Managing Employee Attitude for a Successful Information System Implementation: A Change Management Perspective

Smita Chaudhry
Foundation for Liberal and Management Education, smitachaudhry@gmail.com

Managing Employee Attitude for a Successful Information System Implementation: A Change Management Perspective

Smita Chaudhry
Foundation for Liberal and Management Education

ABSTRACT

In the last three decades, there has been considerable advancement in the design of information systems used in organizations. Information systems facilitate critical organizational activities like recording and processing of business transactions, analyzing complex and large sets of data and generating management and executive level reports. However, their adoption is generally fraught with challenges because of the negative attitude of employees to the impending change in their work life. Considering the enormous investment of cost, time and effort in information system implementation, it is imperative for organizations to ensure long term returns. This requires them to bring about employee readiness, openness and commitment to implementation. The paper uses socio-technical theory to propose how measures like organizational development interventions can influence employee attitudes to information system implementation. Taking a cross-disciplinary approach and drawing upon existing theoretical and empirical literature, the paper examines characteristics of organizational development interventions, factors influencing employee attitudes to change, and determinants of information system implementation, to build the conceptual framework.

KEYWORDS: commitment to change, information system implementation, openness to change, organizational development interventions, readiness to change

INTRODUCTION

Several studies have discussed information system implementation through the lens of organization change (Amis & Aïssaoui, 2013; Bruque, Moyano, & Eisenberg, 2008; Collerette, Legris, & Manghi, 2006; Howard, 2017; Rivard & Lapointe, 2012; Volkoff, Strong, & Elmes, 2007). As per the contingency theory, a successful information system implementation requires appropriate changes at different levels of the organization to create a conducive environment for the implementation (Lapointe & Rivard, 2007). This paper focuses on the individual level of employee

attitude towards the implementation. A favorable attitude can promote constructive involvement in the implementation process, and subsequently bring about enthusiastic adoption of its outcomes. Several information system studies have emphasized the importance of employees and their attitude for successful implementation (Bhattacherjee & Premkumar, 2004; Campbell & Grimshaw, 2016; Ghobakhloo & Tang, 2015; Gurtoo & Tripathy, 2000).

Taking the change management perspective, this paper discusses information system implementation as an organizational change initiative, and focuses on the measures which the organization can take to facilitate a favorable employee attitude towards the implementation. The paper considers the measures in terms of organization development interventions and attitude in terms of readiness, openness and commitment to information system implementation. Using a cross-disciplinary approach, it refers to the organization development (OD), organizational change (OC) and information system (IS) literature to build a conceptual model, and propose the influence of different OD interventions on employee readiness, openness and commitment to IS implementation.

An OD intervention is a planned process intended to bring about change and development in an organization. It rests on the foundation of "humanistic values" and involves organization wide application of behavioral science knowledge, which may be based on theory or empirical research (Bradford & Burke, 2004). To explore management of IS implementation from the standpoint of organization change, this paper examines OD interventions using socio-technical theory (Appelbaum, 2010). According to the theory, an organization is a combination of social and technical aspects and these aspects should be in alignment to enable the organization to perform well (Trist & Bamforth, 1951). Applying this theory to managing change involving IS implementation, the paper seeks to understand how the impact of OD intervention on people (social aspect) facilitates an IS implementation (technical aspect).

Although literature has discussed IS implementation in terms of socio-technical change (Cecez-Kecmanovic, Galliers, Henfridsson, Newell, & Vidgen, 2014; Gaskin, Berente, Lyytinen, & Yoo, 2014; Hayashi & Baranauskas, 2013; Lyytinen & Newman, 2008), scholarly attention to OD interventions has been limited. This paper attempts to address this gap by proposing the manner in which OD interventions can help employees develop readiness, openness and commitment to IS implementation. To propose the relationships, the paper refers to the OC literature for determinants of employee attitudes to change and to the IS literature for determinants of IS implementation. The paper then draws on the OD literature to explore the different OD interventions through the socio-technical approach.

The model is expected to guide scholars to engage in empirical research on factors influencing employee attitudes to change. It can also further theoretical and empirical research on OD interventions, in the context of IS implementation. Besides, the model is expected to benefit practitioners by providing a holistic view to senior management about the strategic and tactical measures it can take to ensure a successful IS implementation.

The paper is organized in four sections. The first section highlights the importance of employee readiness, openness and commitment to organizational change. The second section discusses management of IS implementation as a change process. The third section presents the conceptual model based on the literature on determinants of attitudes to change in general, determinants of successful IS implementation in particular, and OD interventions. The fourth section talks about the theoretical contribution and practical implications of the study, and directions for future research.

ORGANIZATIONAL CHANGE AND EMPLOYEE ATTITUDE

Organizational change can take multiple forms like strategic, operational and technological change. It may be a deliberate and planned change or an evolving and continuous change (Bouckenooghe, 2010). Change impacts organizations in several ways. It can impact an organization's size, business model, markets and strategic focus. Change may have effect at the department level, unit level, region level or organizational level. It may alter organizational structure, policies and procedures. It may also alter functional processes and day-to-day activities. Any kind of change eventually impacts the way employees perform their job responsibilities, though it may affect one employee differently from a group, and an employee at one hierarchical level differently from an employee at another. It may influence how employees collaborate with each other, evaluate and relate to subordinates and supervisor, and manage relationship with customers.

