Factors Affecting Change Management through Technology Adoption in Public Organizations in Bangladesh

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Abstract- The purpose of this study is a clarification of changes in supply chain management (SCM) in public organizations and the nature of change management (CM). The paper also examines and demonstrate the trust of influencing CM in technology adoption in Bangladesh public organizations. The aim of this paper is, consequently, to identify precarious success factors for CM. Also, it focuses on the adoption of technology such as the Technology Acceptance Model (TAM), highlighted the need to broaden the scope of theoretical mechanisms. Besides this, research obtained the empirical data necessary to validate the theoretical framework. Therefore, a total of 460 self-administered questionnaires was used to derive public sector responses in Bangladesh in their perceptions of trust and aspects of change management. In addition, this study provides an outline of FC in TA projects is recognized based on the literature review and empirical evidence. This study will enhance the service and management of the public organization through technology adoption. Besides that, it will provide the factors influential in quality service for a public organization. Finally, it introduces a framework base on TAM theory. This paper concludes with an elaboration of previous work, framework and contributions as well as the stream of future research.

Keywords: *SCM, Change management, Public organizations, Technology adoption.*

1. Supply Chain Management & Change Management

Supply Chain Management (SCM) is a wide range of activities necessary to plan, control and implement the flow of products, from obtaining raw materials and production to distribution to the final customer [2], in the possible profitable way [3];[1]. Besides, the essence of change management is the process, tools and techniques to manage the side of change to achieve the desired business results [6];[4]. Change management is the best possible way to initiate a specific task of supply chain management where the Change management includes organizational tools that can be used to help people make successful personal transitions that lead to a change in adoption and achievement [4]; [5].

The process of supply chain transformation primarily focuses on aligning the distribution chain to maximize productivity with the overall business goals [11]; [34]. So, in reality, it's not so much the material flows that change in the organization's roles and that involves a systematic approach step by step [26]. The transition to supply chain management requires a dramatic shift in organizational structures, cultural and business policies from a conventional silo oriented business model [16]. The aim of supply chain interventions may, therefore, be disrupted without prepared change management. Here we introduce the change management (CM) for the better enhancement of education supply chain in pubic institutions [42].

2. Overview

At present, public organizations need to implement modifications to current technology involvement. This need is often associated with the transformation that takes place in general management and the implementation of change management (CM) [34]; [35]; [36]; [37]. The literature provides numerous instances of failure of the public institution because of

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lack of technology adoption [38;] [40]. Also, the reason for technology implementation failure is a lack of change management (CM) [7]. CM provides a solution to two major problems: how to plan better for the operation of changes and how to overawe employee resistance [4] to these variations. CM refers to a set of essential tools or constructions proposed to keep any change effort under control [8]. Traditionally, the theory of CM has been based on study cases for business organizations. The prior studies on CM did not concentrate on the specific contextual characteristics of public organizations [9]. However, an interest in CM in public organizations has been noted. A recent study has questioned the fact that CM techniques for the private sector are applicable in the public organization context and have suggested that the differences between the public and private sector could play a significant role in this respect [10]. It includes different environmental, organizational, and procedure connected factors. Several authors have suggested that the specific context of public organizations may have consequences for CM, but there is slight empirical evidence concerning this issue. A recent literature review of Study on CM in the public sector by [9] found that most studies emphasize the content and context of change, instead of the implementation process. Furthermore, researchers accomplish that many educations did not address the outcomes or success of a change intervention. Trust of technology and implementation of various kinds of changes related to facilitating condition (FC) have become a challenge for public organizations [11].

This study holds the promise that conducting a study among Bangladesh public organizations should contribute to a greater understanding of the use of CM. Considering the limitations, the objective of this study is to identify TA for CM in Bangladesh public organizations. Also, it is an explanation of CM. It is offered, especially in the context of the public organization [17]. A literature review is conducted with a specific emphasis on TA for CM. Besides, facilitating condition and trust is an essential variable for the adoption of fo TA in a public institution.

