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The Nature and Role of Perceived Threats in User Resistance to Healthcare Information Technology:
A Psychological Reactance Theory Perspective

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ABSTRACT

The efforts of the United States government in the past 15 years have included harnessing the power of health information technology (HIT) to improve legibility, lessen medical errors, keep costs low, and elevate the quality of healthcare. However, user resistance is still a barrier to overcome in order to achieve desired outcomes. Understanding the nature of resistance is key to successfully increasing the adoption of HIT systems. Previous research has showed that perceived threats are a significant antecedent of user resistance; however, its nature and role have remained vastly unexplored. This study uses the psychological reactance theory to explain both the nature and role of perceived threats in HIT-user resistance. The study shows that perceived helplessness over process and perceived dissatisfaction over outcomes are two unique instances of perceived threats. Additionally, the results reveal that resistance to healthcare information systems can manifest as reactance, distrust, scrutiny, or inertia. The theoretical and practical implications of the findings are discussed.

KEYWORDS

Distrust, Health Information Technology, Perceived Threats, Psychological Reactance Theory, Reactance, Scrutiny, User Resistance

1. INTRODUCTION

By the end of 2015, the United States healthcare sector was expected to have completely transitioned from a paper health record system to an electronic health record (EHR) system. It is believed that successful transition will benefit the nation in improving legibility, lessening medical errors, keeping costs low, and boosting the overall quality of care (Blumenthal & Tavener, 2010). But as some researchers have noted, the effective use of, and beneficial outcomes from information systems are not automatically guaranteed (Haddara & Moen, 2017; Lee, Ghapanchi, Talaei-Khoei, & Ray, 2015). As early reports demonstrate, this information technology (IT)-enabled change is meeting with resistance, not altogether uncommon. Physicians, nurses and other practitioners are resisting this change (Buntin, Burke, Hoaglin & Blumenthal, 2011). As other studies have indicated, physicians' intention to adopt

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health record systems such as clinical decision support systems (CDSS) is significantly impacted by perceived threats to their professional autonomy and their involvement in making decisions about CDSS (Esmaeilzadeh et al., 2015). Nevertheless, success depends on the effective and efficient use of these systems in getting work done.

Kim and Kankanhalli (2009) have stated that the failure in new systems can be attributed to user resistance. Lapointe and Rivard (2005) developed a framework to conceptualize user resistance to information technology. In their model Lapointe and Rivard (2005) posited that *user resistance* to an information system results from *perceived threats,* which in turn evolve from certain *initial conditions*—an interplay of political and interpersonal factors resulting from people's interaction with an information system (IS).

Though user resistance to IT and its critical antecedent, *perceived threats*, have been clearly acknowledged in literature (Lapointe & Rivard, 2012), only few studies have attempted empirical testing of these two constructs. With the exception of Bhattacherjee and Hikmet (2007), and Kim and Kankanhalli (2009); there is almost a dearth of empirically investigated frameworks. Considering the benefits of electronic health record systems and the relative failure in the implementation of these systems, an understanding of the nature and role of a key antecedent of resistance as perceived threats is clearly necessary. The use of diverse theories that afford us different perspectives are also very important.

Health information systems like EHRs play a pivotal role in the collection, storage, and transmission of healthcare data. It is the data generated from these systems that are then analyzed through healthcare analytics to generate the information needed to drive healthcare outcomes. Informaticians and healthcare professionals depend on this information for both tactical and strategic purposes, including: health outcomes improvement, evidence-based medical practice, and e-health research.

This study explores the nature of both *user resistance* to health IT and *perceived threats*—defined as a negative assessment that the users make of an IT implementation. We examine the concept through the lens of the psychological reactance theory in the context of electronic health record system. Specifically, this study seeks to answer two questions: (1.) *What is the nature of user resistance to health IT?* And, (2.) *What are the characteristics and role of perceived threats to user resistance to health IT?* To address these research questions, the *theory of psychological reactance* and key insights from justice literature are explored. The proposed model is then empirically tested within a health care setting, using partial least squares (PLS) structural equation modeling.

In the following section, key literature relating to the conceptual background on user resistance to IT is reviewed. Next, the theory and model development is set forth. Third, the research method and analysis are presented. Fourth, the results, discussion are made. Lastly, the conclusions and implications of the research are presented.

2. LITERATURE REVIEW

The concept of user resistance has been a well-echoed theme in IS literature. Many researchers have sought to explain why and how resistance happen. As a consequence, many models have been set forth to explain the phenomenon (Hirschheim & Newman 1988; Joshi 1991; Kim & Kankanhalli, 2009; Lapointe & Rivard, 2005). Earlier research in electronic health records focused more on the technical than the managerial aspects of implementation; but user resistance has continually been cited as one of setbacks to IT implementation in the healthcare industry (Lee, Ghapanchi, Talaei-Khoei, & Ray, 2015; Lin, Lin, & Roan, 2012). Since the current research builds on the Lapointe and Rivard (2005) model, the literature here are summarized based on the conceptual framework proposed by Lapointe and Rivard and the theory of psychological reactance.

Many theories have been proposed to explain user resistance to technology over the years. Leading theories include: the interaction theory, the equity implementation theory, the attributional model

of reactions to information technology, the status quo bias theory, the IT conflict-resistance theory, and the cynicism theory (see Martinko et al., 1986; Markus, 1983; Joshi, 1991; Kim & Kankanhalli, 2009). One theory that has not been well leveraged in IS research is the psychological reactance theory. The psychological reactance theory fills the gap of perspectives of a novel lens to view the concept of resistance.

2.1. The Psychological Reactance Theory (PRT)

The PRT was proposed by Brehm (1966). However, more recent years, the PRT has been applied in the areas of clinical psychology, behavioral intervention studies and in communication (Rosenberg & Siegel, 2017). For example, the PRT has been leveraged in behavioral psychology and medicine (Norman & Wrona-Clarke, 2016; Hall, Sheeran, Noar, Ribisl, Boynton et al. (2017) as well as in health care messaging (Richards & Banas, 2015).

PRT is built around the notion of "freedoms" and "free behaviors". The PRT posits that individuals generally believe that they have specific behavioral freedoms. When these freedoms are threatened, individuals are aroused by the motivation to reassert their freedoms. The psychological reactance theory assumes that people's behaviors are motivated by the desire to protect their "freedom" to carry out a particular behavior in a particular context.

A "threat to freedom", according to the PRT, refers to the perception that an event has increased the difficulty of exercising a particular freedom. Threats to freedoms have also been thought of to be social - emanating from social interactions or nonsocial - coming from the individual. Additionally, it is asserted that, "a freedom is important to a person when it has unique instrumental value of satisfaction of one or more important needs" (Brehm and Brehm, 1981, p. 55). Hence, the level of reactance is thought to be proportional to the relevance and number of threatened freedoms.

According to the PRT, resistance is a result of reactance. It is defined as the response to loosing freedom. The source of this resistance has been attributed to the person manifesting the behaviors as well as situation causing the resistance (Knowles & Linn, 2004). Knowles and Linn (2004, pp. 7, 8) have identified four different but probably related faces of resistance namely: *reactance, distrust, scrutiny and inertia*.