Given the kind of impact change has on employees' professional life, it is essential that they have the right attitude towards an impending change. They should be convinced to adopt a new way of performing functions, optimistic about the outcomes of change, and dedicated to contributing to the process of change. This highlights the importance of readiness, openness and commitment to change respectively (Bouckenooghe, 2010).

Readiness to change pertains to the belief, outlook and opinion of the employees on the requirement for a change and confidence in the organization's capability to implement the change (Armenakis, Harris, & Mossholder, 1993a). It mainly relates to the cognitive and affective components of employee attitude to change (Bouckenooghe, 2010; Finch, 2013). An assessment of readiness to change helps an organization decide about the required investments, in terms of resources, technology and infrastructure, in the change initiative.

Openness to change is associated with the belief that the forthcoming change would bring benefit in some way, and manifests in support for the change. Openness mainly relates to the affective and intentional components of employee attitude to change (Bouckenooghe, 2010). An assessment of openness to change helps the organization gain awareness about the content and volume of information to be disseminated to the employees.

Commitment to change is the power that forces employees to voluntarily take actions that would result in successful implementation (Herscovitch & Meyer, 2002). It relates to cognitive, affective and intentional components of employee attitude to change (Bouckenooghe, 2010). There are three dimensions of commitment to change. Affective commitment to change is associated with faith in the perceived benefits of the change. Continued commitment is associated with awareness about the costs of not supporting the change. Normative commitment is associated with a feeling of moral compulsion to facilitate the change. An assessment of commitment to change helps the organization understand the appropriate actions that can enhance employee involvement, enthusiasm and effort in the change.

MANAGING IS IMPLEMENTATION AS A CHANGE PROCESS

IS is the most commonly occurring form of change initiative in organizations. It can significantly change the manner in which employees engage in their job, manage daily activities, perform work, and interact with each other (Sykes, Venkatesh, & Johnson, 2014). Therefore, as for any change initiative, employee attitude is one of the most challenging aspects to deal with during the IS implementation (Aladwani, 2005; Armenakis, Harris, & Mossholder, 1993b; Bhattacherjee & Premkumar, 2004; Chaikan & Stangor, 1987; Hafeez & Hussain, 2008). Several studies have discussed that employees tend to resist implementation (Campbell & Grimshaw, 2016; Hirschheim & Newman, 1988; Jiang, Muhanna, & Klein, 2000; Kim & Kankanhalli, 2009; Lapointe & Rivard, 2005; Lin, Huang, & Chiang, 2018; Rivard & Lapointe, 2012).

To make the organizational change through IS implementation successful, an organization can take certain measures to align employees at different levels of the hierarchy to this change initiative (Ghobakhloo & Tang, 2015; Sykes, 2015). Understanding these measures requires application of socio-technical theory,

As per this theory, an organization is a socio-technical system with social element comprising informal networks, organization culture and norms, and patterns of behavior and communication (Appelbaum, 2010; Trist & Bamforth, 1951). It makes employees find meaning in their job, feel responsible for their performance and sense belongingness to the organization. Technical element comprises technical infrastructure, automated processes and generation of meaningful information from raw data. Positive results are produced when both elements are considered simultaneously, and resources flow freely within the socio-technical system without any disturbance from the external environment (Appelbaum, 2010).

One of the manifestations of socio-technical system is sociomaterial practices (Orlikowski, 2007), which views technology as a constitutive entanglement. This means that the social and material (i.e. information system which is the technology) aspects of the organization are treated as interdependent in a symbiotic relationship so that they have a smooth interaction with each other. Sociomaterial practices lead to alignment of employee responsibilities and functions of the IS in an inseparable manner, with both together promoting organizational performance (Gaskin et al., 2014; Jones, 2014; Venters, Oborn, & Barrett, 2014). Socio-technical system can also manifest in the form of self-regulatory work groups. Tasks of members in these groups are interdependent and the processes within the group are flexible. Also, group members are jointly responsible for a specific set of pre-defined outcomes (Appelbaum, 2010).

