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Resistance Driven by Non-Technical Risks in Information Systems Development: A Case Study in the Sultanate of Oman

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RESISTANCE DRIVEN BY NON-TECHNICAL RISKS IN INFORMATION SYSTEMS DEVELOPMENT. A CASE STUDY IN THE SULTANATE OF OMAN

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Abstract

Despite the pressing need for computerized Information Systems (IS) in both public and private sectors of developing countries, research shows that most IS are not performing the role successfully and do not achieve the desired objectives. There is increasing focus on risk factors associated the non-technical issues that impact significantly upon development success.

Through the lens of a government IS project for the Ministry of Social Development (MOSD) in the Sultanate of Oman, we identified resistance as an outcome driven from non-technical risk factors that negatively affected the project. We found that where a change in the top management occurred there was an associated risk attached to any extant IS development projects. The incoming top management change in IT strategy inadvertently created a gap between the new business objectives (non-technical) and existing beliefs impacting directly on development success.

Using Leavitt's (1964) Socio-Technical Model as a framework of organizational change we put forward an extended model aimed at handling gaps emanating from non-technical risk factors. In this way, we contribute to the body of knowledge within the IS development domain and also seek to contribute to better understanding of the significance of such resistance driven from non-technical risk factors in IS projects within developing countries.

RESISTANCE AS A NON-TECHNICAL RISK IN INFORMATION SYSTEMS DEVELOPMENT. A CASE STUDY IN THE SULTANATE OF OMAN

1. Introduction

Despite the pressing need for the creation and use of computerized Information Systems in both public and private sectors of developing countries, research shows that most information systems (IS) are not performing the role successfully and do not achieve the desired objectives. Within developing countries there is increasing focus on risk factors associated with non-technical issues that impact significantly upon development success and potential solutions. However, the information systems relevant to the public sector vary from those in the private sector, and risk factors that apply to software development projects are different from those that apply to systems in operation (Bada, 2000; Heeks, 2002; Krishna and Walsham, 2005; Salazar, 2001; Qassim, 2008).

Our study begins at the time when a change of top management in the Ministry of Social Development (MOSD) in The Sultanate of Oman had taken place. A changeover of top management is often referred as a change of 'ownership' of the department concerned. We learned that the incoming management had instigated a change in IT strategy and subsequently requested a new Social Benefit System. This had inadvertently created a gap between the new management business objectives (non-technical) and the previous business rationale that subsequently resulted in opposition from the users. The new development project has encountered a number of delays since its inception.

Utilizing this development project as a case study approach we seek to investigate the rationale behind the degree of resistance experienced that impacted upon the success of the project. The new system was sanctioned by the Council of Ministers of the Sultanate to replace the legacy system which at more than 13 years old was experiencing some limitations with data needed to deliver the volume of critical reports required by key decision-makers. The development of the new system was outsourced to a software company but is being managed internally by a Ministerial Technical Team. Examination exposed that the

significant levels of non-technical risk factors experienced have created resistance among users which subsequently affected the project causing significant delay (18 months) since inception. However, the ensuing problems of user resistance were not because of applying change (as change deemed for improvement of organizational performance) but due to the way of presenting and applying change. Our research study supports the views that where a change in the government top management (ownership) occurs then there is an associated risk to extant IS or development projects due to any accompanying changes in IT strategy (this is discussed further later in the paper).

Using Leavitt's (1964) Socio-Technical Model as a framework of organizational change we put forward an extended model aimed at identifying gaps emanating from non-technical risk factors. We therefore examine the underlying causes of the resistance experienced and ask specifically 'Why was there such unexpected resistance to the new system?' In this way, we contribute to the body of knowledge within the IS development domain. We also seek to contribute to a better understanding of the significance of resistance as an outcome borne from non-technical risk factors in governmental IS projects within developing countries.

As the principle researcher is a member of the Ministerial Technical Team an interpretative action research stance was adopted within the case study setting. The qualitative data gathering methods of participant observation, questionnaires, interviews and project artefacts were used to gather a depth of data aimed at increasing the understanding behind the issues being examined (Myers, 2009; Silverman, 2006). The multi-method approach allowed triangulation to take place during the data analysis in order to increase the validity of the research findings (Denzin and Lincoln 2000, Saunders *et al*., 2007).

We next put forward a discussion of the theoretical context, followed by the research approach and methods adopted and the problem situation is outlined. We then present our analysis and findings in the discussion section and present finally our conclusions.