Reactance is initiated when a person's choice alternatives are threatened. This view of resistance has been found to be associated with two sides of resistance: the affective ("*I don't like it!*") and motivational ("*I won't do it*!").

Distrust highlights the target of the change and general distrust of proposals. Here, the resisting entity questions the motive of proposal and whether the facts are indeed true. This face of resistance underlies the affective ("*I don't like it*!") and the cognitive ("*I don't believe it*!") reactions to influence.

Scrutiny refers to the face of resistance that results when people become aware of the fact that they are a target of an influence and therefore begin to attend carefully and thoughtfully to every aspect of the proposal for change. Here, thorough scrutiny is given to every proposal while each weakness is evaluated, exposed, and countered. This face emphasizes the cognitive ("*I don't believe it*!")

is also discussed, as a theoretical lens through which to examine user resistance. According to this model, five key concepts are salient in user resistance, namely: the object of resistance, the subjects of resistance, initial conditions, perceived threats, and manifestations of resistance.

Inertia is described as a "neutral" quality whereby an individual may not necessarily resist the change but may focus more on rather staying put. To the extent that a "call for change" comes, the *inertia* personality and attitude frustrates the change through a drag of anchor rather than with a personal antagonism. Hence, inertia is a more covert form of resistance.

The psychological reactance perspective of resistance could be very informative given that the PRT's resistance seems to be a continuum of resistance based on emotional intensity. Perceived as such, we see that the emotional intensity rises from *inertia* to *reactance.* The benefit of this type of perspective is that it is likely to inform our understanding about different forms and stages of IT user resistance. For example, there is a possibility that certain types of *initial conditions* are associated

with particular types of resistant behaviors. Also, different phases of implementation are likely to be characterized by particular manifestations of resistance. Such an understanding would then be critical in the development of persuasion messages to mitigate user resistance. In Table 1 below, we summarize key contributions of the PRT in the past fifty years.

2.2. The Lapointe and Rivard (2005) Framework of Resistance

This framework examines resistance from the perspective of the object of resistance, the subject of resistance, the initial conditions, perceived threats, and the manifestations of resistance.

2.2.1. Object of Resistance

According to Lapointe and Rivard (2005), the object of resistance refers to the target of resistance behaviors. These targets include: the system itself (Wagner and Newell, 2007); system's effects e.g. in the creation of power imbalances (Markus, 1983); and the implementers (Lapointe & Rivard, 2005).

2.2.2. Subject of Resistance

Defined to be the actor or actors undertaking resistance behaviors, subjects might include individuals, a group of individuals, or even an organization (see Marakas & Hornik, 1996; Martinko et al., 1996; Joshi, 1991; Lapointe & Rivard, 2005).

2.2.3. Initial Conditions

This refers to the characteristics of the environment surrounding the system which interacts with the object of resistance to influence the users of the system make certain determinations. While Hirschheim and Newman (1988) allude to the socio-political environment of the organization that can influence the way the users can look at the situation regarding the new technology, Martinko et al. (1996) posit that the users' attitudes towards the system are influenced by prior success or failure with a similar system.

2.2.4. Perceived Threats

These consist of the negative assessments that system users make of an IT implementation. Marakas and Hornik (1996) propose that covert resistance like sabotage, could be a result of the behavior individuals pose in response to the introduction of a new IT system workplace. Joshi (1991) gives an alternative view based on the equity theory. He explains that individuals may assess the new IT system from the standpoint of fairness or the lack thereof, due to its introduction into the work environment. In either case, perceived threats affect and influence individuals' response to a new system in the workplace.

2.2.5. Manifestations of Resistance

Defined as a set of behaviors carried out by users to display some discontent with the new IT system being implemented. While some manifestations may be more covert like apathy or sabotage (see Keen, 1981; Moreno 1999), some may be more overt and destructive like open rebellion or formation of coalitions (Kim & Kankanhalli, 2009; Lapointe & Rivard, 2005; Ferneley & Sobreperez, 2006).

3. RESEARCH MODEL AND HYPOTHESES

The proposed model in Figure 1 builds on the Lapointe and Rivard (2005) framework. The Lapointe and Rivard (L-R) model posits that resistance behaviors result from *perceived threats* that arise from the interaction between the *initial conditions* and the *object of resistance*. The model is presented as a cyclical process in which the consequences of using the system are fed back into the initial conditions again as triggers, restarting the entire process all over. Lapointe and Rivard (2005) viewed resistance

from a longitudinal perspective of three phases namely: pre-implementation phase, implementation phase, and post-implementation phase. Regardless of the phase under consideration, the L-R model suggests that *initial conditions* interact with the object of resistance to produce resistance.

With the L-R model as a starting point, we discuss the proposed model from a matching perspective. First of all, the L-R model is summarized into three major parts namely: *initial conditions* (labelled "A"), *perceived threats* (labelled "B"), and *user resistance* (labelled "C"). This research focuses on the *user resistance* and the immediate antecedent, *perceived threats* (with the exclusion of *initial conditions*).

The overarching theory that informs the proposed model is the psychological reactance theory (PRT), and is based on the following fundamental assertions as proposed by Brehm (1966):

1. Human beings generally believe in "behavioral freedoms." That is, the freedom to perform certain behaviors: when they want it and how they want it.
2. When these freedoms are threatened, an uncomfortable motivational state known as *reactance* is created.
3. The decision to assert one's behavioral freedoms and to act in a way consistent these freedoms leads to resistance.

Given these assertions, we discuss the model in terms of the nature of the *perceived threats* that engender *user* resistance within the context of a health information technology (HIT).

3.1. User Resistance

User resistance to information technology in this study refers to covert or overt behaviors that oppose change towards the use of- or avoidance of an information system manifested as reactance, distrust, scrutiny or inertia. Consistent with Hirschheim and Newman (1988) who suggested that user resistance should be viewed as a complex multi-dimensional construct, user resistance in this study is therefore treated in the light of the four faces (reactance, distrust, scrutiny and inertia) proposed by Knowles and Linn (2004). This study further builds on the view that a thorough conceptualization of resistance must cover cognitive, affective and behavioral realms as proposed by Lapointe and Rivard (2005) and Oreg (2006).

As has been discussed above, the psychological reactance theory looks at resistance to have four manifestations or faces namely: reactance, distrust, scrutiny and inertia (see Knowles & Linn, 2004).

Reactance is initiated when a person's choice alternatives are threatened. This view of resistance has been found to be associated with two sides of resistance: the affective ("*I don't like it!*") and motivational ("*I won't do it*!").

Distrust highlights the target of the change and general distrust of proposals. Here, the resisting entity questions the motive of proposal and whether the facts are indeed true. This face of resistance underlies the affective ("*I don't like it*!") and the cognitive ("*I don't believe it*!") reactions to influence.

Scrutiny refers to the face of resistance that results when people become aware of the fact that they are a target of an influence and therefore begin attend carefully and thoughtfully to every aspect of the proposal for change. Here, a thorough scrutiny is given to every proposal while each weakness is evaluated, exposed, and countered. This face emphasizes the cognitive ("*I don't believe it*!") element of resistance.