3. Literature Review

The literature review shows that change is a predictable consequence of applying various tech and functionality [8]; [12]. A project is a temporary and unique group of activities with the beginning and end in time mapped out and designed to accomplish defined goals. Although project management (PM) and CM are derived from different terminologies and different methodologies [19]. They also emphasize different sets of skills and competencies. It is accomplished through the application and integration of TA processes such as initiating, planning, executing, monitoring and controlling, and closing. FC is the disciplined application of knowledge, skills, tools and techniques to project activities to meet the project requirements [12].

CM is the process, tools, and techniques to manage the people-side of change to achieve the required business outcome. CM incorporates the organizational tools that can be utilized to help individuals make successful personal transitions resulting in the adoption and realization of change [13] CM contributes to the successful implementation of a wide variety of projects. Not only does project success utilize the traditional measures of project performance but it is also associated with change management [14]. Both PM and CM support moving an organization from a current state through a transition state to a desired future state. CM focuses on the tasks to achieve the project requirements.

The change management (CM) focuses on the people impacted by the changes. CM in the context of TA can be examined from two perspectives. The first one describes changes occurring itself, e.g., a change of a project goal or its scope. Each addition or deletion to project goals or to project scope is a change, whether it increases or decreases the project cost, schedule, or quality [39]. In public organization context, CM may refer to a technology process wherein changes to the scope of a project. In this research, CM is seen as a creation of diversification that enables the acceptance of changes to the organizations. The other perspective refers to changes which must be implemented in public organizations before or during the implementation of TA will require changes to procedures or workflow [41]. This paper focuses on CM in this very context, i.e., changes that result from the implementation of CM.

Public organizations' efforts relate to a successful facilitating and CM implementation, experiencing various conditions and are associated with a substantial risk of failure. The considerations of FC and CM implementation may be expressed as critical success factors. TA represents the limited number of areas of activity in which the achievement of satisfactory results will ensure the success of creating trust in public organizations, also activities associated with CM. However, the processes through which the change in public organizations comes about are not described in detail in the literature [15]; [9]. The actual study work typically examines CM in TA in business

organizations only. This paper extensively searching the literature, could not find any important studies regarding applying CM in public organizations. This represents the need for studying how CM should be used in public organizations through TA and how it affects the success of institutions.

4. Change Management in Information System Projects

Change management is a process that helps organizations in the implementation of an appropriately tech-based environment [16]. CM in the context of information system (IS) projects is understood as activities, processes, and methodologies that support employee understanding and organizational aspects during the IS projects. CM refers to all activities associated with the interaction of technology, processes, and people [42]. Academic study has shown that it is not the technology that provides an organization with success, but the integration of technology into an organizational change management process [18]. This approach considers the importance of people in an organization.

A successful IS project requires, among other things, a human resource approach to improving the necessary employee skills and their engagement in the procedure of CM [19]. Moreover, IS project very often requiring a reorganization of processes in operation at this point of time. In turn, restructuring of processes is strictly connected with a need to implement the CM concept [18]. Some authors, who also consider public sector changes, point at the fact that these changes may not be more complicated than those in the private sector, but for sure they are different. It can even be stated that CM is key to the success of public organizations by FC [20]. The literature on project success factors has been comparatively quiet about the role of change management [21]. Also, CM, for example, which offers training on project management, does not account for changes brought along with the project. Various practical reports, e.g., a structured way to implement business changes [22]; [23]. Nonetheless, CM has continued to have a relatively small representation.

5. Factors for Change Management in Information System Projects

There are numerous writers' recitation TA for CM [24; [25]; [26]. However, there are not too several telling TA for CM in IS projects. For the purpose of this study, the TA for FC in TA has been identified based on the literature review (Table 1). The framework includes FC, T effect on TA, which is defined in the literature on CM, and only those that might refer to CM in IS projects have been selected. Additional, TA definite by specific authors have been analyzed, classified, and unified. The identification of these key factors also allows for calculating the influence of CM on IS project [43]. The authors state the statement that all factors are similarly significant, and none of them has been listed.

Table 1: Critical success factors for change management in IS projects

The following paragraphs present a more comprehensive explanation of each of the TA shown in Table 1 [26].