2. Theoretical Context

Information systems development is a high risk task, and failures remain common regardless of advances in technologies and the increasing sophistication of development tools. Indeed, the 2009 Standish Group's report shows a marked decrease in project success rates, informing that only 32% of all projects are delivered on time, on budget and with the required features

and functions. 44% were classified as late, over budget, and/or with less than the required features and functions, whilst the remaining 24% are considered failures and are cancelled prior to completion or delivered and never used.

Understanding the risk factor *per se* is an essential part of managing risks in IS development projects such that appropriate counter measures can be taken (Schmidt et al., 2001; Chaffey and White, 2011). Risk can be defined as a condition that can present a serious threat to the successful completion of a software project i.e. the likelihood of an adverse occurrence (March and Shapira, 1987; Kroenke, 2006).

The literature acknowledges that there are numerous risk factors related to information systems development. Both technical aspects and social factors have been extensively documented (Mumford, 1983; Myers, 1999; Suchman, 1987; Wynn, 1979). However, more recent research into IS failure has suggested that although much emphasis has been placed on the technical aspects, '*the primary cause of failure is the lack of consideration ascribed to the social and behavioural dimensions of the implementation process itself'* (Adekoya *et al.*, 2007, p107). Indeed literature has categorized the non-technical factors impacting upon systems development success as Social, Cultural, Economic and Political (Bussen *et al.*, 1997; Heeks, 2002; Shore, 1998; Walsham *et al.*, 2007). More specifically, failure has been attributed to non-technical factors such as not meeting user requirements, low levels of user acceptance, not involving the right users, lack of user participation, poor communication, lack of executive support, inherent cultural behaviour and so on which all represent risks (Bada, 2000; Beynon-Davies, 1998; Bulter, 1991; Heeks, 2002; Krishna and Walsham, 2005; Lapiedra *et al.*, 2006; Lyytinen *et al.*, 1999). However, by categorising risks in this way there is a potential 'risk' of missing other causal issues (Crawford *et al.*, 2005).

Although social methodologies such as the soft system methodology (SSM) of Checkland (1981, Checkland and Scholes, 1990) and Mumford's socio-technical approach (1983) have evolved, the high rate of failure persists. One view is that the social system in the host organization influences the behaviour and relationships of the stakeholders involved (Rodney *et al.*, 2010). Equally, it is difficult for technical people to identify the underlying social norms that relate to human relations within the development arena when their focus is concentrated upon the IT requirements of the system under development (Shore 1998). This is even more complex when development is outsourced.

Leavitt's (1964 in Lyytinen *et al.*, 1998) open system model of organizational change (see figure 1.) will be used as an analytical framework to investigate and analyze issues of early risks in the project. The model aims to achieve a synthesis of major dimensions of software risk management while promoting change. It has been widely used to classify schools of organizational change in respect of managing the process of change. It has also been extensively used in the IS literature (Mumford, 1981; Lyytinen *et al.*, 1998).

The *Actors* represent all system stakeholders (users, managers and IT team members and so on), *Technology* refers to the use of development tools, methods and platforms of software and hardware; *Structure* specifies the culture of the environment and type of project in the host organization and *Task* signifies the expected outcomes in terms of goals and deliverables. There is a strong relationship between these four model components and '*a change in any socio-technical component or relation in a system development process can create variation which, in the extreme, can lead to a failure of the system, otherwise known as loss.'* (Leavitt, 1964 in Lyytinen *et al.*, 1998). In this way, the model provides a foundation to analyze the content of causal dependencies informing risk management approaches and proposes that these dependencies can relate to any or the entire components.