Inertia is described as a "neutral" quality whereby an individual may not necessarily resist the change but may focus more on rather staying put. To the extent that a "call for change" comes, the *inertia* personality and attitude frustrates the change through a drag of anchor rather than with a personal antagonism. Hence, inertia is a more covert form of resistance.

Given the foregone, it is hypothesized thus:

Hypothesis 1(a-d): User resistance to IT will take the form of either reactance, distrust, scrutiny or inertia.

3.2. Perceived Threats

When a system is introduced, users in a group will first assess it in terms of the interplay between its features and individual and/or organizational-level initial conditions. They then make projections about the consequences of its use: if expected conditions are threatening, resistance behaviors will result. (Lapointe & Rivard, 2005; p. 461)

Threats may result from perceived inequity (Joshi, 1991), the fear of the potential loss of power (Markus, 1983), stress and fear (Marakas and Hornik, 1996), or from negative or undesirable outcome expectations (Martinko et al., 1996). Previous studies have considered perceived threats as a single construct and an immediate antecedent of resistance. In this study, it is argued that perceived threats are manifested as two related, but distinct threats.

Justice literature had long postulated that people are constantly evaluating change through the lens of fairness (Konovsky, Folger & Cropanzano, 1987). If an individual believes that a particular change is not fair, a state of discomfort and dissatisfaction is created. Folger and Konovsky (1989) distinguished between two distinct types of justice in organizations namely: procedural and distributive justice. Procedural justice refers to the perceived fairness of the procedure while distributive justice focuses on the fairness of the outcomes. In the same way, Oreg (2006) has distinguished between two important elements of organizational change that are responsible for resistance. In his study, Oreg (2006, p. 78) argued that two types of reactions to organizational change must be distinguished and examined separately namely: "reactions to the change process" - i.e. the procedural component, and "reactions to the outcomes" - i.e. the distributive component. Furthermore, Lines (2005, p. 12) had proposed a model of attitudes towards change based on fairness that argued for the differentiation between the "change process" and the "change content." Consistent with the forgone, it is argued here that perceived threats due to change would be a result of threats from the process as well as threats from the outcomes of the change in question. Again, Lapointe and Rivard (2005) had pointed out that the introduction of technology in the workplace is likely to bring about change of routines, roles and even the significance of workplace interrelationships to bring about some sense of threat. Based on the foregone, two types of threats are distinguished in this research namely: *perceived helplessness over process* and *perceived dissatisfaction with outcomes*.

Perceived helplessness over process is defined as an individual's belief that carrying out a new behavior diminishes their ability to maintain control over their current routine. According to the interaction theory (Markus, 1983), resistance can happen when an individual/organization interacts with technology in a given organizational context. The introduction of technology in the workplace is generally accompanied by new processes demanding the change of work routines and task dependencies between employees. These processes have the potential to cause power imbalances that may lead to perceived helplessness over process. The process of change due to the introduction an information system is therefore likely to be associated with reactions to process of change.

Perceived dissatisfaction with outcomes, on the other hand, denotes an individual's belief that carrying out a particular behavior will lead to unfavorable result. Perceived dissatisfaction with outcomes is generally linked to the discontentment with the espoused claims about the capability of the new system. Consequently, this perception is clearly linked to the outcome of change. *Perceived helplessness over process*, in this context, refers to an individual's belief that carrying out a new behavior diminishes their ability to maintain control over their current routine. Festinger (1957, p. 25) suggests that people resist change because it is "painful" or may "involve loss." Furthermore, he asserts "the magnitude of this resistance to change will be determined by the extent of pain or

loss which must be endured." Markus (1983) also suggested that during technology implementation, threats could arise from the dynamics of power and control. She therefore postulated that "power loss" for a group and consequently "power gain" for another will give rise to perceived threats. Perceived threats arise in this case due to the loss of autonomy brought about by these power imbalances. The perception of discontent with the process and loss of control over routine, results in a sense of discomfort described here as perceived helplessness over process. When an individual's sense of control over the process is threatened, the individual is likely to resist.

Warren et al. (1988) conducted a study in which they measured physician's perceptions of loss of control over work conditions and clinical autonomy. The results showed that loss of control over work conditions and clinical autonomy, were all significantly and negatively correlated with physician satisfaction. Additionally, this study found out that one of the strongest challenges to physician satisfaction was yielding their clinical judgment to non-physicians. In fact, 44 percent of those who sometimes must yield their clinical judgment to non-physicians were dissatisfied, compared to only 18 percent of those who need not do so. The introduction of technology in the workplace clearly disrupts routines and task management; and threatens clinicians who feel as though they have surrendered their control over work conditions and professional judgment to non-clinicians – in this case, system developers. This threat to clinical control over work conditions and autonomy is likely to contribute to user resistance to information technology in the healthcare setting.

The sweeping process changes in the healthcare system due to the introduction of electronic health records are likely to generate resistance due to the loss of control in autonomy and power over processes. This loss of control is further exacerbated by the government procedural requirements placed on medical professionals (Warren et al., 1988). Since most of these imposed changes impact work routines and task assignments, physicians and other professionals are likely to resist such changes. Hence, it is hypothesized:

Hypothesis 2: Perceived helplessness over process of use of the system will positively affect user resistance.

Warren *et al.* (1988) had also established a connection between loss of control over work conditions, clinical autonomy and lack of satisfaction. This study showed that both loss of control over work and reduced levels of clinical autonomy will both lead to greater dissatisfaction with outcomes. Hence, it is hypothesized:

Hypothesis 3: Perceived helplessness over process of use of the technology will positively affect perceived dissatisfaction with outcomes.

Poon et al. (2006) also observed that the introduction of certain HIT systems is likely to cause employee dissatisfaction due to the negative impact it has on workflows and productivity. Additionally, as the healthcare providers' income is directly tied to their productivity (Poon et al. 2006), any changes that negatively affect this bottom-line are likely to result in dissatisfaction. Consequently, dissatisfaction with productivity and workflows due to implementation of new systems is likely to cause resistance to change.

Alter (1978, p. 40) pointed to the positive relationship between user dissatisfaction and resistance (lack of compliance). Alter notes that the implementer's dilemma is: "How can I achieve compliance with minimal disruption and user dissatisfaction?" Doll and Torkzadeh (1989) had also stated that user feelings of greater control due to involvement in decision-making can lead to reduced resistance. Additionally, Martinko et al. (1996) observed that user dissatisfaction with the system is associated with resistance towards the system. The introduction of a new system will affect productivity, at least in the beginning, since users must learn how to use the new system. The more users find ways to go around

the system instead of actually using them, the more productivity is affected. This impact on productivity contributes to the dissatisfaction with system outcomes. Furthermore, workflow interruptions can also affect dissatisfaction with outcomes such that the greater the number of disruptions, the more dissatisfied the healthcare professional. There is an association between perceived helplessness over process, perceived dissatisfaction with outcomes and user resistance.