Based on the literature, the paper contends that effectiveness of OD interventions in facilitating technological change can be explained from the socio-technical perspective. This perspective informs that OD interventions influence employees in a manner which makes it easy for them to adapt to an IS implementation. Employing this perspective, the paper proposes that different OD interventions have characteristics that align employees to IS implementation by influencing their readiness, openness and/or commitment towards it. The theory of OD practice involves three stages: a) OD process, b) action cycles and c) outcomes. OD process relates to design of interventions, management of relationship with the organization and display of behaviors like collaboration and facilitation that enable the change process. Action cycles relate to communication of information about the change initiative, response to the initiative like support, inertia or resistance, and the
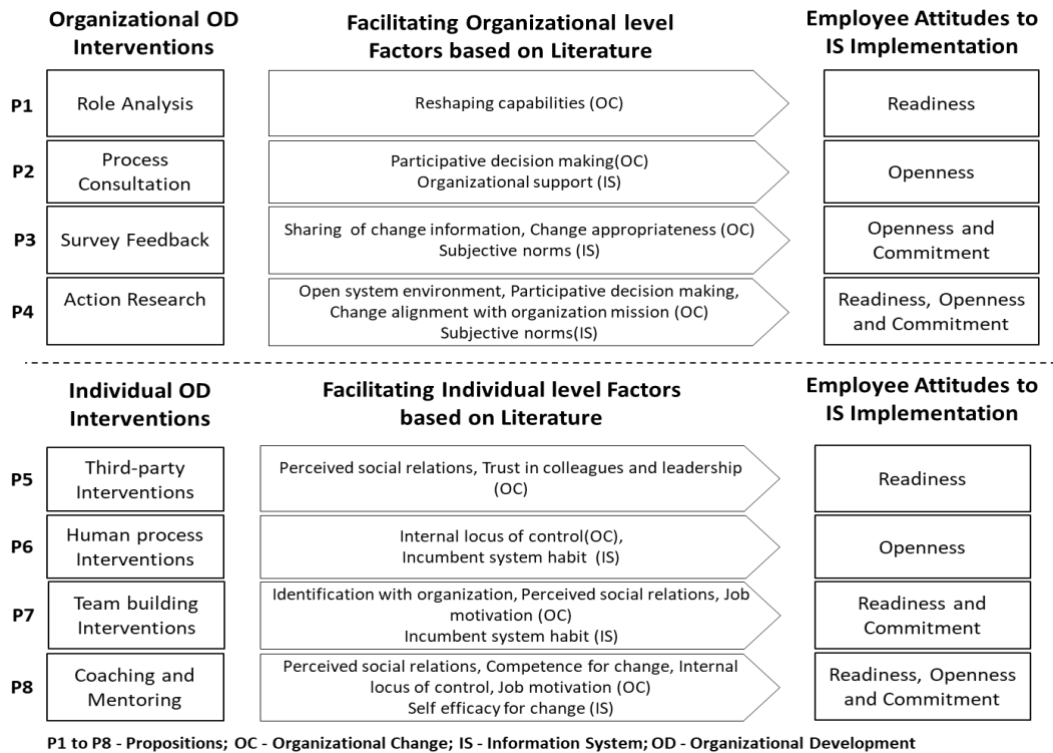
consequent occurrence of changes at the individual and organization level. Outcomes of OD relate to positive changes in knowledge, skills, behavior and attitude at the individual level, and performance, capability and culture at the organizational level.

CONCEPTUALIZATION OF THE MODEL

Figure 1 presents the conceptual model for the relationship between OD interventions, and employee readiness, openness and commitment to IS implementation. The model proposes the impact of organizational and individual OD interventions on employee attitudes to IS implementation. Organizational interventions refer to measures taken by organizations at the enterprise wide level that effect organization structure, processes and design. Individual interventions refer to measures taken by organizations at the employee level that effect employee to self, employee to employee and employee to organization relationships. This classification of levels is based on the work by Armenakis et al. (2011), which reviews antecedents of change on the basis of seventy-nine empirical studies, published between 1948 and 2007 and covering a cross section of industries.

To propose the relationships, the model draws upon theoretical and empirical literature on OC, IS and OD as discussed in the following subsections. The existing OC research provides understanding about the organizational and individual factors influencing employee readiness, openness and commitment to change (Table 1). The existing IS research gives insight into the organizational and individual factors influencing IS implementation (Table 2). The existing OD literature informs about the varied organizational and individual interventions that organizations undertake to bring about successful organizational change. Considering the established determinants of employee readiness, openness and commitment to change and determinants of successful IS implementation, the model suggests the effect of OD interventions on employee attitudes to IS implementation.

Figure 1: Influence of Organizational Development Interventions on Employee Readiness, Openness and Commitment to Information System Implementation

Organizational OD Interventions	Facilitating Organizational level Factors based on Literature	Employee Attitudes to IS Implementation
P1 — Role Analysis	Reshaping capabilities (OC)	Readiness
P2 — Process Consultation	Participative decision making(OC) Organizational support (IS)	Openness
P3 — Survey Feedback	Sharing of change information, Change appropriateness (OC) Subjective norms (IS)	Openness and Commitment
P4 — Action Research	Open system environment, Participative decision making, Change alignment with organization mission (OC) Subjective norms(IS)	Readiness, Openness and Commitment

Individual OD Interventions	Facilitating Individual level Factors based on Literature	Employee Attitudes to IS Implementation
P5 — Third-party Interventions	Perceived social relations, Trust in colleagues and leadership (OC)	Readiness
P6 — Human process Interventions	Internal locus of control(OC), Incumbent system habit (IS)	Openness
P7 — Team building Interventions	Identification with organization, Perceived social relations, Job motivation (OC) Incumbent system habit (IS)	Readiness and Commitment
P8 — Coaching and Mentoring	Perceived social relations, Competence for change, Internal locus of control, Job motivation (OC) Self efficacy for change (IS)	Readiness, Openness and Commitment

P1 to P8 - Propositions; OC - Organizational Change; IS - Information System; OD - Organizational Development

FACTORS INFLUENCING EMPLOYEE READINESS, OPENNESS AND COMMITMENT TO CHANGE

Empirical studies in OC literature have extensively discussed factors influencing employee readiness, openness and commitment to change both at the organization and individual level. The comprehensive list of organizational and individual factors influencing these attitudes is provided in Table 1.