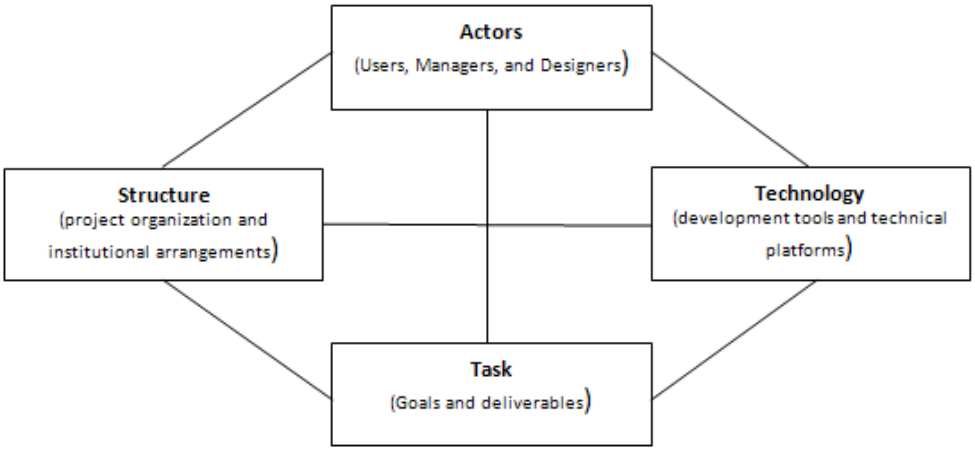

Figure 1. A Socio-Technical Model; Leavitt 1964

Our research centres on the success of IS projects within developing countries and we utilize the case study setting in The Sultanate of Oman as a vehicle to explore these issues further. Indeed, as we mentioned previously, published research shows that the majority of Information Systems across both public and private sectors of developing countries are not performing their role successfully and do not achieve the desired objectives relative to non-technical issues (Heeks, 2002; Qassim, 2008; Krishna and Walsham, 2005). Thus, there is

considerable debate surrounding potential solutions of the non-technical risk factors associated with IS within developing countries (Bada, 2000; Salazar, 2001).

Although there is neither evidence nor theoretical basis that failure rates in developing countries are worse than figures in developed countries, Heeks (2002) suggests that there is practitioner evidence and practical reasons to sustain the idea that failure rates in developing countries may be higher than those in developed countries. Through his research he concludes that the significant majority of IS projects in developing countries fail in some way citing human and social (non-technical) factors as key causal elements.

Montealegre (1999) believes that the majority of research focuses "*on conditions rather than actions and behaviors, and on weaknesses rather than on ways of overcoming them*" (p201). He suggests that as a consequence previous research lacked theoretical underpinnings or presentation of models. Additionally, another viewpoint is that successful information systems development tends to match its environment in relation to the social and organizational factors (Bada, 2000; Heeks, 2002; Walsham, 2001). This includes the values, perceptions and assumptions of key stakeholders and as such is culturally rooted (Berger and Beynon-Davies, 2009). An observation is that in Arabic organizational culture, little importance is attached to the engagement of users in IS development which may subsequently lead to system failure. It is also widely reported that end users, in general, are resistant to change and the greater the degree of change, the greater the risk of failure (Mann, 2002).

During the auditing of public sector IT Projects, the State Audit Institution (SAI) in the Sultanate of Oman (2007) has observed that although reporting of the outright failure of IT Projects was rare, failure to achieve all project objectives within the envisaged time and cost is common. They suggest that a potential new challenge for IT projects emanates from any changeover of ‘ownership’ of governmental organizations. By this we mean that where a change in top management takes place, the incoming management may review the extant IT strategy effecting changes. It can be argued that in The Sultanate of Oman as IT strategy has to be dovetailed to the business strategy this may alter with a change in top management and can even result in project termination or shorter life span. In our case the degree of resistance that proved problematic was a direct consequence of overlooking the non-technical risk factors caused by the way that changes to the IT strategy were managed.

The case study setting enables us to examine the rationale behind the resistance experienced that proved challenging for the Social Benefit System's new IS project of MOSD in the Sultanate of Oman.

3. Research Approach

A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analysed and used (Myers, 1997; Saunders *et al*., 2007. All research (whether quantitative or qualitative) is based on some underlying assumptions about what constitutes suitable research and which research methods are appropriate (Hirschheim, 1992). Information Systems qualitative research involves the use of qualitative data collection methods to understand and explain social phenomena to provide the IS community with useful qualitative information. Action research, case study research and ethnography are examples of qualitative methods. Qualitative data sources include observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, the researcher's impressions and reactions (Myers 2009) and recording and transcribing (Silverman, 2006).

3.1 Action Research

As the principle researcher is an employee of the case study setting the research approach adopted is that of action research. This leans towards an interpretive philosophy as advocated by Yin (2009) and Baskerville (1999). Action research has been used in social science since the 1940's as a research strategy that combines theory with practice through change and reflection. It aims to solve current practical problems whilst increasing scientific knowledge (Myers, 2009) with '*more precise theories of social change*' (Lewin, 1946, p40) and managing change (Cunningham, 1995). Lewin (1946) first proposed a cycle of planning, action and fact-finding. Moreover, he emphasized praxis, or theory/practice integration, thus action research was about action and research: both practice and theory (Dick *et al.*, 2009).