TA	Definition
Top management support	Active and visible support from management. Direct participation of the strategic decision-makers in an IS project.
Recognize the change	The need for change must be established. Promote a positive approach to change.
A shared vision for change	The vision should be strongly advocated across the organization.
Planning a project as a change	Evaluation of the gap between where the organization is now and where it would like to be manage the entire change process as a project prepare change management to promote change in the organization.
Managerial activity	Involvement of managers who are directly associated with the change process
Effective communication	Communicate the change message at all levels throughout the organization
Organizational readiness to deal with changes	Organization needs to be ready to deal with change Employs need to feel that the organization is prepared to deal with change
Employees training	Clear demonstration of how to use IS
Employees involvement	Belief the employees that the change is essential and has an

	impact on the organization's success
Employees satisfaction	Satisfaction with the final product and its acceptability by employees.
Information flow	Having readily available and current data gathered in one place and accessible to all interested.
Performance measurement	Measure of change performance and value it to employees to demonstrate success

Source: [29].

The following paragraphs present a more comprehensive explanation of each of the TA presented in Table 1.

5.1 Top management support

Top management support assistances express and found excellence strategies and objects, delivers resources and workout, supervises IS application at all levels of the organization, and evaluates and studies the strategy considering consequences realized [27]; [28].

5.2 Recognize the change

Recognizing the alteration assistances comprehend what precisely will be different and whom the change will affect [25]. The difference wants to be defined obviously. The suitable identification of changes determines changes in the organization's procedures and the employee's tasks and responsibilities. As a result, it sets the direction of an organization's development.

5.3 Shared vision for change

A shared vision for variation is significant to direct the system change effort and to serve as a foundation from which precise strategies need to be established for a public organization [28]. The change agents must ensure that the organizational stakeholders comprehend the vision of how the IS will be transformed into the global organization. It is significant to have a clear idea and objects for organizational achievement, especially during times of increased uncertainty, such as change management [26]. It is also very significant to understand the present state of the organization that can be viewed as the platform for CM [29].

5.4 Planning a project in CM

Planning is a project as a change includes management human and other resources. A documented change management procedure helps make a map of the tasks and resources required [29].

5.5 Managerial Activity in CM

The commitment of line managers to CM creates a situation that they classify with a change. They also achieve the time of their supporters accordingly, accounting for their involvement in change procedures in their assignments [27].

5.6 Effective communication

Effective communication is crucial for sufficient CM. Without proper notification, the employees involved in the change process would not know what changes were made, what changes are being made, what changes should be made. Furthermore, the employees would not be conscious of their tasks related to the applied changes. Collaborating communication across the organization is essential to confirm that the momentum and eagerness for change does not reduce over time [25]. Communication by top management is seen as powerful leverage in ahead promise and building consensus about the necessary change [30].

5.7 Organization readiness to deal with changes

This issue reproduces employees' perceptions of the quantity to which an organization is prepared to make variations to recover performance [26]. Dealing with a change helps bring a better understanding of imminent changes by employees.

5.8 Employees training

Employees' working as necessary, but it is very separate [27]. Employees' exercise is a transparent complaint about how to use the TA. After foremost training, employees will gain early involvement with the change, and as an important, the originality will stand a consequence on them; they may validate better understanding and provision for organization and the thoughtful change [26].

5.9 Employees satisfaction

Employees' approval is the precondition for positive change application linked with FC. Satisfaction is not fully felt until the employees get used to a new IS. In the beginning, there is continuously a noticeable resistance to change [31]. The confrontation can be rapidly overwhelmed. Furthermore, the improvement of info movement on changes reduces the strength.

5.10 Performance measurement

Performance measurement is a critical issue for the success of CM projects management [32]. Application development necessity is measured frequently for additional efficient control. Through monitoring and feedback from the users, the performance of the change procedure can be studied and assessed to see whether it is achieving business goals and objectives.

