

Conceptualization of User Acceptance and Resistance in System Implementation Research: A Re-examination of Constructs

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Working Paper
November 2003

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An earlier version of the paper was presented at AMCIS 2002. The authors would like to thank the conference participants, Ritu Agarwal, Cheri Spier, and Bob Zmud for valuable input.

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Abstract

Information systems research has focused on studying system implementation using two important constructs: user acceptance and resistance. Most prior studies have conceptualized these constructs as being at two ends of a continuum. As such, models have been developed primarily to explain user acceptance with the underlying assumption that non-acceptance would be tantamount to resistance and hence, understanding acceptance can help alleviate resistance. We argue that this simple conceptualization of the acceptance-resistance relationship is inadequate for a thorough examination of user behavior in system implementation. Using several vignettes of user resistance we examine the relationship between acceptance and resistance. Towards further understanding this relationship we propose a framework that is based on the premise that under certain circumstances *apparent acceptance* may in fact be resistance and resistance may signal serious problems and serve as constructive criticism. Implications for IS researchers include the need to re-examine the conceptualizations of acceptance and resistance constructs. For information systems managers a better understanding of resistance can lead to better strategies for managing system implementation.

Key Words: Systems Implementation, User Acceptance, User Resistance, Information Technology Adoption

1. INTRODUCTION

Information Systems (IS) researchers have for a long time studied system implementation and concluded that user resistance can undermine its success (Marakas and Hornik, 1996, Joshi and Lauer, 1998). Interestingly, most of the research on IS implementation is oriented around system user acceptance (Riemenschneider, Hardgrave and Davis, 2002, Venkatesh, 2000, Venkatesh and Davis, 2000, Venkatesh and Morris, 2000) with resistance considered as the flip side of acceptance. For example, consider the following excerpt from a recent study:

“Many organizations attempt to deploy methodologies intended to improve software development processes. However, resistance by individual software developers against using such methodologies often obstructs their successful deployment. To better explain why individual developers accept or resist methodologies, five theoretical models of individual intentions to accept information technology were examined.” (Riemenschneider, Hardgrave and Davis (2002), p. 1135)

Note that the study contends that to understand why resistance occurs studying acceptance is the key. This line of argument is in fact consistent with several other studies in system acceptance (Davis, 1989, Davis, Bagozzi, Warshaw, 1989, Davis, 1993, Karahana, Straub and Chervany, 1999, Venkatesh, 2000). If as these studies suggest, acceptance and resistance are two opposing sides along a single dimension, conflating acceptance and success leads to the conclusion that resistance is then a form of failure and can simply be characterized by non-acceptance. However, an examination of the reports of system implementation failures suggests that this conceptualization may be inadequate to explain several cases of systems implementation. For example, apparent *acceptance* can mask passive forms of resistance (Marakas and Hornik 1996, Tetlock 2000). In some of these instances severe resistance could result in tipping the scales from short-term success to long-term failure. Indeed, information technology executives report numerous forms of resistance after what they thought was a successful completion of systems project (Krasner, 2000). In a complementary vein, resistance may eventually lead to implementation success. Some behavior

construed to be resistance may be constructive, aimed at pointing out potential system defects that could cause system failure if ignored.

If, resistance cannot be conceptualized simply as the opposite of acceptance, it follows that studying acceptance alone will do little to provide insights into implementation resistance. What then does the research literature on system resistance have to say about acceptance? Owing to the fragmented nature of resistance research, this is less clear. Despite a large body of literature on acceptance (e.g., Agarwal 2000) and to a lesser extent resistance (Hirschheim and Newman 1988), to our knowledge, no study has adequately examined the relationship between these constructs. Although it seems intuitive that acceptance and resistance are closely related, the precise nature of this relationship remains murky.

The motivation for this paper is that extant research does not clearly explicate the relationship between acceptance and resistance. Our primary objective is to examine this relationship and more generally examine the range of user responses to IS implementation. In order to accomplish this, we will begin by examining how the literature on acceptance conceptualizes resistance and vice versa. This will enable us to understand the degree to which there is consistency within the body of IS research regarding acceptance and resistance. We expect to find that the literature often understates the complexity of user response to implementation. We will then present a framework for understanding the multifaceted nature of resistance. To illustrate the framework and to show some important consequences of current conceptualizations of acceptance and resistance, namely what is obscured or misrepresented, we will analyze several short cases describing implementation. In this way, the study will contribute toward the conceptual clarity regarding user response to IS implementation, an important precursor to the development of theories explaining user reaction to system implementation.