Dissatisfaction from the introduction of an information system in healthcare can result from threats to equity in reward systems, productivity and workflow. Regardless of the source of dissatisfaction, this generally leads to resistant behaviors. As Ford et al. (2008) have noted when employees cannot perceive a fair treatment during a change process in the work place, a loss of trust and satisfaction results. This means that the change process can also affect the outcomes. For instance, if an older physician perceives that the outcome of the introduction of a system will inequitably favor a younger physician who has greater computing skills needed to work the system, they may become dissatisfied with the outcomes. This dissatisfaction is then manifested as resistant behaviors that include revenge, sabotage, theft or other aggressive behaviors (Ford et al. 2008). Evidently when employee satisfaction is threatened, resistance is likely to ensue. It is therefore hypothesized:

Hypothesis 4: Perceived dissatisfaction with outcomes of use of the technology will positively affect user resistance.

4. RESEARCH DESIGN AND ANALYSIS

4.1. Study Design

This study was designed to respond to the study's objectives and questions. Consequently, a quantitative study design was adopted. Because of the involvement of human subjects, the Institutional Review Board approval was sought and secured. The design of this study therefore encompassed three major phases. The first phase involved conducting an extensive literature review to uncover the underlying theories and determinants of user resistance. Once this was done, the determinants were then categorized and incorporated into a preliminary conceptual model. Through more theoretical insight from literature, this model was further refined to obtain a theory-based conceptual model. Second, an instrument and measures were developed to capture the concepts of the model. Lastly, different procedures were administered to accurately collect empirical data and to test this proposed model through appropriate and rigorous data analysis procedures.

4.2. Study Participants

Research in information technology resistance within the healthcare sector has often drawn from a broad population including a wide range of medical professionals, such as physicians, nurses, staff and even administrators (Bates, 2005; Bhattacherjee and Hickmet, 2007; Lapointe & Rivard, 2005; Thede, 2009; Timmons, 2003). Because this research measures cognitive and attitudinal perspectives of user resistance to information technology, the sample for the study was drawn from a similar population. The sampling frame participants in this study include physicians, physician assistants, nurse practitioners, registered nurses, and other healthcare professionals who use electronic health record systems in daily practice. A non-probabilistic sampling technique was used. To do this, a variety of organizations and individuals were approached through personal face-to-face contacts, emails and phone calls. The final sample included health professionals from independent healthcare clinics, a nurse practitioner association, a department of nursing in a medium Southwestern university and individual healthcare professionals. These participants represented large, medium, and small healthcare practices drawn predominantly from the Southwestern region of the United States of America. With such a wide range of participants, it was expected that the heterogeneity of the population would increase the external validity of the study.

4.3. Instrument Development

Burns and Grove (2010) identified three sources of content validity namely: (1) literature, (2) representativeness of the relevant population, and (3) experts. The determination of whether or not an instrument possesses content validity is subjectively based on the opinions of experts (Nunnally, 1978). It must be noted here that since the questionnaire was intended to be administered in a post-implementation phase, the questionnaire was developed thus, by tweaking the questions to reflect participants' response in retrospect. Additionally, the ability of the content of a questionnaire to measure the trait of interest and to do so effectively is also influenced by factors such as the wording of item questions. The techniques below were used in this study to improve the instrument's ability to accurately capture the variables of interest. For instance, Armstrong and Overton (1977) have suggested the use of brief and concise questions that reduce the likelihood to "read into" the question. Schuman and Pressor (1981) cautioned on the ordering of questions to ensure the proper effectiveness of a survey questionnaire. For instance, instead of saying, "I was knowledgeable enough to understand how to use the system," it was phrased as: "I had the knowledge necessary to use the system." In the former question, the participant may think that the item is intending to question their prior ability to use the system rather than whether or not they have been provided the right tools (e.g. manuals, online help, etc.) to use the system.

The instrument for this study was developed through a multi-step approach. First, to understand the key determinants of IT user resistance, an in-depth literature review was conducted to identify all the major factors. Second, each of the determinants was then carefully operationalized using existing scales or by creating new ones. Where particular words were used in new contexts, these words were clearly defined through examples. For example, in the equity evaluation constructs section, respondents were asked to compare their "benefits" versus their "stresses" with the introduction of the new system.

4.4. Measures

Existing validated scales were adopted where possible and, elsewhere, new scales were developed based on previous literature. All constructs were measured on a five-point Likert scale (1=strongly disagree; 5=strongly agree) except for perceived dissatisfaction with outcomes (PDO) where a five-point Likert scale with range (1=not dissatisfied at all; 5=extremely dissatisfied) was rather chosen. This was done to maintain a uni-dimensional conceptualization of the construct. In the subsections below, the scales used for each construct in the model are discussed.

User Resistance (UR). User resistance is conceptualized in this study as having "four different but probably related faces" (Knowles & Linn, 2004). The four dimensions are namely: reactance, distrust, scrutiny and inertia. Items for all four dimensions were self-derived based on the definition of each individual dimension by Knowles and Linn (2004). Since all four dimensions were defined to encompass elements of affect, motivation and cognition; items from Oreg (2006) three-dimensional resistance model - encompassing cognitive resistance, affective and behavioral resistance - were adapted and modified to fit the Knowles and Linn (2004) definitions. Reactance items (UR11, UR12 and UR13) for example, are conceptualized to reflect the affective ("I don't like it") and motivational ("I won't do it") perspectives defined by Knowles and Linn (2004). In a similar manner, distrust items (UR21, UR22 and UR23) are conceptualized to depict the affective ("I don't like it") and cognitive ("I don't believe it") perspectives. Scrutiny, (items UR31, UR32 and UR33), was conceptualized as cognitive ("I don't believe it"), ("I don't like it"). Lastly, inertia is defined as a state of equilibrium with the characteristic of "staying put" rather than actual antagonism. Its items (UR41, UR42 and UR43) are also constructed accordingly.

Perceived Threat Variables. Perceived helplessness over process (PHOP) made use of two important perspectives. First, it used items from the Langfred (2005) autonomy scales as well as insights from the job characteristics model extension of Hackman and Oldham (1976) and the Maastricht Autonomy Questionnaire (MAQ) (de Jonge et al., 1995). The reason for using these items was to particularly capture the "helplessness" factor, which is particularly related to loss of autonomy

or control. For instance, we used some items developed by Langfred (2005) to predict individual- and team-level autonomy influences.

Perceived helplessness over process (PHOP). Items that relate to the freedom of "getting work done" or "scheduling of work" benefited from this scale. The job control scale (de Jonge, 1995) developed from the MAQ informed the perceived dissatisfaction with outcomes construct by drawing on elements of the MAQ that deal with "method of working", "pace of work" and "work goals."

Perceived dissatisfaction with outcomes (PDO). Construct was self-derived with insights from Landeweerd and Boumans (1994) and Bankauskaite and Saarelma (2003), who particularly addressed the subject of dissatisfaction with the outcomes of healthcare services; and hence, the items seemed particularly suited for this study. However, because they looked at dissatisfaction with the healthcare services from the patient's and not the healthcare professional's perspective, the items had to be reconstructed.

4.5. Data Analysis Strategy

A pilot study was administered to 50 participants, out of which 44 were received back with valid data. Analyses were conducted to determine the reliability and validity of using PLS version 3.0 M3. Given the characteristics of the proposed model (i.e. with a maximum of two arrowheads to a latent variable); it will require a least sample size of 33 to yield a statistical power of 80% at 95% confidence level for a minimum R^2 of .50 (see Hair et al., 2014, p. 21). Data from this sample were analyzed for reliability and validity using smart PLS version 3.0 M3. Most of the construct items showed adequate factor loadings of .50 and greater with Cronbach's alphas that exceeded the recommended .70 threshold level (Hair et al., 2010). Items that did not load were further refined. Each of the three latent variables explained at least 20% of the predictor variables significantly. Overall the sample data fitted the proposed model quite well.