6. Theory

In this study, we focus on the adoption of technology such as the Technology Acceptance Model (TAM), highlighted the need to broaden the scope of theoretical mechanisms [48]; [45]; [46]. In addition, to use this model, we can make outstanding theoretical and managerial contributions for this study [44]; [48]. It is seated at the meeting of numerous sub-streams connected to technology acceptance model TAM and UTAUT [47].

7. Theoretical Framework

In this section, we explain the theoretical framework of our study.

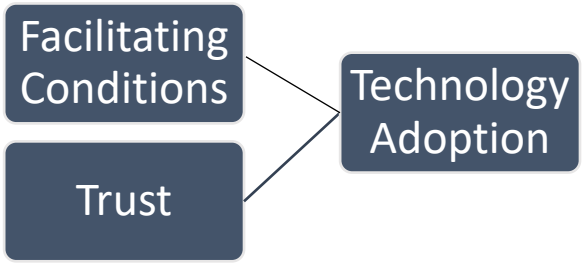

Figure 1. Theoretical framework

Table 2. Operational definition

Abbreviation	Construct	Operation Definition
FC	Facilitating Condition	The degree to which academia believe the existence of digital tools, networking and infrastructure provided by the organization to support their job purposes in the public organizations.
T	Trust	The level of belief with the change management reliability to improve the service/information flows of the public organization.
TA	Technology Adoption	Adoption of technology is a term referring to the adoption, incorporation and use of new technologies in society. This process takes place in several stages, usually defined by the groups of people who use it.
SCM	Supply Chain Management	The control of the movements of products and services in trade, supply chain control (SCM) includes transporting and processing raw materials, working-in-process inventories and finished goods from the point of origin to the point of consumption. There was a mistake. In supply chain management, marketing networks play a significant role.
CM		Management of change is the mechanism, resources and strategies for handling changes on the side of the individual to achieve the business result. There was a mistake. The management of transition focuses on the individuals affected by the change. Any shift in procedures, structures, the structure of organizations and work responsibilities has a technological side and a staff side.

8. Hypothesis

H1: FC has positive relation in technology adoption in change management.
H2: Trust has a positive relationship to technology adoption in change management.
H3: TA has a positive relation in change management.

9. Methodology

In this study, we obtained the empirical data necessary to validate the theoretical framework. In a total of 460 self-administered questionnaires were used to derive public sector responses in Bangladesh in their perceptions of trust and aspects of change management. A study to measure the underlying structures in the conceptual model. In theory, identified trust as "individual disposition to trust beliefs in capacity, benevolence and integrity". In line with the current study has been executed as an accumulation of trust: integrity, benevolence and ability to manage change. Therefore, the trust elements are selected in a way that covers key aspects of the customer's perception of trust.

10. Study Findings

Public administration in Bangladesh, due to the territorial scope of its operations, is divided into public organizations at the state level embracing the whole of Bangladesh. The case studies of FC considered below refer to the state level, where the project management took place, and the local levels, where the two IS projects were implemented. The two similar projects, one successful and another unsuccessful, will be used to present the application of CM in TA projects. Information about each project was gathered by participation in those projects and conducting a series of semi-structured interviews. Table 2 shows that the two projects were alike in terms of scope and size, but CM was only used in project B. As a result, the outcomes of the projects were different. Project an ended only as a partial success. Although the trust was finally implemented, it was not fully used by end-users after 12 months. The completion of project A was also significantly delayed. Project B was entirely successful. The FC was implemented, and its end-users thoroughly use it.

Table 3. Project A and B – comparison of essential variables

Features	Project A	Project B
Project type	Information system	Information system
Sector	Public administrations	Public administrations
Initial schedule	12 months	18 months
Budget	Realistic	Realistic
Success criteria	On-time within the budget successful installation of ERP system	On-time within a budget successful installation of web-based information system
IS software	Custom made	Custom made
End users	Public organization employees	Public organizations employees
No of end-user	400	3500
Project management methodology	BD-TECH	BD-TECH
Change management	No	Yes
Project result after 12 months	The software was made but not fully used after 12 months	The software was made and fully used after 12 months

11. Data Analysis and Tools

To assess model structure, [51] proposed a catalogue of criteria since PLS path model does have global goodness-of-fit standards [49]; [50]. The implementation of these criteria encompasses a two-stage process, e.g. (i) assessment of the outer model and (ii) assessment of inner model [50]. The external model is known as the measurement model, and the internal model is known as the structural model [51].