The rest of the paper is organized as follows. In § 2 we summarize relevant prior research concluding with definitions for both acceptance and resistance. Next, in § 3 we present a framework for understanding resistance. Subsequently, in § 4 we illustrate the framework based on several cases of system implementation. We also examine ambiguities in the relationship between acceptance and resistance. In § 5, we discuss the implications of our study for researchers and information systems managers. Finally, in § 6 we present concluding remarks.

2. LITERATURE REVIEW

Individual users of information systems could react in different ways to a new technology. They may reject it completely, partially use its functionality, actively resist, grudgingly accept or embrace it fully (Agarwal, 2000). Relevant prior research for our study comes from two related strands of literature – acceptance and resistance. Our focus is on how prior studies have conceptualized acceptance and resistance in their research. Our reading of the literature indicates that few studies of acceptance discuss resistance in more than a superficial way and vice versa implying each to be the opposite of the other. We present a summary of relevant literature in both strands.

2.1 User Acceptance

Studies of system user acceptance typically employ the following logic. They motivate the study by describing information systems development as a high stakes endeavor and identify user resistance as being important as it can undermine system implementation efforts resulting in failure. Subsequent to this justification, little attention is paid to resistance. The focus shifts to examining system acceptance leaving us with the impression that studying acceptance will help understand and address resistance. A substantial part of the research is then devoted to studying antecedents of

individual acceptance of IS (e.g., Davis, 1989; Mathieson, 1991; Taylor and Todd, 1995a, 1995b). Our interest is less on the antecedents more on how acceptance is conceptualized.

Varied conceptualizations of acceptance can be found in the IS literature. The most common of them all, owing probably to the ease with which it can be measured, is the *initial decision to use it or not* (Davis, 1989). In this case, users are asked to answer questions about their *intention to use* the system and *actual use* of the system to serve as surrogate measures for system acceptance (Venkatesh and Morris, 2000). When the responses are aggregated this leads to the conceptualization of *institutionalized usage* proposed by Rogers, (1983) and Cooper and Zmud, (1990).

Clearly, in all these cases the focus is on *short-term user reaction* to the system and there is no guarantee that this will continue. In fact, Karahanna, Straub, and Chervany (1999) present evidence showing that pre-adoption and post-adoption user beliefs are different. They also distinguish between *adoption* and *usage*. To address this short-term bias of acceptance conceptualization, studies have proposed alternate conceptualizations based on long-term *sustained usage*. In this regard, the idea of using the system as part of the daily work routine, referred to as *routinization*, was proposed by Hage and Aiken, (1970) while Zaltman et al., (1973) espoused *continued-sustained implementation*. In a similar vein, Fichman and Kemerer, (1999) underscored the importance of studying *assimilation*, continued usage over longer time horizon, as acceptance.

In sum, the construct of acceptance has had varied bases from the decision to *acquire* a technology to one that captures the *usage* of it. As Table 1 shows, despite this, none of the studies has defined acceptance vis-à-vis resistance, which leads us to conclude that these studies construed resistance as being the opposite of acceptance. Logically, it is possible that these researchers conceptualized resistance as being entirely independent of acceptance. However, this seems counter-intuitive and highly unlikely.

Insert Table 1 here

2.2 User Resistance

Several studies in IS have focused on understanding user resistance to system implementation (Joshi, 1990, Krovi, 1993, Joshi and Lauer, 1998). Like the user acceptance studies in IS, research on resistance employs a similar logic. A typical motivation for these studies delineates user resistance as being important as it can undermine system implementation efforts resulting in failure. Subsequent to this justification the study focuses on understanding resistance as a means of managing projects to increase the likelihood of user acceptance. For example, consider this excerpt:

“This article proposes an attributional explanation for individual resistance (or acceptance of) information technology...Procedures for decreasing individual resistance to (and, hence, increasing acceptance and use of) information technologies are suggested.” (Martinko, Henry, Zmud 1996)

A substantial part of the research is then devoted to studying causes of resistance (e.g., Jiang, Muhanna, and Klein, 2000). Our interest here is less on the causes of resistance and more on how resistance is conceptualized.

Resistance has been defined as “an adverse reaction to a proposed change” (Hirschheim and Newman, 1988). Unlike acceptance, which has varied measures, in the case of resistance researchers have been more consistent. Several forms of resistance have been studied. Passive resistance, resistance in covert forms, has been studied by Marakas and Hornick (1996).