Table 1: Factors Influencing Employee Attitude to Change (OC Literature)

Organizational level Factors	Individual level Factors	Employee Attitude to Change
Reshaping capabilities Open systems environment Adaptable organization structure Supportive work environment Clan culture Flexible organization policies and procedures	Identification with organization Perceived organizational culture Perceived social relations Trust in colleagues and leadership Competence for change Self-efficacy for change	Readiness to Change
Sharing of change information Participative decision making Successful history of change	Trust in senior management Internal locus of control Need for achievement Exposure to change in the past Perceived quality of shared information Self-efficacy for change	Openness to Change
Organizational inducements Transformational leadership Clan culture Adequate infrastructure Change alignment with organization mission Change appropriateness	Trust in senior management Psychological resilience Supervisor-subordinate relationship Satisfaction with HR practices Perceived fairness of change Job motivation Role autonomy Self-efficacy for change	Commitment to Change

Organizational factors.

Certain organizational factors influence readiness to change. Reshaping capabilities of the organization equip employees with the appropriate knowledge, skills and abilities required in the post-change scenario (Griffiths, Jimmieson, & Jones, 2005). Open systems environment encourages visionary leadership and flexible decision making process, thus bringing about innovation and development required for change. Adaptable organizational structure and supportive work environment make the change seem feasible and sustainable to the employees. Clan culture creates strong inter-personal influence and sense of mutual support for change (Shum, Bove, & Auh, 2008). Flexible organization policies and procedures build optimism for fast and smooth adaptation to change.

Besides, some organizational characteristics affect employee openness to change. Information sharing about change makes employees more aware about the reasons and benefits of the change (Banas & Wanberg, 2000; Miller, Johnson, & Grau, 1994). A participative decision making process provides opportunity to them to be actively involved in making decisions, and thus enhances their inclination for change (Ertürk, 2008). A successful history of change creates positive expectations of employees about its implications (Devos, Buelens, & Bouckenooghe, 2007).

Further, certain organizational attributes impact employee commitment to change. Organizational inducements (Seo, Shin, & Taylor, 2012), like material and non-material rewards, acknowledge the contribution of employees. They increase the confidence and optimism of employees and give them a feeling of being supported and valued. They lead to an environment of trust and employees tend to reciprocate with their commitment to change. Transformational leadership (Caldwell, Fedor, Herold, & Liu, 2008) builds motivation and dedication for the change in them by increasing their commitment towards their job. Clan culture puts responsibility to embrace the change on employees who feel part of the organizational clan (Shum et al., 2008). Support for the change in terms of adequate infrastructure, make them hopeful about the effectiveness of the impending change. Alignment of change with the organization mission (Cady & Neubert, 2001; Jaros, 2010) and appropriateness of change (Neves, 2009) make employees feel obligated as well as enthusiastic to participate in the change process.

Individual factors.

Empirical studies show the effect of certain individual level factors on employee readiness to change. Identification with the organization aligns employees to organizational change objectives (Dick, Drzensky, & Egold, 2012). Positive

perception of the organizational culture makes them comfortable and willing to adjust with the uncertainty accompanying change. Strong human relations create unity amongst employees, build optimism and promote open and participative communication (Griffiths et al., 2005). Employees' perception of strong social relationships makes them more involved in the workplace. Trust in colleagues and leaders makes them better prepared to adapt to change. Requisite competence to deal with change reduces associated risk of change (Kwahk & Kim, 2008).

Besides, some individual characteristics impact employee openness to change. Trust in executive management makes employees more willing to comply with organization wide initiatives (Devos et al., 2007; Ertürk, 2008). Internal locus of control gives the self-confidence to handle change. A personal need for achievement creates the employee perception that change is an opportunity to prove one's ability. Exposure to change in the past reduces uncertainty about its possible outcomes (Axtell et al., 2002). Perception of high quality of shared information brings about awareness about the change and trust in the objectives of change (Miller et al., 1994).

Further, certain individual attributes also impact employee commitment to change. Trust in senior management makes employees willing to comply with the need for change (Michaelis, Stegmaier, & Sonntag, 2010). Psychological resilience helps them deal with initial hardships in the changing environment and recover from adverse and difficult circumstances (Seo et al., 2012). Healthy subordinate-supervisor relationship gives employees the required psychological support and resources (Cady & Neubert, 2001; Choi, 2011; Jaros, 2010). Satisfaction with HR practices and job gives them the reason to contribute to the change process rather than switch their job (Conway & Monks, 2008). Perceived fairness of the change creates the inclination and allegiance for the change. Motivation and role autonomy (Cady & Neubert, 2001; Jaros, 2010) provide the enthusiasm to participate in the change.