The proposed research model required a structural technique for analyzing the relationships. Two structural equation modeling approaches exist to address this (Hair et al., 2010; Hair, Ringle and Sarstedt, 2011). One of such is the covariance-based structural equation modeling (CB-SEM) and the other is the partial least squares structural equation modeling (PLS-SEM). To decide which of the SEM techniques to use, Hair, Hult, Ringle and Sarstedt (2014) have suggested that the objectives and characteristics that distinguish the two methods be utilized. Consistent with this admonition, the data analysis tool of choice for this study was the PLS-SEM technique based on the considerations described below.

Hair et al. (2014) laid out five rules of thumb for using PLS-SEM technique namely: (1) when the goal is predicting key target constructs or identifying "driver" constructs, (2) when formative constructs are part of the model, (3) when the structural model is complex (many constructs and indicators), (4) when the sample is small and/or the data are non-normally distributed, and (5) when the plan is to use latent variable scores in subsequent analyses. Additionally, Chin (2010) has also noted that PLS-SEM is more suited for complex models (i.e. having more constructs and indicators). Given the objectives of this study, as stated earlier, PLS-SEM was chosen for the analyses.

The final sample of 206 health professionals consisted of physicians, physician assistants, nurse practitioners, and registered nurses in the major categories. Of this total, 156 (76%) were females while 50 (24%) were males. About 87% of the respondents operated in mandatory settings where electronic health record (EHR) system use was mandated while the remaining 13% operated in non-mandatory settings. Additionally, more than a third of the settings had an installed EHR system within the last few years. Almost all the respondents (96%) had previous paper records use. More than a third of the sample had over five years of experience in their professional roles at the time of data collection. About half of the respondents had an average EHR experience of more than two years. Table 2 shows the sample distribution by profession and gender. Table 3 reveals an alternative sample distribution by profession and years of experience in their current role. The minor professional groups represented in the sample are presented in Table 3.

5. RESULTS

5.1. Model Evaluation: Measurement Model Results

In this section, we present the evaluation of the measurement and structural model results. First, we take a look at the measurement model. The measurement model evaluation focuses on ensuring the accuracy and reliability of the measures as well as the assessment of the convergent and discriminant validities of the proposed model. The measurement model was also assessed for internal consistency by computing the Cronbach's alpha values and composite reliability values. Composite reliability values measure the internal consistency of a construct, but unlike Cronbach's alpha, it does not assume equal indicator loadings (Hair et al., 2014). In lieu of Cronbach's alpha in this study, we use composite reliability values since it gives more suitable measures. Hair et al. (2014, p. 115) suggest a threshold of 0.70 in exploratory research or a range of 0.06–0.07 would be considered acceptable. In our analysis, the composite reliability values for the measurement model were all adequate. The values ranged from 0.806 (for inertia) to 0.945 (for perceived dissatisfaction with outcomes).

As shown in Table 5 below, the reliability values of the measures were all above 0.7 threshold, confirming the composite reliability of the measures. Table 5 illustrates the inter-construct correlations and reliability values of the measures too. The table represents the final values of the identified inter-item cross-loadings after some items were dropped from the analysis. The results indicate that the reliability measures were adequate given the fact that all values were greater than the recommended 0.70 level (Nunnally, 1978). Additionally, reliability was also checked by measuring the average variance extracted (AVE). The AVEs serve to further support the reliability of these measures as recommended by Fornell and Larcker (1981) and are expected to be greater than the squared inter-construct correlations to establish discriminant validity. The results of our analysis confirm all the AVE values were above the 0.5 threshold level. This means that more than 50% of the variance in the indicators is accounted for. Furthermore, discriminant validity was established as the results reveal that all AVEs were greater than the squared inter-construct correlations except for the second-order user resistance construct where the AVE was nearly same as the squared inter-construct correlations.

Finally, Table 5 also shows convergent validity results. Convergent validity refers to the extent to which blocks of items strongly agree or 'converge' in their representation of the underlying construct they were created to measure Chin (2010). It is an assessment of the magnitude of the loadings (how high each loading is) and their similarity or dissimilarity. Despite the absence of a general rule of thumb, Chin (2010) suggests that the loadings be high enough so that the difference can fall in the 0.02 range. With this in mind, our results reveal that all the items loaded highly enough and were within the acceptable narrow range. Thus, our data analysis shows evidence of convergent validity. Table 5 further shows the squared factor cross-loadings for a more intuitive view of the convergent validity.

Figure 2 displays the measurement model with the items that were retained with their respective loadings.

5.2. Model Evaluation: Structural Model Results

In this section, we present the evaluation of the structural model results, which are summarized in Figure 3 below. The results show the path coefficients, R-square values as well as the significance levels. We obtained the t-statistics from the bootstrapping procedure in PLS. Bootstrapping is a non-parametric technique that does not require the normality assumptions associated with regression models. A bootstrapping procedure of 5000 samples and 206 cases was performed to obtain reliable structural path results and the t-statistics. The result of the analysis for the structural model shows that all the hypotheses were supported except. A closer examination of the path coefficients and the directionality for the supported hypotheses is shown the Figure 3 below.

As originally hypothesized, *user resistance* was positively predicted by *perceived helplessness over process* ($\beta = 0.29$; $p < 0.05$) and by *perceived dissatisfaction with outcomes* ($\beta = 0.35$; $p < 0.05$). Moreover, perceived dissatisfaction with outcomes was positively predicted by perceived helplessness

over process ($\beta = 0.39$; $p < 0.05$). According to the proposed model, user resistance manifests as either reactance, distrust, scrutiny, and inertia or combinations of either of the constructs. Results also showed that user resistance manifested as *reactance* ($\beta = 0.88$; $p < 0.05$), *distrust* ($\beta = 0.91$; $p < 0.05$), *scrutiny* ($\beta = 0.79$; $p < 0.05$), and *inertia* ($\beta = 0.60$; $p < 0.05$). The total variance in user resistance explained by PHOP and PDO was 28.7% while the total variance in PDO due to PHOP was 15.2%. Lastly, user resistance manifested as either reactance, distrust, scrutiny or inertia with a variance of 76.7%, 86.2%, 62.7%, and 36.3% respectively. The results of these analyses have been summarized in Table 6 below.