Insert Table 2 here

2.3 Definitions for Acceptance and Resistance

Studying the literature on acceptance and resistance points to a gap in understanding the constructs. Saga and Zmud (1994) recognize such a gap, and note that within IT implementation research, the term acceptance has taken on various meanings including *attitudes towards use, intentions to use, and frequency of use*. In order to close this gap, three issues must be addressed. First, the constructs should take into account the existence of passive forms of resistance that could easily be construed as apparent acceptance. Second, studies in both acceptance and resistance should relate the conceptualization of one to the other. And third, for theory development and long term meta-analysis it is important that the varied forms of defining acceptance and resistance be explicitly recognized by studies.

As a starting point, we adopt the definition proposed by Saga and Zmud (1994) for acceptance and propose our own for resistance.

1. *IT **acceptance** is the act of receiving IT use willingly.*
2. *IT **resistance** is action or intentional inaction that opposes or sidesteps the implementation of new information technology. It may manifest over time, from the program's inception through its deployment and operation and its intensity may wax and wane. A resister may be an individual, a group, or an entire organization.*

Here are some observations regarding the two definitions. There is no implicit value judgment regarding acceptance or resistance. Thus, resistance is not viewed as dysfunctional or pathological and acceptance is not viewed as normatively correct. The definition for resistance specifically states

that it may occur over time. Acceptance is the fourth stage in six-stage model of IT implementation (Cooper and Zmud 1990). The stages are: *initiation, adoption, adaption, acceptance, routinization, and infusion*. Thus acceptance is part of a process that unfolds over time. Resistance may manifest itself at any of the stages. Resistance may be active or passive. Although not stated explicitly in the definition of acceptance, both acceptance and resistance may be referred to in the context of individuals, groups, or entire organizations.

3. A FRAMEWORK TO UNDERSTAND RESISTANCE TO SYSTEM IMPLEMENTATION

To understand the implications of conceptualizing acceptance and resistance as simple antipodes we develop a framework. More importantly, this also helps establish that short-term behavior of acceptance and resistance can change in the long term. Assimilation gaps (Fichman and Kemerer, 1999) show evidence of extremely low long-term infusion of some IS innovations. One of the reasons for low assimilation could be ignoring forms of resistance early during system implementation.

3.1 Resistance Behavior

People express their resistance to the implementation of information technology in various ways (Tetlock, 1999). The most common of them, arguably mild, is the *voicing* of opinion against the new system. In a more extreme reaction the resister could *exit* the organization in protest. In both these cases the actions of the resister are outwardly visible and relatively easy to detect, characteristics that make them *active* forms of resistance.

On the other hand, *passive* forms of resistance are hard to detect and difficult to deal with. Grudging acceptance is an example of this type. In this case the resister shows no semblance of frustration or rejection of the system outwardly. Having decided *grudgingly to accept* the system, this individual is constantly looking for ways to avoid using it and in most cases uses it less than what it

is intended for. Another type of passive resister is the smart one who thinks he can beat the system by simply finding ways of *working around* it. Instead of spending his valuable time and intellect in making the best use of the system, this individual is constantly engaged in outsmarting the system. Finally, there is the crusader against the system who silently plots and uses every opportunity to ring in the demise of the system - *sabotage*. [See Table 3 for a summary of the forms of resistance]

Insert Table 3 here

3.2 Resistance and the Judgment of Acceptance

We present a framework based on two dimensions: System Implementation and Resistance Type. System implementation can be perceived as being a success or a failure. This perception when viewed through the lens of acceptance would mean the higher the acceptance, the more successful the implementation. The perceptions usually reflect reaction immediately following the completion of the system implementation. Resistance type is classified into two levels: *Active* and *Passive*. The crossing of these two dimensions yields four quadrants we label as: *Rebel*, *Mutiny*, *Subversive* and *Coup*. It is important to note that owing to our focus on system implementation situations where overt acceptance may mask various forms of resistance, the framework only covers such scenarios. Indeed, there are situations where overt acceptance is not accompanied by any significant forms of resistance thereby resulting in a successful implementation. Such cases are outside the scope of our study.

Insert Figure 1 here

Rebel: This quadrant is characterized as a scenario where the system implementation is perceived as being successful from the acceptance standpoint but active forms of resistance are present. If this

situation remains unattended, resistance can spread, leading to non-usage of the system and ultimately a long-term failure – a move to quadrant 2 denoted by *mutiny*.

Mutiny: This quadrant is comprised of cases where active forms of resistance have caused the failure of the system and the system is deemed a failure from acceptance viewpoint too. Detection of this situation is obvious, but very difficult to remedy since resistance is so widespread.

