As such, the project manager must ensure that a sponsorship model that is best suited for the Public Service is in place to support the project throughout its lifecycle. Based on the IGP and IhRIS experience, there is a need for a sponsorship model that allows the change management team to be actively involved in the activities of the project. The sponsorship model used in both projects had the change management team reporting directly to the project team. As a result, change management issues affecting the project were not escalated to the steering committee to be addressed.

There are several options available to the project manager, and the choices vary depending on the size and complexity of respective IT projects. For large and complex IT projects (that are planned and implemented across various ministries) in the Public Service, it may require an external change management team dedicated to the project. This ensures that the team has the skills and time to address the change management issues that may arise as each ministry has its own culture. However, to ensure that there is coordination between project management and change management activities, a change management leader should be assigned to the project team as depicted in Figure 9.

Based on the survey findings, 71% of the respondents indicated that the executive sponsor does

not actively and visibly participate in the project team throughout the project. As such, in the case of small ministry-specific IT projects, it is recommended that the project sponsor be a member of the project team as depicted in Figure 10, where each member of the project team is expected to work on the change management aspect of the project. This also requires training project team members in change management. Moreover, for larger ministry-specific IT projects, the Permanent Secretary of the ministry in question can act as the executive sponsor supported by a mid-level manager sponsor. This ensures that change management issues are escalated to the executive level, and allows mid-level managers to actively participate and take ownership of the project. In this model, certain members of the project team should be assigned responsibility for the change management programme as depicted in Figure 11.
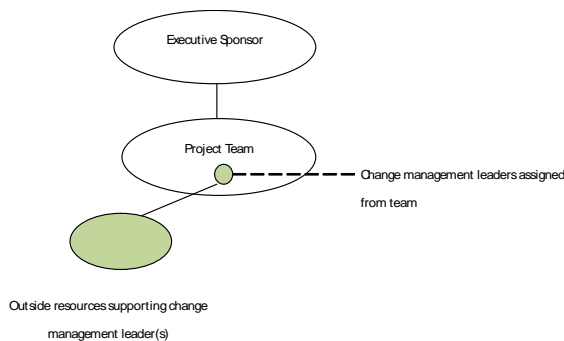
Figure 9. Sponsorship Model for Public Service wide IT projects
Source: Prosci (2009)
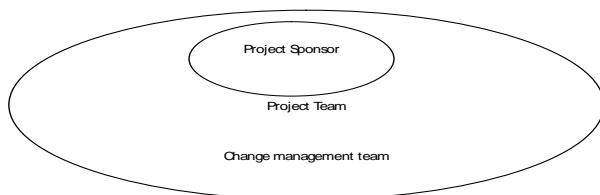
Figure 10. Sponsorship Model for small ministry-specific IT projects (Source: Prosci (2009))
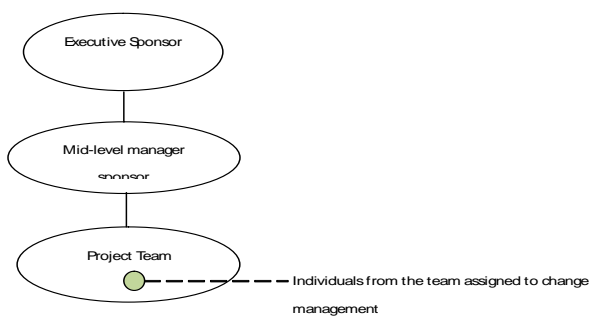
Figure 11. Sponsorship Model for large ministry-specific IT projects (Source: Prosci (2009))

9. Conclusion

Over the past decade, the Government of the Republic of Trinidad and Tobago has made substantial investments in the area of ICT. A substantial amount of that investment has gone towards government modernisation which looked at simplifying access and delivery of public services using ICTs as the vehicle. However, the anticipated improvements have not been realised as the culture which is built around strict rules and traditional practices have stifled innovation and limited the extent to which IT projects are planned and executed. Managing IT projects continues to be challenged and necessitates greater efforts on managing change.

After reviewing popular approaches to project management in practice, it was concluded that change management was lacking in the planning and execution of IT projects. A sample size of forty-three (43) IT professionals was drawn from the Public Service to participate in an online survey. This sample size was determined using a confidence level of 90%, with a margin of error of ±5% and response distribution of 95%. The survey was sought to identify the characteristics and causes of IT project failure, and explore the change management issues affecting IT project implementation in the Public Service.

The findings of the survey confirmed that IT projects in the Public Service were challenged. That is, they are usually delivered late, over budget and missing some features. It also revealed that change management factors such as a lack of senior management support, lack of user involvement and lack of communication were among the most reasons of IT project failure in the Public Service. Major change management issues facing IT projects included the failure to anticipate areas of resistance, the non-integration of the change management plan and project management plan, and the failure to communicate the change. In light of these findings, an integrated approach to managing IT projects is derived. The approach incorporates both change management and project management activities, and addresses the factors affecting IT project failure.

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