There are numerous definitions of action research; however, one of the most widely cited is that of Rapport (1970) who defines '*Action research aims to contribute both to practical concerns of people in an immediate problematic situation and to the goal of social science by joint collaboration with a maturely acceptable framework'* (in Myers, 2009 p499). Hult and Lennung's (1978 cited in Avison *et al*., 1999) confirm that action research assists in practical problem solving, expands scientific knowledge, is performed collaboratively in an immediate situation utilizing data feedback in a cyclical process aimed at increasing understanding of a

given social situation. We are guided by Susman and Evered's (1978) action research cycle (see figure 2 below) consisting of diagnosing, action planning, action taking, evaluating, and specifying learning. Action research has been adopted and developed successfully as an approach to information systems research (Avison *et al*., 1999; Baskerville and Wood-Harper, 1996; Checkland, 1981; Mumford, 2001).

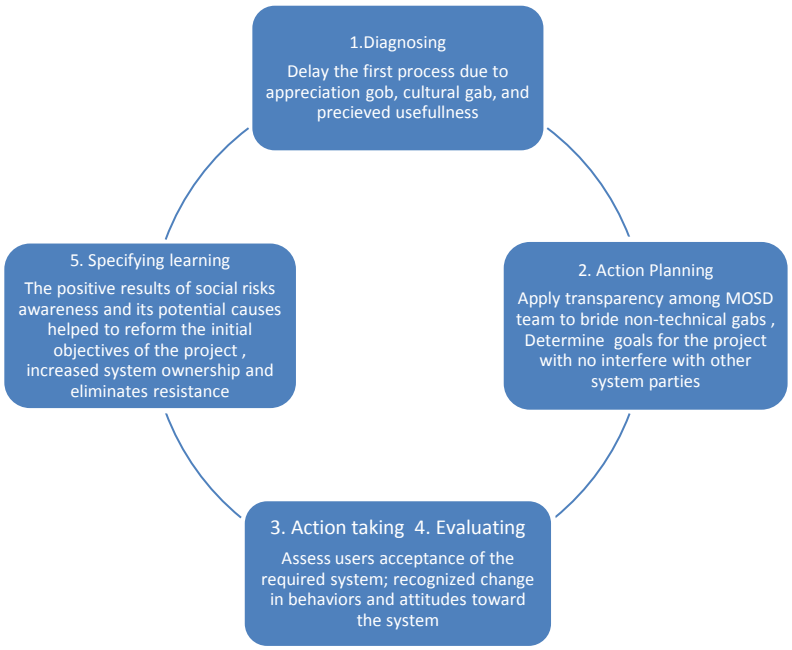

Figure 2. The Action Research Cycle (based on Baskerville 2001; Susman and Evered 1978). The figure is populated with steps encountered in one intervention of this research.

However, there are some disadvantages of action research. For example, its highly situational nature, this means that each action research project is to some at extent unique, making it difficult to put forward general laws regarding its adoption (Avison *et al.*, 2001). A further disadvantage is the perceived lack of researcher's impartiality and bias (Avison and Wood-Harper, 1991). The recommendation is to adopt aspects of control and key strategies to the ensure rigour and validity of the research (Baskerville and Wood-Harper 1996). However, the use of multiple data sources, strengthened through triangulation, increases the robustness of results, and such bias can be minimized (Yu, 2003). Cross-validation is achieved when different kinds and sources of data converge and are found to be congruent (Yin 2009).

Thus, our approach aims to build an unbiased understanding of both theory and practise, and the relationship between them. The interpretive stance relates to the ability for social intervention into the research setting to enhance an understanding of the context of the

information system and the process in which the information system is influenced by its context (Onwuegbuzie *et al*., 2009; Walsham, 1997).

3.2 Case Study approach

As mentioned earlier the principal researcher is as an employee of the research organization and thus, adopted an action research approach. The utilization of a case study is a practical, and popular inquiry that investigates a contemporary phenomenon within its real-life context, (Myers, 2009; Yin, 2009). Robson (2002) defines case study as '*a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple source of evidence'* (p178). The case study research method is particularly well-suited to IS research, since the object of IS discipline is the study of information systems in organizations, and interest has shifted to organizational rather than technical issues (Benbasat *et al*., 1987 in Myers, 1999).