Subversive: This quadrant consists of cases where system implementation is considered a success from the acceptance standpoint but there is an undercurrent of resistance that is passive in its form. If not identified and dealt with this can lead to long-term failure of the system.

Coup: This quadrant represents cases where passive forms of resistance have undermined the system implementation and caused it to not being accepted.

4. EMPIRICAL SUPPORT FOR THE FRAMEWORK

We selected illustrations of the framework from a larger corpus of descriptions of resistance to the implementation of IS implementations. Descriptions were generated by students enrolled in four graduate (MBA), Management Information Systems classes, over a two-year period. The assignment required the students to describe the implementation of an information system or a new version of an information system where someone or some group resisted its implementation. They were required to include a description of the functionality of the system, the environment where it was implemented (company, department, etc.), the resister or resisters (job function, tenure with the company, age) and how, and why they resisted. Our methodology is similar to the approach described in Sabherwal and Robey (1995) and Sabherwal and Robey (1993).

The descriptions used to illustrate are best classified as *vignettes*. A vignette is a:

“Focused description of a series of events taken to be representative ... normally limited to a brief time span, to one or a few key actors, to a bounded space, or all three (Miles and Huberman 1994, p. 81).”

In essence, the class assignment gave the students an outline for the vignette. Of the 101 vignettes that were written, 90 were sufficiently consistent with the vignette outline to be included in the corpus. 97% of the students were employed full time at the time of the class and used their workplace as the source for their vignette. The background of a typical graduate student in this institution is 3-5 years of work experience.

The following is a brief summary of the vignettes. The majority of them took place in manufacturing companies (manufacturing – 62%, finance/insurance – 6.5%, retail – 6.5%, healthcare – 4.5%, information systems – 6.5%, other – 14%). The cases described a wide variety of IS implementations including ERP systems, establishing a common desktop, accounting systems, logistics systems, inventory systems, scheduling systems, and a variety of specialized engineering systems. The majority of the vignettes involved multiple forms of resistance (73%) and described instances of passive resistance (60%). Of the vignettes where there was passive resistance, some form of active resistance accompanied 75% of them. Specific vignettes used to illustrate the framework in the next section were drawn from this collection.

4.1 Resistance Vignettes

For the Acceptance/Resistance Relationship framework, we identified vignettes to illustrate each of the quadrants.

Rebel Quadrant: The *Rebel* quadrant describes a situation where the implementation has been judged a success but active resistance remains. If left unattended, the resistance can spread leading to a *mutiny* and thus ultimate failure of the implementation.

a. Product Description Catalog

The product description group (PDG) of a major auto manufacturer had difficulty tracking parts that belonged to a particular vehicle program. The task of adding new parts to a program required hours of manual checking through documents to insure that the part was needed for a particular vehicle build. To overcome these inefficiencies the information systems group in conjunction with the PDG developed a system to track product descriptions in minutes. The system implementation was considered a success based on apparent system acceptance. However, it soon became obvious that several individuals resisted the use of the system. Reasons for the non-usage included lack of knowledge of computers, lack of trust in the system output, fear stemming from prior experiences with systems, and the short time left before retirement for some individuals. The resister group showed its resentment in several ways. Some rejected training offered to them. Others avoided performing tasks that required the use of the system. Several others waited out their time to retire and choose to exit before using the system. All of the resisters, in this case, vocalized their rejection of the system in some way. The following description from the vignette elaborates:

“A very vocal and quite large minority disapproved (of the system). ...Coworkers resisted this database by basically refusing to utilize it. Despite the fact that this database was available, they would waste hours manually looking up vehicles and their options. Efforts to walk through the process of looking up vehicles and specific options were rejected. When training on the database was offered, they refused it stating lack of time to learn a new way to complete it. They also avoided doing tasks that involved using the Build Authority and database all together despite the fact that this had a negative effect on their job performance.”

The management recognized the need to address this situation and quickly made efforts to deal with the resister group. Having identified the resister group, management quickly focused on a strategy to convince the individuals of the importance of using the tool and the benefits of the system to them.

b. Profile Builder

A leading global information technology services company set out to implement a system to provide real time information about employee skills and experience to managers worldwide. Management considered the profile builder system to be a success and fully expected the acceptance to turn into usage. However, a closer examination revealed a different picture. One account described the usage as 25% fully compliant, 50% minimally compliant, and 25% no compliance. Resistance to the system manifested in several forms ranging from not complying with the requirements to deliberately overloading the system with non-relevant information.