Literature has found that self-efficacy for change is an attribute that enhances employee readiness, openness and commitment to change (Banas & Wanberg, 2000; Caldwell, Fedor, & Herold, 2007; Choi, 2011). It also has been found to influence IS implementation (Kim & Kankanhalli, 2009). Self-efficacy for change is a perceived internal behavioral control (Ajzen, 2002) that makes employees believe in their capability to embrace and adapt to change. In the context of IS implementation, employees high on self-efficacy for change perceive the new IS easy to learn and use (Kim & Kankanhalli, 2009).

FACTORS INFLUENCING IS IMPLEMENTATION

Information system literature has revealed that change involving an IS implementation is influenced by certain organizational as well as individual level aspects. Organizational aspects include failure of an IS earlier, organizational support, subjective norms of using incumbent IS and switching costs (Kim & Kankanhalli, 2009; Lewis, Agarwal, & Sambamurthy, 2003; Martinko, Henry, & Zmud, 1996). Individual level aspects include self-efficacy for change, virtual efficacy, incumbent system habit, perceived value of the new IS and perceived change in power and equity (Compeau, Higgins, Huff, Higgins, & Huff, 1999; Karahanna & Polites, 2012; Kim & Kankanhalli, 2009). The comprehensive list of organizational and individual factors is provided in Table 2.

Table 2: Factors Influencing Information System Implementation (IS Literature)

Organizational level Factors	Individual level Factors
Past failures Organizational support Subjective norms Switching costs	Self efficacy for change Virtual efficacy Incumbent system habit Perceived value of new IS Perceived change in power / equity

Failure of an IS earlier implies that employees have experienced an ineffective IS implementation in the past. It can lower employee expectations about the success of an impending implementation and performance of the new IS. It can also provide a convenient excuse to avoid adopting and using a new IS (Martinko et al., 1996). Employees may feel that the organization will not be able to make the new IS successful.

Organizational support relates to the guidance, resources and assistance provided by the organization to help employees adopt the new way of working (Kim & Kankanhalli, 2009). It makes the organizational environment more conducive to change. Employees may feel confident about the organization's ability to implement a new IS and make it effective in the long term. They may also become more aware about the implications of change for themselves and the organization.

Subjective norms are perceived social pressures and result in normative beliefs (Ajzen, 2002). Subjective norms of using incumbent IS can give rise to negative opinions in the organization about a new IS, especially in uncertain situations (Lewis et al., 2003). This can influence individual beliefs and attitude (Karahanna & Polites, 2012; Titah & Barki, 2009). Employees may consider the new IS devoid of any additional benefits. Besides, they may perceive the costs of not supporting the new IS low since nobody arounds them supports it. They may not sense any moral obligation towards contributing to the new IS implementation.

Switching costs are the costs of adopting a new IS that replaces an incumbent IS. They can be monetary as well as non-monetary (time and effort), and include sunk, transition and uncertainty costs (Samuelson & Zeckhauser, 1988). Sunk cost is the cost incurred in learning and using the incumbent IS. Employees are reluctant to let the cost go waste (Karahanna & Polites, 2012). They feel a psychological commitment towards it that produces a status quo bias (Samuelson & Zeckhauser, 1988). Transition cost is the cost incurred in learning and using the new IS. Uncertainty cost is the cost incurred in securing oneself against the potential challenges of implementing the new IS. When switching costs are high, employees can feel that the change demands more time, effort and cost investment than they are willing to incur.

Virtual efficacy is the self-belief of employees about their ability to use a computer and a software application. High virtual efficacy can lead to more liking and enjoyment and less anxiety about using an IS. Comfort and confidence can make employees more sure and optimistic about adapting to a new IS (Compeau et al., 1999). Employees can experience positive emotions and expect to perform well as users. They may feel that they would be able to adapt to the new IS easily.

Incumbent system habit is a well-entrenched habit of employees to use an existing IS. It grows stronger with time and over time, it brings about strong persistence to use prevailing processes and systems, resulting in inertia towards a new IS (Karahanna & Polites, 2012). Inertia can make the new IS appear less advantageous and difficult to use. It can also lower the perceived importance of implementing the new IS for the employees.

Individual perception about the effect of the new IS can also impact its implementation (Markus, 1983). It can be in terms of perceived value of the new IS, and change in power and equity due to the new IS. Perceived value of the new IS is the observed gain (surplus of benefits over costs) from the new IS vis-à-vis the old IS (Joshi, 1991; Kahneman & Tversky, 1979). It can create belief about the

apparent advantages of the new IS (Ajzen, 2002). This can make employees open to change the status quo and adopt the new IS (Kim & Kankanhalli, 2009).

Perceived change in power is the assessed increase, maintenance or decrease in power after an IS implementation. Perceived change in equity is the evaluated difference in relative outcomes at three levels: outcomes for self before and after change, outcomes for self vis-à-vis outcomes for the organization, outcomes for self vis-à-vis outcomes for comparable groups or individuals. A perceived increase in power and equity presents a more definite and desirable view of the post IS environment.

OD INTERVENTIONS FOR SUCCESSFUL IS IMPLEMENTATION

The field of OD evolved in mid 1940s in the form of T-groups. Since its evolution, several kinds of OD interventions have been established and practiced (Burke, 2010; French, Bell, & Vohra, 2008; Porras & Silvers, 1991; Ramnarayan & Rao, 2011; Worley & Jamieson, 2008). OD interventions can be classified into two categories based on the level at which they bring about change a) organizational level OD interventions and b) individual level OD interventions.