However, it is argued that case studies can be considered weak as they are typically restricted to a single organization and it is difficult to generalize findings as it is hard to find similar cases with similar data. However, generalization can be achieved by sample size or sampling frame (Saunders *et al*., 2003) and that can be achieved in our case study because it is all about one specific country, one type of organizations and one researcher. Nevertheless, over time, as more action research studies are completed more general models of the meaningful contexts of various aspects will be possible. Also the ability to generalize from one case study to theory (Walsham, 1997; Yin, 2009; Myers, 1999) implies it is possible to generalize from one action research to theory (Myers, 1999).

3.3 Research Methods

In action research data can be collected through observations, interviews, action experiments and participant-written cases (Baskerville, 1999). The choice of a specific qualitative research method in action research is independent of the underlying philosophical position adopted which can be positivist (Clark, 1972), interpretive (Elden and Chisholm, 1993) or critical (Carr and Kemmis, 1986). This research is combining qualitative methods to provide a richer, contextual basis for interpreting and validating results. To gain a relevant background, secondary research on extant literature of the theoretical context was conducted

The qualitative data gathering methods of participant observation, interviews and questionnaires were used to gather a depth of data aimed at increasing the understanding behind the issues being examined (Myers, 2009; Silverman, 2006). Participant observation occurred in situ for intensive periods of time (months) and involved observing people during the course of their daily routines and activities within the project environment. The questionnaire was designed to enable the researcher to get the required quantitative and qualitative primary data utilizing both open and closed questions (Myers, 1997; Saunders *et al.*, 2003; Silverman, 2006; Yin, 2009). We can confirm that 99% of participants participated, as one employee had left the organization. Outcomes from the questionnaire led to a schedule of formal interviews, which were subsequently conducted with the relevant top management of the project. Although formal in nature (due to the cultural context) these sessions were sufficiently flexible to facilitate a free flow of information to collect the needed qualitative data.

4. The Problem Situation (Case Study)

The case study concerns the development of information systems for a government organization in The Sultanate of Oman - the Social Benefits System of the Ministry of Social Development (MOSD). The new system was sanctioned by the Council of Ministers of Oman to replace the current system which is more than 13 years old. The users believe that top management under evaluated the importance of the existing system and were looking for a modern, more automated system. The Council of Ministers assigned a Project Committee that was chaired by the Minister of National Economy (MONE), with members of MOSD and MONE to determine the new system's requirements and to manage the project. The Committee's chairman formed a technical team from both ministries mainly to prepare the new system's feasibility study and manage the system development process (see table 1 below).

Ministerial Technical Team Composition	
General Director of Statistics and Research	MONE
General Director of Financial Affairs	MOSD
Director of Social Care	MOSD
Director of Global Positioning System (GPS)	MONE
IT Directors	MOSD, MONE
Systems Analysts	MOSD, MONE
IT Programmers	MOSD, MONE
Social Workers	MOSD

Table 1. Technical Team Composition

The existing system does not provide MOSD (new top management) and MONE with the essential level of detail about existing and potential beneficiaries necessary for accurate assessment of benefit status. Further critical detail is vital to generate the required reports sufficient for key decision-makers to make assessments and judgments (in line with Omani Social Benefit Law 1984) about claimants' entitlements to any of the social benefit services. Currently all employees (directors to social workers) use the system on a 'sharing data' basis using a computerized central database to store data from all locations (32 branches) across the region so that they can handle complex calculations and generate the required financial reports and allowing greater user autonomy. Additionally, public users will also be able to interact with the system directly by using electronic forms via the Internet.

The intention is to implement a full prototype across one branch and then to evaluate and review it before rolling it out across the rest of the region (32 branches). Although it is not possible to provide further detail about this project at this time, we can confirm that the new system's key requirements were assigned to the IT department Committee by the Council of Ministers of Oman and the proposed new system was imposed upon the users by the new top management.

The new development project has encountered a number of difficulties since its inception. A delay in preparing the new system's feasibility study documentation had a 'knock-on' effect across other project activities. Such delay is attributed to the assigned Technical Team (table 1. above) and accounted for an 18 month setback.

Traditionally MOSD employees had a good reputation for accepting changes in information systems and in adapting to new technologies previously developed by the Ministry IT team. A shared interpretation across the organization is that the formal purpose of information systems is to support and bring about organizational change in order to improve the functioning of the organization. However, early resistance to the new system from the MOSD side was clearly evident. The Director of Social Care and his social workers (who are a part of the Technical Team) opposed the new system. It is somewhat paradoxical that the MOSD IT team resisted the idea of having a new system which contradicts their former positive reputation of accepting change in the context of overall organizational change. Thus, our Research Question asks 'Why was there such unexpected resistance to the new system?'