In this case, management was under the illusion that the system was a success based on initial acceptance and did little to address the concerns of the resisting group. The active form of resistance continued to spread and more individuals joined the resister group. As a consequence very little usage of the system occurred. Clearly, this was a classic case where the unattended rebels were on the verge of turning the situation into quadrant 2 – mutiny. With timely intervention, management could have developed and implemented a strategy to address the concerns of the resister group thus avoiding the spread of resistance.

Mutiny Quadrant: This quadrant is comprised of cases where active forms of resistance have caused the failure of the system. Detection of this situation is obvious, but very difficult to remedy since resistance is so widespread. We illustrate this quadrant using two cases.

a. System Upgrade Controls

The IS department of a major auto manufacturer was faced with the problem of system upgrades being carried out with few controls in place. This led to chaotic application of system upgrades leading to low system reliability and integrity. To solve this problem, management implemented administrative controls on upgrades. Resistance to the controls generated animosity between systems personnel and management. Deadlines for system implementation were missed and

blamed on the new controls in place. Several individuals resisted by finding “back-door” ways of bypassing the controls. Others used the controls as a scapegoat for the problems being encountered in development. This led to long delays in system deployment resulting in huge production losses.

The following excerpt from the vignette sets the stage and captures the manifestation of resistance:

“Deadlines actually began to be missed as the developers tried to find ways to circumvent the controls put in place and the administrations tried to watchdog the system to make everyone was playing by the rules. For example, there was a *golden system* that was supposed to look like all the production systems in all of our plants worldwide. All applications were to be developed on the *development system* then copied to a staging location on the *distribution system*. When a tested application was sent to the *distribution system* all members of the technical services group were notified via email, and then a system administrator copied the application to the *golden system*, then distributed the application to all production locations, so that consistency could be maintained on all supported systems. In the pre-system control days an application developer could copy applications from one system to another, but now this ability was restricted. A nightly report was generated that compared file modification date and size on all production systems and those on the *golden system*. The administrative staff investigated any anomalies. The developers found a *backdoor* that allowed them to change the date/time/size of a file and copy files, without authorization between systems. There were a number of similar incidents, which made the administrators more diligent about maintaining control, and made the developers increasingly clever.”

Early warnings of resistance to the new controls were ignored resulting in a total failure of the system development efforts.

b. Resource Reservation System

The implementation of a resource reservation system took place in a tier-1 automotive supplier. The firm was faced with immense waste of resources in scheduling meetings and assigning the meetings to a physical location. To alleviate this, a resource reservation system was designed and implemented. The calendar feature of the system that allowed for automatic scheduling of meetings faced heavy resistance. Several had paper planners and didn’t see the need for duplication since they were reluctant to give up using their planners. Others had problems with the openness of their schedule to colleagues. Some users that had no objection to the scheduling system *per se* cited the non-use by others as a reason for not supporting it. Clearly, the value of such a system can only be harnessed if all/most of the users use it – *network effect*. For example, if one of five users attempting

to schedule a meeting is not on the system, it becomes useless. In this case, the decision by a majority to boycott the system – mutiny, resulted in a failed implementation.

Subversive Quadrant: This quadrant consists of cases where system implementation is considered a success but there is an undercurrent of resistance that is passive in its form. If not identified and dealt with this can lead to long-term failure of the system.

a. Contact Management System

A human resource management services firm offering office services, transaction processing, administrative and distribution support decided to implement a contact management system for field sales representatives. The system was intended to support tracking of sales contacts. The sales staff resisted the use of the system, but few voiced their resistance. User resistance manifested itself primarily in covert ways. Some found excuses to not have the software loaded on their laptops. Others claimed that the software did not function on their laptops. A few put either too little data in or dumped massive amounts of data on their laptops and then argued that the system did not work properly.

Although management considered the implementation a success, the usage pattern rendered the system far less useful than intended. With time, the situation worsened leading to outright failure of the system. Clearly, what started off as a scenario in quadrant 3 moved to quadrant 4 – *comp*.

b. Warranty Informational Network System

A leading global information technology services company implemented a common office environment (COE) to standardize desktop applications across a department. Several in the group resisted the implementation. Resistance was exemplified by an individual who refused to attend informational meetings and did not provide an inventory of software on his desktop. Further, a

group was quietly lobbying support for slowing down the implementation of the COE. In this instance resistance was detected and addressed with top management support.