Organizational level OD interventions identify source of hurdles to change at the structural, process and organizational level, and find appropriate solutions to them. They can be in the form of role analysis (Dayal, 1969), process consultation (Ramnarayan & Rao, 2011), survey feedback (Cummings & Worley, 2012) and action research (French et al., 2008). Individual level OD interventions directly bring about cognitive and affective changes in employees at the individual and group level. They include third-party interventions, human process interventions (Cummings & Worley, 2012), team building interventions (French et al., 2008), and coaching and mentoring (Ramnarayan & Rao, 2011).

Role analysis.

Role analysis brings about improvement by focusing on organizational roles rather than jobs (Dayal, 1969). An employee may perform multiple roles and the same role may be played by several employees. Role analysis acknowledges that roles are dynamic and ambiguous, and require some level of discretion to be performed. Besides, the tasks constituting the roles are interdependent, irrespective of whether they are carried out by the same employee or different employees. Role analysis

helps to identify the potential areas of differences and conflicts between different positions within the organization.

Role analysis allows comparative analysis of current and future roles of employees. In the event of an IS implementation, a comparative analysis can make employees more aware about their responsibilities, duties and challenges in the new environment. It can bring more clarity to them about the change in relationship and task related skills, and organization's expectations from them after IS implementation. The consequent certainty about their future role and its interaction with other roles would equip the organization with reshaping capabilities for an impending change, thus making employees ready to adopt the change (Griffiths et al., 2005).

Role analysis can help explain effectiveness or ineffectiveness of a previous IS implementation. This would enable the organization to become more cognizant about the possible problems that may come up in the course of a new implementation and help them redefine roles such that employees have clarity about organization's expectations from them. This would also make them more prepared for IS implementation. Therefore:
Proposition 1: Role analysis will promote employee readiness for IS implementation.

Process consultation.

Process consultation involves use of techniques by an outside agency to bring about improvement in the organization (Ramnarayan & Rao, 2011). The facilitating role of the agency enables the organization to perceive, understand and act upon the organizational processes. It helps the organization identify and accept problems. Joint collaboration results in suggestions for several alternate solutions to problems. However, the organization has the onus to take the decision on selecting the most appropriate solution.

During an IS implementation, an effective process consultation can equip the organization with the ability to recognize and solve problems being faced at the process level. This would give organizations better ownership and control over any issues during implementation, having a cascading effect on employees. Even if the implementation is carried out by an external service provider, employees would have the opportunity to participate in identifying problems and taking decisions for resolving them. Participative decision making would make them more open to change (Ertürk, 2008).

Process consultation is undertaken at an organization-wide level and involves considerable investment of cost, effort and time. This indicates importance given by the organization to study internal processes, and its willingness to change them. Organization's initiative on process consultation and the resultant actions can demonstrate its sincerity towards the implementation, and thus create the perception of organizational support. This would also make employees more open to IS implementation. Therefore:

Proposition 2: Process consultation will promote employee openness to IS implementation.

Survey feedback.

Survey feedback is an instrument of OD intervention that provides objective information about the organizational functioning to its employees based on the data collected from them (Cummings & Worley, 2012). When communicated through a piecemeal approach, survey feedback allows employees to process the data realistically without getting overwhelmed. When top management takes part in designing surveys and forming feedback work groups based on common concern areas, employees are available and inclined towards attending feedback sessions (Ramnarayan & Rao, 2011). A survey feedback is effective when employees are willing to take action based on it. This happens when the feedback is significant, meaningful, detailed, authentic and easy to understand and interpret. Besides, a timely feedback ensures that the problems being addressed are relevant and data on which they are based is valid.

A survey feedback can enable employees to understand the need for an IS implementation, or the specific problem areas which should be addressed by a new IS (Cummings & Worley, 2012). Availability of this change information, shared by the organization, would make employees more open towards IS implementation (Banas & Wanberg, 2000; Miller et al., 1994). Also, survey feedback can create employee awareness about the problems at different levels and functions of the organization, and communicate appropriateness of new IS, making them more committed to it (Neves, 2009). Besides, a better ownership of the feedback (data is provided by employees themselves) promotes their emotional involvement, enthusiasm and responsibility for the IS implementation.

Survey feedback becomes pertinent in situations in which the organization is using an incumbent IS. Apart from giving an insight into the drawbacks and challenges of using the existing IS, survey feedback also highlights the subjective norms associated with it. Survey data indicates opinions and beliefs of a large number of employees. Self-awareness provided by survey feedback along with appropriate

organizational communication and organizational policies can enable employees to consciously direct their efforts towards reneging existing IS, and transitioning to the new IS. Therefore:

Proposition 3: Survey feedback will promote employee openness and commitment to IS implementation.

Action research.