5. Findings

Although the acceptance of an information system by managerial, professional, and operational users is deemed a necessary condition for its success (Al-Gahtani and King, 1999), it is widely reported that resistance to change to computer systems is a widespread problem (Au *et al*., 2008; Igbaria and Chakrabarti, 1990; Mann, 2002; Wicks, 2002). We locate the causal factors for the problematic delays around issues of resistance to change that generated the level of risk experienced.

Examination of the empirical data affirms that, in our case, the MOSD IT team believed that the formal purpose of information systems is to support and bring about organizational change in order to improve the functioning of the organization. However, although there is evidence of positive cooperation with previous organizational change situations, open resistance to the new system from MOSD users was clearly obvious. This was totally unexpected. Even though the Director of Social Care Department and his social workers (members of the Technical Team) were used to accepting changes in previous information systems as well as adapting to new technologies paradoxically they opposed the new system.

Investigation into the rationale behind the resistance experienced suggests that the review of IT strategy undertaken by the incoming top management (i.e. change in 'ownership' of the government organization) impacted upon the development of the new system in a number of ways. Revisiting our research question, we asked 'Why was there such unexpected resistance to the new system?'

Our findings identified four 'levels' of non-technical gaps which we put forward as the main cause for project resistance. These are *Cultural Gap*, *Communication Gap*, *Appreciation Gap* and *Communication and Relationship Gap*. The first three gaps occurred among MOSD *Actors* [see figure 1 above] generating a level of resistance which resulted in the fourth gap between MOSD and MONE *Actors*. We found that the resistance experienced among MOSD *Actors* generated a *Communication and Relationship Gap* between MOSD and MONE. This eventually had a negative impact on the *Task* variable and caused delay. We next discuss the non-technical risk factors that created system's resistance in terms of their impact.

First Level of Resistance – Cultural Gap within MOSD

Analysis of the empirical data gathered reveals that the first level of resistance materialized when the Council of Ministers and incoming top management named the new project 'Establishing a database to record social beneficiary cases'. This caused offence to the MOSD employees who believed that this title implied that there was no existing or current electronic database. Evidence to the contrary exposes this as untrue. An existing database containing valuable data detailing social benefits case since 1996 was disregarded firstly by the incoming top management, and subsequently by the Council of Ministers. Employees felt that their thirteen years of previous hard work, effort and loyal contributions to the organization had been ignored. The Director of Social Care confirmed that *'there is doubt concerning honesty and integrity of his social workers'*. This coupled with the disinterest in the extant system by top management offended employees and left them feeling disrespected.

Consequently the Technical Team asked the MOSD's top management to change the title of the project to 'Establishing a **new** database to record social beneficiary cases' or 'Developing the **existing** database' instead of the given title. However top management decided that the name could not be amended because it had been already announced in local media. This was a great disappointment to the MOSD employees who are members of the social care domain and the IT team. Such a response undermined the users' perception of their own self-esteem. They felt that top management attached greater importance to their own strategy rather than upon employee honour and integrity.

In fact, as advocated by Mann (2002), end-users, IT management and top management all adopt the culture of his/her own profession, these differences in culture are differences in behaviours and norms and create significant cultural gaps among actors. Thus, the users, IT management and top management behaved according to the culture and values of their own area of activity [job] making it difficult for effective interaction to occur. Such a cultural gap might cause the perspective of one group to be limited which could cause additional gaps among actors. This form of imposing change is de-motivating and the Technical Team described it as 'disruptive change'. It created resistant among employees regardless whether they agreed or disagreed with that particular change issue (Mann, 2002).

Second Level of Resistance – Communication Gap within MOSD

The second level of resistance was caused by the lack of discussion between the top managers and the users. The entire MOSD team agreed that *'No clear objectives have been proposed'*, there had been no shared or common communication allowing those affected by the system change to comment or debate. The MOSD IT director said, '*They have decided without consultation, and regardless of the impact, they have made the decision'.*

Indeed we evidenced that there was little consulting or inclusion of the MOSD employees in the planning stages of the project. Communication between IS professionals, IS staff and IS users is critical to the successful completion of an IS development project (Hornik *et al.*, 2003). They point out that the ability to interact with all potential stakeholders in an organization, to clearly document requirements, and to effectively express ideas has long been recognized by researchers and practitioners as critical success factors. Such an obvious flaw exacerbated an already sensitive situation.