Coup Quadrant: This quadrant represents cases where the passive forms of resistance have undermined the system implementation and caused it to fail.

Product Level Interchange System (PLIS)

A leading automotive parts manufacturer supplying customers in the automotive, light truck, heavy-duty, railroad and industrial markets rolled out a system to manage their product applications. Interestingly, the product group manager responsible for a key group of intended users of the system, turned out to be the primary resister. In a classic case of coup he managed to alter the incentive structure in a manner to dissuade system usage. This led groups that relied on information from the product group to avoid using the system, as they could not rely on the incomplete and inaccurate system data. Although the actions of the group were overt, the strategy of the manager to exploit the incentive structure was covert in nature and hence, rather difficult to detect. The system implementation was a total failure and the firm had to restart its efforts on building a new system.

5. DISCUSSION

Our analysis of the conceptualizations of acceptance and resistance in the literature reveals several important issues that have implications for IS researchers. First, we found several conceptualizations of user acceptance ranging from acquisition of a technology to long-term acceptance. While diversity in conceptualization of a construct is a good way to explore its applicability in a variety of circumstances, we believe that for theory building it is important that constructs are defined, used and tested based on a common conceptualization. We are not suggesting that multiple ways of defining and measuring a construct by itself should be eschewed

but that if that is done specific reasons why the new conceptualization is more appropriate than others for the situation under consideration should be clear. In this regard, it is also to be noted that a common basis for the constructs also helps bring clarity to the construct.

Second, our analysis indicates that most studies treat acceptance and resistance as entirely mutually exclusive opposites. We have clearly shown that this conceptualization may be fallacious - acceptance and resistance may be not at two ends of a continuum. Further, these categories are not discrete. What may appear to be acceptance may conceal underlying resistance and likewise, the motivation for some resistance behavior may be aimed at making the system implementation a success. So, the acceptance construct will need to include grudging acceptance as a way of describing aspects of acceptance and resistance. Similarly, voicing resistance can coexist with acceptance behavior too. The pressure of conforming to management's stated viewpoint makes agreement an overt means of acceptance while voicing objections is on the surface an expression of resistance. The voiced objection may be an expression of ambivalence or be constructive. In either case, it may accompany a predisposition to support the implementation. There is need to reexamine the constructs in light of this. Based on the proposed framework we offer suggestions for managing resistance and discuss the implications of our report for IS research.

5.1 Implications for IS Implementation Research

Our study has implications for two contexts in which IS research on system implementation is usually carried out: 1. Organization has implemented a system – usage is voluntary, and 2. Organization has implemented a system – usage is mandatory. In the former case, usage denotes acceptance and resistance is a non-issue. One would expect the different measures of acceptance, *attitude toward use, intention to use, and frequency of use* to be relatively consistent. However in the latter case, both acceptance and resistance are relevant. Clearly, in the case of mandatory usage acceptance

is more complex than simply usage. Apparent usage can mask passive resistance or grudging acceptance. Measures of acceptance based on attitude or intention will likely fail to uncover passive resistance or grudging acceptance. In addition, a user may exhibit acceptance and resistance concurrently to different aspects of the system depending on say, equity issues, control, or politics. Also for a department/unit forces of resistance could co-exist with acceptance.

To understand a gamut of issues relating to stakeholder response to system implementation it would be interesting to look at it for different units of analysis in the context of mandatory usage. At the micro level – individuals could accept the system fully (through usage and cognitively), partially accept (limited usage), or overtly accept (apparent usage, passively resist). Similarly, at the individual level, stakeholders could manifest resistance through a variety of actions – actively or passively or both. At the mid level, as with individuals, groups could accept or resist a system at different levels. The group may be homogeneous or heterogeneous with respect to acceptance and resistance. At the macro level, acceptance by the organization could also occur at various levels, as does resistance. For example, within a supply chain a dominant supplier may force a system on its suppliers. In turn, the suppliers may accept or engage in resistance tactics.

An important question for proposed theories of acceptance is their ability to explain the multifaceted user reaction to IT implementation, namely both acceptance and resistance. Models such as the Technology Acceptance Model (TAM) (Venkatesh, 2000, Venkatesh and Davis, 2000) and Self Efficacy (Compeau, Higgins, and Huff, 1999, Agarwal, Sambamurthy and Stair, 2000) are acceptance focused. One option would be to ignore resistance and focus solely on acceptance. TAM was originally based on the study of voluntary systems. This seemed logical since mandated system usage may remove any intentionality from the decision to accept the system. The other side of the coin is that resistance only occurs when system usage is mandated. With voluntary systems there is acceptance and non-acceptance. With mandated systems, both acceptance and resistance

can take place. Given the importance of resistance, as evidenced by the high rate of implementation failure, in order for a model of implementation to be robust, it must account for resistance as well as acceptance.