6. DISCUSSION

6.1. Manifestations of User Resistance

Overall, our results showed empirical support for the hypothesized relationships in the research. Knowles and Linn (2004) theorized resistance as a four-face construct consisting of reactance, distrust, scrutiny and inertia. In order of magnitude, this study showed that the four faces manifested as reactance, distrust, scrutiny, and inertia, respectively. These results seem to suggest that post-implementation resistance behaviors are associated with more overt outcomes, manifesting mostly as distrust, reactance, and scrutiny rather than inertia. The findings are consistent with Knowles and Linn (2004) characterization of these three overt faces of resistance. According to Knowles and Linn (2004), reactance and distrust are generally associated with affective and motivational tendencies in which the individual assumes behaviors that are consistent with: "*I don't like it"* and *"I won't do it."* However, these individuals are also characterized by a cognitive state where their behaviors are not only emotional or motivational in nature but are strongly influenced by behaviors that are consistent with cognitive elements such as: "*I don't believe in it.*" This research shows that inertia was the weakest form of resistance at this stage of implementation of the system. This seems to suggest that as individuals begin to interact with the system—post-implementation, they tend to lose their neutrality (*inertia*) and begin to take part in more active rather than passive resistance. As Coetsee (1999) had stated, resistance could be overt or covert, aggressive or passive. Our research seems to suggest that individuals tend to engage in more overt and aggressive behaviors as they actually experiment and interact with a new system. It is possible that individuals tend to lose passivity as frustrations build due to perceived helplessness over process and perceived dissatisfaction with the outcomes. Thus, it is conceivable that the greater the sense of helplessness and dissatisfaction with actual interaction with the system, the greater the emotional and cognitive intensity towards resistance.

6.2. The Nature and Role of Perceived Threats

The study also demonstrated that perceived threats are two related but distinct constructs. Specifically, perceived threats can either be *perceived helplessness over process (PHOP)* or *perceived dissatisfaction with outcomes (PDO)*; that is, perceived threats are more than just one construct as specified in previous literature. Additionally, the study revealed that PHOP and PDO together positively predicted resistance; thereby hindering adoption and acceptance of health information systems. Meanwhile, perceived helplessness over process indirectly contributed in driving resistance through its positive influence on perceived dissatisfaction with outcomes. In other words, as perceived helplessness increases, so is the likelihood for perceived dissatisfaction with outcomes. This interaction thereby, increases resistance.

In the case of the *perceived helplessness over process* construct, the results of this study are consistent with Markus (1983) which asserts that when a new technology is introduced in an organization, new processes are created that alter the users' routines. Consequently, the users lose their ability to master and control the additional processes, thereby ensuing resistance. As for the conceptualization of *perceived dissatisfaction with outcomes*, users with particular behaviors such as

low sense of control tend to belief that a system is incapable of performing as expected, thereby, leading to unfavorable outcomes. Past studies have stated that "continued experience of failure in the face of effort leads to a sense of powerlessness and helplessness" (Ross & Broh, 2000, p. 272). This sense of powerlessness is characterized by, or manifested as, passivity leading to none-use of the system.

Lastly, the study also showed that *perceived helplessness over process* manifested in such a way as to influence and drive *perceived dissatisfaction with outcomes*. Venkataramanan et al. (2013) found out that patients' perceived helplessness over the care process was associated with lower satisfaction with outcomes. The findings of this current study aligns with Venkataramanan and associates (2013) as it demonstrates that helplessness over process can influence dissatisfaction with outcomes.

6.3. Contributions of Study

This study contributes to the theory and practice of health information systems and management. On the theory end, it enriches our understanding of user resistance through the use of an important theory of resistance that has heretofore, not been leveraged in information systems literature or in health IT. Hirschheim and Newman (1988) had noted that resistance is a complex phenomenon which defies simple explanation and analysis; thereby requiring well accepted theories or paradigms encompassing the full range of variables associated with an individual user's resistance to IT (Martinko, Henry & Zmud, 1996). This research, therefore, fills this gap by providing a new lens through which *user resistance to IT* and *perceived threats* can be examined.

Our results are consistent with Bhattacherjee and Hickmet (2007), who expressed the need to uncover other types of threats that lead to user resistance. Their conceptualization of *perceived threats* clearly falls into the category of *perceived helplessness over process* according to our study. This study, therefore, defines and measures an entirely new set of threats, *perceived dissatisfaction with outcomes,* which has not been explored in earlier studies. It should be noted here that with the exception of Bhattacherjee and Hikmet (2007), previous research on user resistance has theorized but not measured the *perceived threat* construct. This study found out that *perceived threats* are two salient but different types of threats that should be considered in determining the cause of user resistance.

Furthermore, it is possible that each of these manifestations of user resistance (whether *reactance, distrust, scrutiny* or *inertia*) may become more important depending on the implementation stage (i.e., pre-implementation, during implementation or at post-implementation).

On the practice side, change managers and project leaders would find the results helpful in detecting and mitigating resistance. Specifically, our instrument can be administered at different phases during the implementation process to detect which elements of resistance need to be addressed. For instance, if the survey is administered pre-implementation, the results can be used to develop training and persuasion strategies to increase acceptance and adoption. During implementation, the survey can be administered again to see if any shifts in behaviors happened as a result. Finally, the survey can be conducted post-implementation to determine if user sentiments have improved with actual interaction with the system or not.

7. LIMITATIONS, IMPLICATIONS AND CONCLUSION

7.1. Limitations of Study and Future Research

The results of this study must be interpreted within the proper context of the limitations of our research. First, the research utilized the psychological reactance theory as the main theoretical framework. We built on a selection of constructs based on previous literature like Knowles and Linn (2004), and Lapointe and Rivard (2005). It is possible that there are other important constructs that can predict IT user resistance, which necessitates future research. As Hirschheim and Newman (1988) have noted, resistance is a complex phenomenon requiring more than just a single paradigm to properly explore it. Future research should explore other theoretical frameworks that may help capture these concepts.

Second, this research study was conducted post-implementation. The results are likely to have been different if the study was done pre-implementation or during the initial implementation phase. Further research can take a longitudinal approach that covers all the three major phases of implementation to study the change in resistance.

Third, the study used a non-probabilistic sampling approach. It would be interesting to find out what other sampling techniques could probably yield. Additionally, with the changing demographics in the healthcare sector, namely, a younger generation of health professionals, it is probable that the apprehension to new technologies might change. The ability to capture this through demographic probabilistic sampling could also be helpful.

7.2. Implications of Research

Our study contributes to research in three main ways. First, we demonstrated that user resistance can be effectively explained from the perspective of psychological reactance theory. Second, the study increases our understanding of the role of the two types of perceived threats to resistance, which, heretofore has been considered only as a single construct in literature. Third, the Knowles and Linn (2004) classification of resistance as reactance, distrust, scrutiny and inertia are also introduced. This classification, which is relatively new in information systems literature, helps us to understand the complex and multi-faceted nature of user resistance as other researchers have cautioned (see Piderit, 2000).

On a practical note, our study is helpful to change managers as it identifies two key predictors of user resistance, namely: *perceived helplessness over process* and *perceived dissatisfaction with outcomes*. Change managers can use this understanding to mitigate these threats, and hence, improve the chances of successful IT implementation. This could be achieved by administering the survey instrument before, during and after implementation to find out potential bottlenecks.

Furthermore, the four-face conceptualization of user resistance is insightful in understanding how resistance is manifested as opposed to previous conceptualizations which classified resistance simply as apathy, passive, active, or aggressive categories (see Coetsee, 1999). The current study's conceptualization (i.e. reactance, distrust, scrutiny and inertia) is likely to be more intuitive for change managers.