Third Level of Resistance – Appreciation Gap within MOSD

The third level of resistance originated from the intended degree of change in the proposed new system that led the Project Committee's chairman to outsource the software development. The MOSD IT team perceived this decision in a negative light. They felt that their management, technical skills and competences had been incorrectly evaluated. Both the MOSD IT director and his systems analysts believed that '*the new requirements can be applied in the existing system without the need to implement the whole system again'*. Lack of transparency meant that there was no clear rationale behind the decision to outsource and to rebuild the whole system. Thus, once again the employees felt ignored and disregarded. They resisted the project to avoid dealing with complexities caused by the outsourcing of the project. Heeks (2002) believes that this form of system failure is a key concern in developing countries.

In situations where one stakeholder group implicitly feels unappreciated by the other, that their loyalty, commitment and contributions to the organization go unrecognized, then an 'appreciation gap' is generated (Mann, 2002). This is what resulted in the case study setting.

Fourth Level of Resistance – Communication and Relationship Gap between MOSD and MONE

The fourth and more significant level of resistance occurred when, regardless of the obvious degree of resistance, The Technical Team of MOSD valiantly attempted to collaborate with the members of Technical Team of MONE in an effort to accommodate user requirements of the new system. This was totally unsuccessful. It became apparent that MOSD's Technical Team could not communicate with MONE Technical team and could not work as one team (as assigned by the committee). This was attributed to the high level of resistance among MOSD team members who felt that they did not have ownership of the system. Consequently, relationships between the people in the Technical Team proved difficult and were further compounded by the other levels of resistance discussed above. MONE had difficulty in recognizing and accepting the problems of the other team (MOSD). In reality the low levels of understanding between the teams, coupled with the resistance generated a significant relationship gap that negatively affected the project and caused delay. Mann (2002) proposes that '*when each group's pre-judgements of the other group never become resolved. Relationship becomes 'us' versus 'them''* (p256). However, we surmise that such a gap between MOSD users and their top management was a key causal factor that figured in the negative behaviour of stakeholders that significantly contributed to the degree of resistance and subsequent project delay. Table 2 summaries the key resistance factors of the risks discussed above as identified through the cyclic action research stages.

Action Research Cycle Stages	Time Period	Stages Descriptions
1. Diagnosing	**From 9-2008 To 12-2009**	The main reason for the delay experienced was due to resistance among MOSD team. This resistance was a subsequent result of the non-technical gaps which were encountered among MOSD while introducing change. The *Cultural Gap* between MOSD management and (IT and Business users) created an *Appreciation Gap* among (IT and Business users), this resulted a *Communication Gap* between the two groups. The resistance among MOSD created a relationship gap between them and MONE technical members and had a negative impact to the designated task (feasibility study) and cased 18 months of delay
2. Action Planning	**12-2008**	Apply transparency among MOSD team to bridge non-technical gaps. Determine goals for the project with no interference with other system parties. In an effort to apply transparency an open dialogue among members of the Technical Team and business personnel proposed aimed at engendering transparency among the different stakeholders. The intent is to provide an opportunity for employees to discuss the incoming top management's new objectives regarding a change of the existing benefits system to bridge the cultural gap. It was hoped by presenting the new

		(ownership) top management's rationale positively that compromises could be reached to bridge the *Appreciation Gap* and subsequently enhance communication among MOSD actors. An anticipated outcome was to increase system ownership among MOSD technical team.
3. Action taking	**1-2009**	As planned, meeting to identify the non-technical risks factors has been introduced, clarified and discussed among the MOSD team.
4. Evaluating	**1-2009**	After assessing users acceptance of the required system a positive change was recognized in behaviours and attitudes toward the system. Once the *Cultural Gap* was clarified and resolved, the *Appreciation Gap* and the *Communication Gaps* resolved automatically. The increased level of system ownership among MOSD helped them and MONE to communicate better.
5. Specifying learning		The positive results of transparency and non-technical risks awareness helped to reform the initial objectives of the project with no interference from other system stakeholders, eliminated resistance among actors and increased system ownership.

Table 2. The research's action research cycle stages

5.1 Extension of Leavitt's Socio-Technical Model

In figure 3 below we have positioned the non-technical gaps identified through our research study to extend Leavitt's Socio-Technical model. The model illustrates how a non-technical gap can create further gaps which create resistance within the *Actors* variable. Consequently, such resistance has a negative impact upon the *Task* variable. We present this model to facilitate better understanding of the negative effects of such gaps. In our specific case the problem identification stage exposed the gap between Technical Team and top management in MOSD. This created another gap in the same variable, but this time between MOSD and MONE teams which negatively affected the task variable.