Action research is an OD intervention that involves the simultaneous and reiterative process of research, problem and solution identification, and commensurate action. It requires iterative cycles of systematic and scientific collection and analysis of organizational data, consideration of alternative actions possible, execution of one action plan, and evaluation of its effectiveness through further data collection and analysis, until a requirement is met or a problem resolved (French et al., 2008). Action research yields success when there is continuous collaboration between different organizational entities and across different hierarchical levels. It requires mutual respect and equalization of power between all participants. An employee driven action research is most effective since employees are the core subject of research and most impacted by the resulting outcomes (Pasmore & Friedlander, 1982). A participative approach also solves problems created by hierarchical controls. Involvement in such a program positively alters the attitude of the key stakeholders towards reaching a resolution.

Action research in an IS implementation gives opportunity to employees to experience the process of change in an incremental manner, identify challenges on the way, explore solutions to them, implement them, assess their effectiveness, and repeat the cycle if required. This fosters employee ownership and responsibility for the new IS, helps employees understand its features, and offers them a chance to contribute at every stage of the implementation. This participative approach can make employees believe in the feasibility of the implementation and sustainability of the new IS in their organization. Besides, it can provide them clarity about the consequences of the IS in the short and long term. Further, it can engage them emotionally in the implementation, and motivate them to invest effort, time and energy for making the IS successful.

Collaboration for action research is likely to occur in an open systems environment. Organizations would ensure that employees understand the impact of change, and are able to participate in the change process with ease. Besides, they would tackle possible issues in a structured manner. Thus, action research would make employees ready for IS implementation (Griffiths et al., 2005; Vakola, 2014). Participation signifies involvement in decision making regarding change.

Employees would feel assured that the organization is willing to spend resources and time to involve them in making decisions. This would make employees open to IS implementation (Ertürk, 2008). Incremental approach to research ensures alignment of change with the organizational mission. When accompanied with appropriate organizational communication, it would make employees committed to IS implementation (Cady & Neubert, 2001; Jaros, 2010). By involving employees and taking their feedback, action research can over time enable a slow but sure change in the subjective norms and make it easier for them to adapt to the new IS. Therefore:

Proposition 4: Action research will promote employee readiness, openness and commitment to IS implementation.

Third-party interventions.

Third-party interventions serve to resolve conflicts between two persons or groups within the organization (Cummings & Worley, 2012). Organization may use different types of third-party interventions depending on different kinds of conflict. When conflict involves large scale issues, it may use arbitration and mediation like pay scales, working conditions and job methods. While arbitration resolves conflict through a formal and legally binding process, mediation resolves it through more informal communication and negotiation process. Organization may also use interventions that facilitate direct interaction between individuals, recognize their personal priorities and analyze issues from all perspectives. Such interventions resolve conflict involving inter-personal problems like personality clashes and misperceptions.

In the course of IS implementation, third-party interventions help deal with disagreements and differences, and resolve issues at the individual and group level. They make employees believe in the organization's capability to handle all challenges that may occur during and post the implementation process. They also convince the employees that the organization cares enough about them to invest effort in addressing their concerns or misgivings, and ensure their satisfaction. Third-party interventions would strengthen perceived social relations and create trust in colleagues and leadership, making employees ready for IS implementation (Kwahk & Kim, 2008). Therefore:

Proposition 5: Third-party interventions will promote employee readiness for IS implementation..

Human process interventions.

Human process interventions seek to enhance the quality of working relationships of employees with each other (Cummings & Worley, 2012). They may concern inter-personal as well as group processes. They can be in the form of feedback, comments, questions and observations. Human process interventions enable employees to perceive, understand and act on the processes occurring in their environment with the objective of improving their inter-personal situation (Schein, 1969). They create awareness about functional roles of individuals and group members in the domains of task execution and relationship maintenance. Besides, they help recognize the nature and implication of group norms.

In the context of IS implementation, human process interventions can help employees realize the way in which their inter-dependent tasks and relationships are expected to be influenced by the change. They can also enable employees to understand the changes required in inter-personal processes like communication, problem solving and decision making. Further, they can help employees comprehend the leadership processes and styles that would be suitable for a successful IS implementation. By creating better awareness about working relationships and how they can be improved in the new IS environment, human process interventions can facilitate an internal locus of control in employees. When employees feel that they can themselves change their environment, they would feel more confident about their ability to make the transition from the existing IS (Banas & Wanberg, 2000), making them more open to adopt the new IS. This would also help them get rid of the incumbent system habit and the resultant inertia. Therefore: *Proposition 6: Human process interventions will promote employee openness to IS implementation.*

Team building interventions.

Team building interventions serve the purpose of improving performance and effectiveness of individuals within a team, and teams within the organization (French et al., 2008). They can be directed towards formal groups (fixed long term work teams) and special groups (newly built teams, task forces, cross-functional teams and committees). They are carried out through diagnostics and developmental instruments (Cummings & Worley, 2012). Diagnostic instruments include surveys, interviews, feedback and meetings. Developmental instruments include coaching, 360-degree feedback, mission and role clarification, strategic planning and stakeholder analysis.

Team building interventions enable team performance assessment, task accomplishment, relationship building and maintenance, and management of team processes and culture. Performance assessment helps to assess the current and desired state of team performance, and diagnose the problems that may be causing the difference. Task accomplishment helps to solve problems, improve decision making, clarify member roles, utilize resources and set goals. Relationship building and maintenance help to resolve conflict, utilize member capabilities and maintain effective inter-personal relations. Management of team processes and culture helps to optimize processes around communication, decision making and task allocation.