8. CONCLUSION

Our research showed that in order for healthcare information systems to yield its promise, elements of user resistance must be identified and dealt with at all stages of the implementation process. From covert manifestations as inertia to more overt expressions as reactance, resistance must be mitigated for optimal outcomes. This is even more critical in healthcare when we consider that the information that is needed to improve healthcare outcomes are both generated, stored and transmitted by health information systems. Without proper leverage of these systems, healthcare informatics will not be possible and evidence-based practice of medicine will be hindered. Success in healthcare information system adoption and implementation is clearly a precursor for success in healthcare outcomes realization. This study adds to, and can serve as a foundation for future research in healthcare information systems adoption and use.

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APPENDIX I

Figure 1. Research model

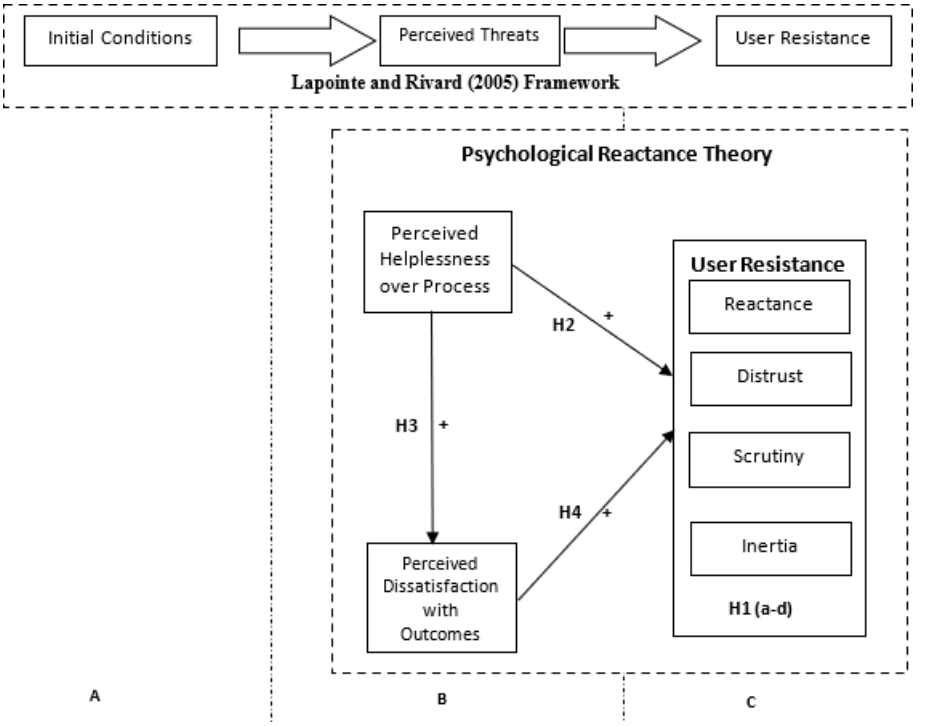

Figure 2. Measurement model

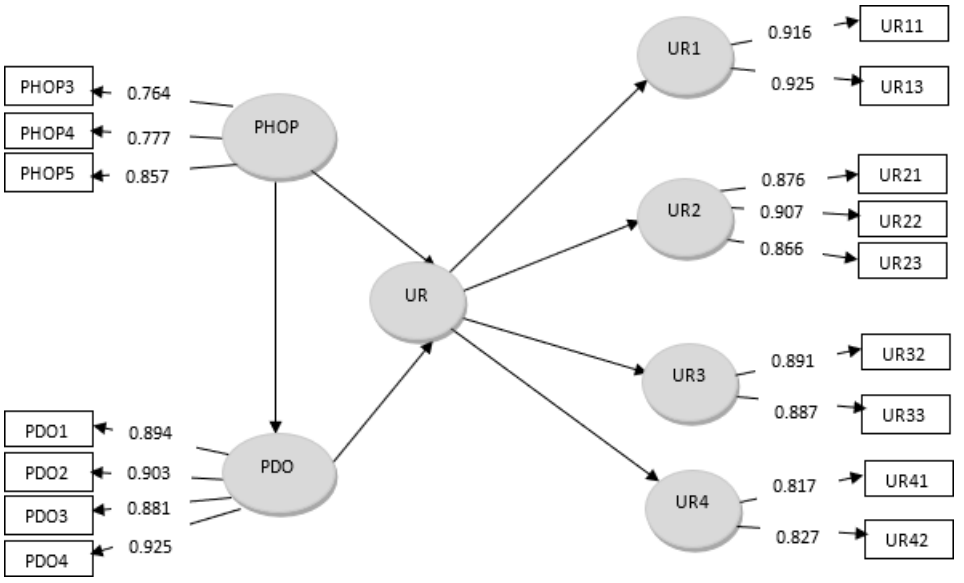

Figure 3. Structural model

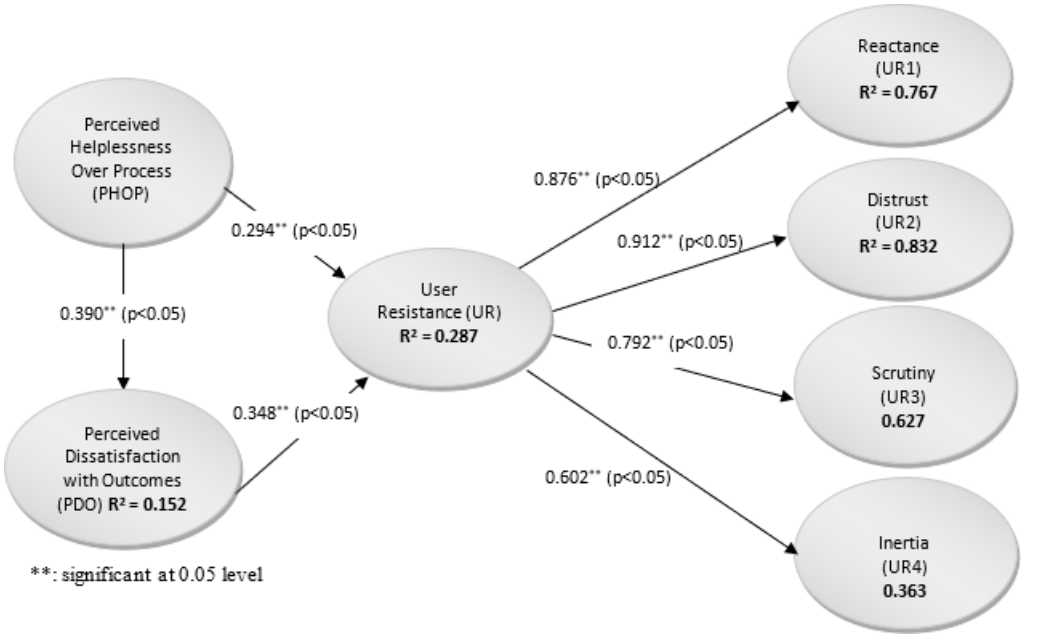

Table 1. A summary of psychological reactance theory (PRT) literature in the past 50 years