12. Discussion

As stated, CM was not verified in project A, and the essential variations were implemented, whereas CM was applied to project B in a methodologically correct manner. Based on the examination of the case studies, the authors can draw the same questionnaires form response in a public organization. Finally, FC was created and implemented with a significant delay. The study explored two projects, one positive and one not effective. The fact that the positive one performed CM

and the ineffective one did is not proof that is applying CM assurance achievement. However, it is worth considering that implementing CM can contribute to project success. The study was based on two case studies and the reports accessible by the project managers in both cases. Though these sources mainly replicate individual views, it should be stated that project managers and whole project teams are valued sources of information on IS projects, also in terms of their success or disappointment. TA analyzed in the paper are also measured as preconditions for CM success by other investigators. This proves that the factors described in this paper may accurately reflect the state of practice of CM in IS projects. As the presented case studies showed, the application of CM bore an influence on the IS project success, though, it should be kept in mind that project success and CM success are different terms. Project success is measured in contradiction of a project's overall achievement of the project's objectives [32]. PM success is mostly based on budget, schedule, and requirements goals [33]. CM success reflects the implementation and acceptance of change by people. Does TA success depend on two variables, namely? Sound project management and CM application. At the same time, it is worth emphasizing that CM mostly concentrations on social issues.

13. Conclusion

Though the recognized TA for CM in FC schemes and its applied application are general and complete, a limitation of this study lies in the fact that it is founded on only two case studies, which examines only Bangladesh public organizations. The replication of this study for a more significant number of FC projects in public organizations in Bangladesh will be useful to enrich the body of knowledge related to the factors bearing an impact on CM in IS projects.

This study contributes to the Study of CM in FC projects in two ways. Firstly, the identification of TA for CM finds the impact on the public organization. Twelve technology adoption have been identified these are (1) top management support, (2) the change recognition, (3) shared vision for the change, (4) planning a project as a change, (5) managerial activity, (6) effective communication, (7) organization readiness to deal with the change, (8) employees' training, (9) employees' involvement, (10) employees' satisfaction, (11) information flow and (12) performance measurement. Secondly, it presented applied issues concerning those identified TA and, consequently, the effect of CM on IS project success. This study suggested that the relation between FC and TA in change management. On the other hand, the timely and effectively managed CM optimizes an FC project. On the other, a change is an inevitable consequence of IS project implementations.

Additionally, this study can be useful for other Central and Eastern European countries as these countries are similar in many features. Their resemblance concerns their similar geopolitical condition and their joint history, traditions, culture, and values. In addition, the similarity reflects in building democratic state structures and a free-market economy, participating in the European integration process, the levels of information systems application in public organizations. In addition, they have to resolve the same difficulties and overcome the same political, economic, social, and technological obstacles in their transition from a traditional government to a technology-based government.

Appendix A
Table A1 Measurement Items.

Variables	Items	Adapted from
Trust	I believe that change management is trustworthy.	Gefen et al. (2003)
	I trust in change management.	[44]
	I do not doubt the honesty of change management.	
	I feel assured that legal and technological structures adequately protect me from problems on change management.	
	Even if not monitored, I would trust change management to do the job right.	
	Change management can fulfil its task.	
Technology Adoption	I believe change management needs proper technology adoption	Puschel et al. (2010).[54].
	Change management needs proper technology knowledge	Zhou et al. (2010).[52]

	User manual for enhancing the productivity of the public organization	
	Change management needs user guideline	
	Organizations stakeholder need proper adaptability on change management	
Facilitating Conditions	I have the resources necessary to use change management.	Venkatesh et al. (2012). [53]
	I know necessary to use change management.	
	Change management is compatible with other technologies I use.	
	I can get help from others when I have difficulties using change management.	

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