5.2 Revisiting the Definitions for Acceptance and Resistance

Users may respond to the implementation of IT in a variety of ways, some aimed at supporting the implementation, and some not. Definitions of acceptance and resistance should convey the full richness of user response. Resistance seems to be treated as the evil stepsister to acceptance. Studies of acceptance implicitly (ref.) or explicitly (Cooper and Zmud 1990) assume that IT implementation is both desirable and appropriate. Therefore, when resistance is viewed as the opposite of acceptance, it must be undesirable and inappropriate. This may not be the case since some IT projects are ill conceived or ineptly managed. Resistance may be constructive and in the best interests of the organization. Whether acceptance or resistance is the right action may be further complicated in the mind of the user when faced with conflicting powerful influences in the organization.

We suggest that definitions for acceptance and resistance should have the following four characteristics: a) they should be neutral with regard to whether acceptance or resistance is good or bad, b) they should account for passive resistance and grudging acceptance, c) they should recognize that both acceptance and resistance occur over time, and d) they should scale up from the individual to larger social groupings.

In section 2.3, we presented definitions for acceptance and resistance. It seems intuitively that the definitions should be commensurable. One difference in the two is that the definition for resistance encompasses more of the system implementation cycle than that for acceptance. Acceptance as defined however, is one stage in a life-cycle that describes behavior generally

supporting IT implementation. We suggest that resistance be contrasted with supporting behavior that can occur at different phases of system implementation rather than just acceptance.

5.3 *Implications for IS Managers: A Contingency Approach for Managing Resistance*



We propose a strategy for managing resistance based on three activities, **D**etect, **I**solate and **M**anage. Because of the frequency of passive resistance, detection or surfacing the resistance is often critical. If you can't see it then it is hard to deal with. Active resistance, rather than being something to fear, provides an opportunity for the implementer to turn it around – it has surfaced! In contrast, passive forms of resistance are much harder to identify. Efforts to detect them are critical to long-term success of the system. Absence of a visible form of resistance is not to be construed by management as a situation devoid of resistance.

Isolation may be important to minimize the risk of resistance spreading from small pockets of rebellious or renitent individuals into a full-blown mutiny or coup. With resistance, there may be something like a 'tipping point' or 'critical mass' that occurs when what had appeared to be a successful project with a few disgruntled complainers becomes a serious problem with widespread resistance forcing the project to be abandoned. In some ways this is analogous to a self-organized criticality (SOC) phenomenon. The archetype of SOC is a sand pile [Bak, P., Tang, C. & Wiesenfeld, 1988]. Sand is slowly dropped forming a pile. As the pile grows, avalanches occur that carry the sand from the top to the bottom of the pile. The falling sand is the resistance in our case. As it increases, the avalanches increase and the size of avalanches could also increase thereby destabilizing the system equilibrium. By isolating and dealing with a small number of resisters in a timely manner, it may be possible to head off the spread of resistance and the resulting avalanches.

How can resistance be managed? It may be tempting to suppress vocal dissension and various tactics aimed at avoiding using the new information system. However, as Tetlock (2000)

points out, there is a natural progression from milder to more deleterious forms of resistance, suppression of voice leads to workarounds and then suppression of workarounds leads to sabotage or exit or grudging compliance. Early in the game it may be possible to identify and address equity issues for individuals as a successful response to voiced complaints or workarounds. Management tactics, once resistance has spread to the point of being a coup or mutiny, can involve rebuilding the system, reverting to the old system, or forcing the implementation. Ultimately it is a cost benefit decision that involves political capital, human capital, and economic capital. [See Table 4 for managing different forms of resistance]

Insert Table 4 here

The framework shown in figure 1 suggests a contingency approach to managing resistance. Quadrants 3 and 4 emphasize detection since those who engage in passive resistance are attempting to appear innocent of actions to resist. Quadrants 1 and 3 describe situations where resistance is confined to a small number of individuals for the moment. This suggests isolation as an appropriate strategy since a major risk is the spread of resistance. For quadrants 2 and 4, the stakes are much larger since resistance has become widespread and implementation failure may be imminent. Resistance may be based on valid complaints of the resisters, in which case rebuilding the information system may be necessary and appropriate. The least cost option may be to revert to the old system. This option may be preferred if the costs of rebuilding are too great, the benefits of the new system are not particularly large, or the risk of failure from rebuilding or forcing the new system is too great. Forcing the new system may be an appropriate choice when there is strong management support for it. For example, during mergers and acquisitions, it is often necessary to select between two competing systems, each with supporters from the two companies involved. For the losing group, implementation of the other company's information system is like a new

implementation. Had the choice been made to use their own information system, in all probability, there would have been a group of resisters from the other company. Since it is unlikely that there will be a win-win choice in this situation looking for one will merely prolong the agony. Forcing the implementation is like undergoing a lesser pain to avoid a greater pain.