Theory Proposal and Testing (1966-1981)	· Assumptions of PRT · Components of PRT	· People possess a set of free behaviors they desire to enact; a threat in free behaviors triggers desire for restoration of freedoms · Freedoms, elimination of freedoms, arousal of reactance, characteristics of freedom, characteristics of the threat, restoration of freedom (behavioral outcomes and subjective outcomes), failure of reactance	Brehm (1966); Brehm & Brehm (1981)
Theory Leverage in Clinical Psychology (1981-2005)	· Perception of reactance	· Reactance as a moderator, reactance as a tailoring variable, validity of the reactance debate	Shoham, Trost & Rohrbaugh (2004); Tracey, Ellickson and Sherry (1989); Miron & Brehm (2006)
Theory Leveraged in Communications Research (1991-2011)	· Controlling versus Autonomy-Supportive messaging	· Other messaging affecting reactance (e.g. novel messaging, restoration of postscripts, and narrative messaging)	Wu (1991); Buller, Borland & Burgoon (1998)
Theory Leveraged in Information Systems (2002-2017)	· Information messaging · Work autonomy · Behavioral deterrence	· Information messaging · Resistance to technology · Behavioral deterrence	Lee & Lee (2009); Wall & Lowry (2013); Lee & Lee (2010); Matthias, Miller, Caputi, Jayasuriya & Willis (2007)

Table 2 indicates that our sample is representative of subjects in the healthcare professions who are active users of electronic health record (EHR) systems, showing that we sampled the appropriate targets for this study.

Table 3 indicates that the subjects sampled were professionals who had been using an electronic health record system and had gained some years of experiences with the system (2-5 years on average). Respondents were thus qualified to be included in the sample.

Table 4 indicates that our sample subjects included other professionals who use electronic health record systems on a regular basis.

Table 2. Profession and gender demographics

Physicians		Physician Assistant		Nurse Practitioners		Nurses (RNs, LVN, LPN, CNA)		Other Professions	
Male	10	Male	10	Male	8	Male	22	Male	0
Female	13	Female	40	Female	21	Female	72	Female	10
Total	23	Total	50	Total	29	Total	94	Total	10
Sample %	11	Sample %	24	Sample %	14	Sample %	46	Sample %	5

Table 3. Profession and experience demographics

Physicians		Physician Assistant		Nurse Practitioners		Nurses (RNs, LVN, LPN, CNA)		Other Professions	
< 2 years	6	< 2 years	44	< 2 years	11	< 2 years	16	< 2 years	5
2-5 years	10	2-5 years	3	2-5 years	5	2-5 years	30	2-5 years	7
>5 years	7	>5 years	3	>5 years	13	>5 years	44	>5 years	2
Total	23	Total	50	Total	29	Total	90	Total	14
Sample %	11	Sample %	24	Sample %	14	Sample %	46	Sample %	5

Table 4. Other professions represented in sample

Profession Type	Representation
EHR technician	2
Medical assistant	2
Dental assistant	1
Dietitian	2
Pharmacy technician	1
Office manager	1

Table 5. Inter-construct and reliability measures

Latent Variable	Indicators	Convergent Validity		Internal Consistency Reliability		Discriminant Validity						
		Loadings	AVE	Composite Reliability	Cronbach's Alpha	PDO	PHOP	UR	UR1	UR2	UR3	UR4
		>0.70	>0.50	>0.70	>0.70							
Perceived Dissatisfaction with Outcomes (PDO)	PDO1	0.894	0.812	0.945	0.923	0.901						
	PDO2	0.903										
	PDO3	0.881										
	PDO4	0.925										
Perceived Helplessness Over Process (PHOP)	PHOP3	0.764	0.641	0.842	0.722	0.389	0.801					
	PHOP4	0.777										
	PHOP5	0.857										
User Resistance (UR)	UR11	0.785	0.605	0.914	0.890	0.450	0.437	0.832				
	UR13	0.826										
	UR21	0.850										
	UR22	0.805										
	UR23	0.757										
	UR32	0.709										
	UR33	0.700										
Reactance (UR1)	UR11	0.916	0.847	0.917	0.820	0.422	0.385	0.851	0.920			
	UR13	0.925										
Distrust (UR2)	UR21	0.876	0.780	0.914	0.859	0.455	0.380	0.893	0.700	0.883		
	UR22	0.907										
	UR23	0.866										
Scrutiny (UR3)	UR32	0.891	0.790	0.883	0.734	0.291	0.347	0.804	0.584	0.566	0.889	
	UR33	0.887										
Inertia (UR4)	UR41	0.817	0.676	0.806	0.520	0.255	0.326	0.729	0.472	0.523	0.582	0.822
	UR42	0.827										

Table 6. Summary of analyses

Relationship	Beta-Values	t-Values	Significance P-Values
UR-UR1	0.876**	55.491	0.000
UR-UR2	0.912**	76.013	0.000
UR-UR3	0.792**	24.171	0.000
UR-UR4	0.602**	8.339	0.000
PHOP-UR	0.294**	3.689	0.000
PHOP-PDO	0.390**	5.854	0.000
PDO-UR	0.348**	4.747	0.000

Table 7. Summary of hypotheses testing

Hypothesis	Relationship	Proposed Relationship	Result
H1a	UR-UR1	Positive	Supported
H1b	UR-UR2	Positive	Supported
H1c	UR-UR3	Positive	Supported
H1d	UR-UR4	Positive	Supported
H2	PHOP-UR	Positive	Supported
H3	PHOP-PDO	Positive	Supported
H4	PDO-UR	Positive	Supported

APPENDIX II

Table 8. Instrument items

User Resistance (UR) [1. Strongly disagree; 5. Strongly agree]	
	Reactance
UR11	I felt frustrated about how the new EHR system works.
UR12	I was irritated by the way the new EHR system restricts my pattern of work.
UR13	I was stressed by the change brought by the new EHR system.
	Distrust
UR21	I didn't believe the new EHR system is a better one.
UR22	I didn't think the new EHR system does the job.
UR23	I doubted that the new EHR system is indeed effective.
	Scrutiny
UR31	I analyzed different aspects of the new EHR system.
UR32	I saw several weaknesses with the new EHR system.
UR33	I was critical about the new EHR system.
	Inertia
UR41	I was watching to see how the new EHR system actually holds up.
UR42	I tried as much as possible to avoid some aspects of the new EHR system.
UR43	I was enthusiastic about the new EHR system*.
Perceived Helplessness Over Process (PHOP) [1. Strongly disagree; 5. Strongly agree]	
PHOP1	With the new EHR system, I was free to decide how to go about my work*
PHOP2	With the new EHR system, I had control over the scheduling of my work*
PHOP3	With the new EHR system, I was not free to interact with my patient as I would like to.
PHOP4	The new EHR system was inflexible to my professional judgment.
PHOP5	Overall, I felt the new EHR system dictates the way my tasks are performed.
Perceived Dissatisfaction with Outcomes (PDO) [1. Very dissatisfied; 5. Very satisfied]	
	Rate how dissatisfied/satisfied you were with the following aspects of the new system
PDO1	The speed with which you were able to do your work using the new EHR system.
PDO2	The ability to easily relate to your patients using the new EHR system.
PDO3	The impact in your skills and abilities using the new EHR system.
PDO4	The impact in the overall quality of care using the new EHR system.

* Reversed Scoring *

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