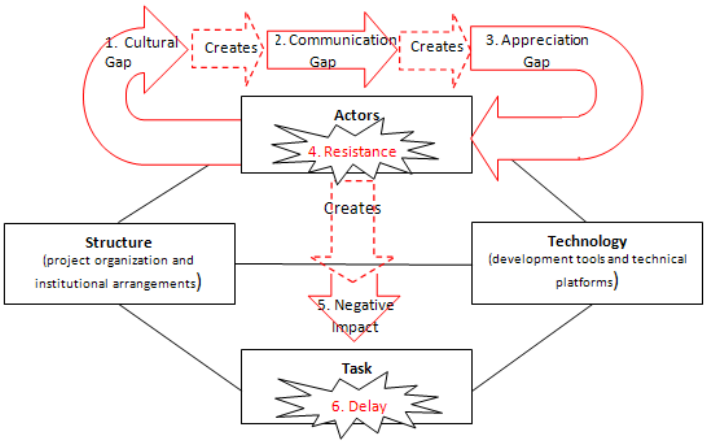

Figure 3. Extension of Leavitt's Socio-Technical Model showing how resistance emanates from non-technical gaps

6. Conclusions

We have discussed above the need for any IT strategy of an organization to match its business strategy for it to succeed. Unless a project's strategy dovetails with the business strategy the IT project will not succeed. In our case we acknowledge that a change in management (ownership) of the organization will result in a review of the existing business strategy. This in turn will have implications on the existing IT strategy as well as the IT applications in use or under development at that time.

From the four levels of resistance identified we conclude that the first three elements of resistance experienced in this case study context reflect beliefs, attitudes and individual reactions towards the proposed change. Indeed, this concurs with Knights and Murray (1994 cited in Goldfinch, 2007) '*like any situation involving humans, IS developments involve… struggles for individual autonomy, power and value dominance… and personality clashes'* (p924). We further note that the reversal experienced in the former positive behaviour of acceptance towards IT changes by employees was brought about by their belief that they felt disrespected and disregarded by top management (Bhattacherjee and Premkumar 2004; Davis *et al*., 1989; Venkatesh *et al*., 2003).

Thus, we surmise, that in our case, the complexities of technological development were further complicated by the complexities of human relations (Goldfinch, 2007), such that the attitudes had an impact on behaviour (Melone**,** 1990). We witnessed how the MOSD employees' attitudes played a significant role in influencing their subsequent behaviour (Fishbein and Ajzen, (1975) in Al-Gahtani and King, 1999) which effected project delay.

It is our fourth dimension of resistance that is the most noteworthy. It is clear that a lack of transparency and subsequent unawareness of the each others (MOSD) and (MOSD vs. MONE) sphere of activity and responsibility that was to blame. We refer to the need for a clear understanding of the gaps identified within the Technical Teams and top management. More specifically it is important to *recognize* the associated negative impact if resistance of non-technical issues is not resolved successfully. Additionally with regard to the impact of the incoming (ownership) top management's proposed change objectives for IT strategy both transparency and working in partnership are crucial. Potential benefits would be the

awareness of the rationale behind the new purpose, intentions and objectives resulting from the change in ownership in order to reach compromise where necessary such that the optimum project success is achieved.

We have extended Leavitt's (1964) Socio-Technical Model by positioning our identified non-technical gaps (risks) and their inter-relationships that need to be considered and which are key when managing change. In other words, the adapted model recognizes how the relationships between these identified gaps, and their consequences, can impact upon Leavitt's acknowledged variables. In this way, we contribute to the body of knowledge within the IS development domain and also provide a better understanding of the significance of such resistance driven from non-technical risk factors in IS projects within developing countries.

Finally, what is required to reverse user resistance in our case study? We suggest that to reverse users' negative intention and behaviour (resistance) applying transparency within the working environment is key (Alavi and Leidner, 1999; Street and Meister, 2004). We believe that in our empirical study a first step towards a transparent environment would be to bridge the identified non-technical gap between IT Technical Teams and the business users, and top management of MOSD and MONE. By raising awareness of the non-technical problems to the top management (in our case the Council of Ministers) it is possible to instigate resistance management policies to address such issues reoccurring.

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