6. CONCLUSIONS

Although the constructs of system acceptance and resistance have been widely studied in IS, few have looked at the relationship between them. We argue, using a framework and giving it face validity, that it is critical to understand this relationship in order to fully comprehend system implementation. System acceptance assessed at a point in time may give the illusion of success where failure is imminent because success and failure in this domain are determined over the long haul. A system may apparently be a success, but could be heavily resisted and eventually less used thus resulting in failure. Similarly, a system may be initially resisted, but as a result of effective management, in the end the system may be used to good benefit, a success.

Future research can focus on refining the constructs especially the relationship between acceptance and resistance. A clearer understanding of these constructs can in turn drive development of new scales for measuring them and thereby analyzing systems implementation.

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Table 1: User Acceptance Studies and their reference to Resistance

Study	Acceptance conceptualized as	Resistance
	Attitude toward Use	
Davis, Bagozzi, and Warshaw (1989)	Frequency of use	Study motivated by the need to understand resistance to system implementation
Mathieson (1991)	Frequency of use	No reference made
Harrison, Mykytyn & Riemenschneider (1997)	Frequency of use	No reference made
Joshi and Lauer (1998)	Frequency of use	Study motivated by resistance to system implementation.
Karahana, Straub and Chervany (1999)	Frequency of use	Study motivated by the need to understand resistance to system implementation
Venkatesh (1999)	Frequency of use	No reference made
Morris and Venkatesh (2000)	Frequency of use	No reference made
Venkatesh and Davis (2000)	Frequency of use	No reference made
Venkatesh and Morris (2000)	Frequency of use	No reference made
Davis (1989)	Intention to Use	Study motivated by the need to understand resistance to system implementation
Agarwal and Prasad (1997)	Intention to use	
Riemenschneider, Hardgrave and Davis (2002)	Intention to use	Study motivated by resistance to system implementation.

Table 2: User Resistance Studies

Study	Resistance conceptualized as	Acceptance Addressed	Relationship to Acceptance
Jiang, Muhanna and Klein (2000)	Non-Use of System	Yes	Opposite
Joshi and Lauer (1998)	Non-Use of System	Yes	Opposite
Marakas and Hornik (1996)	Passive Resistance – Covert form	Yes	Opposite

Table 3: Forms of Resistance

Type of Resistance	Form of Resistance	Description
Active	Voice	Individuals voice their concerns and opposition
	Exit	Individuals leave the organization unwilling to adapt to the new system
Passive	Grudging Acceptance	Individuals grudgingly accept the system
	Workaround	Individuals find ways of working around the system
	Sabotage	Individuals make concerted efforts to ensure the failure of the system

Table 4: Managing the Effects of Resistance

Form of Resistance	Effect	Ease of Detection	Management Approach
Voice	Word of mouth spreading can increase the number of individuals resisting.	Easy	Identify hot-points (individuals capable of influencing) and manage their voicing
Exit	Isolated incidents of exodus can be harmless. However, with increasing numbers it can cause huge problems of knowledge depletion and human resource management.	Easy	Need to identify potential exits before they occur and invest in efforts to stop. In some cases it may be beneficial to let the exits occur.
Grudging Acceptance	Lowered productivity in the short-term. If not dealt with, in the long-term could lead to other forms of resistance.	Hard	Deploy innovative mechanisms like tapping into informal networks to identify this situation.
Workaround	Inconsistent data, data integrity problems, high potential for error and lowered productivity.	Hard	Continuous monitoring of data and placing controls that will detect workarounds.
Sabotage	Could go on for a long period of time undetected causing severe long-term impact on data quality.	Hard	Informal networks best way to get prior notice. If detected after damage then strong action may be needed for the individual. Provide incentives for blowing the whistle.

Figure 1: Dynamics of the Acceptance/Resistance Relationship for Actually or Potentially Failed Systems