Team building interventions are designed such that employees (team members) take the initiative, responsibility and ownership to strengthen task efficiency, problem-solving ability, inter-personal skills and performance. In the process, they help employees understand each other's emotions, experience a sense of influence and belongingness to teams, find alignment between their needs and wants, and team tasks and processes, and comprehend their collective contribution as a team to the organization. In the course of an IS implementation, team-building interventions can create a sense of identification with the team's purpose during change and make members feel competent to deal with it, making them ready for IS implementation (Dick et al., 2012; Kwahk & Kim, 2008). They can also help employees feel satisfied and motivated as team members, making them committed to the IS implementation (Cady & Neubert, 2001; Jaros, 2010). Team-building interventions can thus help to weaken incumbent system habit and create enthusiasm about using the new IS. Therefore:

Proposition 7: Team-building interventions will promote employee readiness and commitment to IS implementation.

Coaching and mentoring.

Coaching and mentoring achieve the purpose of developing individuals by supporting and guiding them through the process of interactions over a period of time (Ramnarayan & Rao, 2011). They are carried out in dyadic relationships, and require mutual trust, mutual understanding and confidentiality to be effective. Employees are willing to be coached and mentored by someone whom they respect and trust. The coach or the mentor can be either the supervisor or a person designated by the organization.

Coaching involves setting challenging performance goals, guiding employees towards them, identifying obstacles on the path and solving them by facilitating appropriate training. It requires the presence of a comfortable environment in which employees feel free to share problems and conflicts. The coach has to clearly

understand strengths and weaknesses of employees with regard to their inter-personal and task performance. Also, the coach has to ensure continuous improvement of employees, provide them the required resources and help them realize their potential.

Mentoring involves providing practical and moral support to employees and taking care of their overall and psychological well-being during their initial phase of adjustment to a new environment. It requires that the employees admire the mentor, are comfortable discussing personal and professional concerns, and are willing to take advice. The mentor has to help employees find solutions to their problems, share experiences that may be helpful, and respond to their emotional needs.

When IS is to be implemented, coaching and mentoring can make employees feel that the organization cares about their personal and professional well-being. It can also make them more aware about the implications of change for themselves. Strong relationship with the coach or the mentor can make employees feel confident about having support during the process of change. Consequently, employees would develop perception of strong social relations within the organization, competence for change, internal locus of control, job motivation and self-efficacy for change. These factors would make employees ready, open and committed to IS implementation (Banas & Wanberg, 2000; Cady & Neubert, 2001; Caldwell et al., 2007; Jaros, 2010; Kwahk & Kim, 2008). Therefore:

Proposition 8: Coaching and mentoring will promote employee readiness, openness and commitment to IS implementation.

DISCUSSION

IS is inevitable for any organization that aims for efficiency, effectiveness, growth, market share, compliance to statutory procedures, or simply survival. It provides multiple benefits like structured and integrated information, standardized processes, optimized operations, transparent transactions, employee accountability, sophisticated data analysis and seamless reporting. However, investment in IS implementation may turn out to be futile if employees do not have the right attitude towards it. Employee attitude is representative of organizational attitude (Amis & Aïssaoui, 2013; Finch, 2013). A poor attitude may reflect in dissatisfaction, group think, resistance and destructive conflict in employees. It can result in inaccessibility to required resources, decision biases, and irresolvable differences leading to failure of the implementation (Van De Ven & Sun, 2011).

Employees' readiness, openness and commitment to an IS implementation initiative can enable them to make a meaningful contribution to it. Employees are responsible for determining the required functionalities of the IS, testing the application through an iterative process, and eventually using it in the most productive manner. If they are not ready, open or committed, this process cannot occur smoothly. As a result, IS may not produce the desired results. Its functionalities may be under-utilized or not utilized, and there may be loss of potential benefits, resulting in failure of the implementation. Therefore, it is imperative for employees to have a deep and positive engagement with the IS implementation. This requires organizations to initiate such OD intervention that bring about the required change in employee attitude. By focusing on the significance of employees, the paper extends IS literature. Extant studies have examined determinants of IS implementation including structural factors like policies, procedures and norms (Harper & Middleton, 2004), and process factors like implementation process (Huang, Newell, & Tansley, 2006). However, employees have not been sufficiently explored as the focal point for IS implementation.

The paper extends understanding about the socio-technical perspective for a successful IS implementation by highlighting the role of OD interventions in this constitutive entanglement (Cecez-Kecmanovic et al., 2014). IS literature has considered socio-technical theory to examine functioning of organizations in terms of human centric business processes (Crick & Chew, 2017) and learning practices (Hayashi & Baranauskas, 2013). IS studies have also used socio-technical approach to analyze the IS implementation. They have discussed implementation as a punctuated change in which different actors and tasks are involved at different levels (Lyytinen & Newman, 2008), and adaptation of IS happens in a non-linear manner (Lyytinen, Newman, & Al-Muharfi, 2009). However, IS literature has paid limited attention to use of socio-technical theory to understand the success of IS implementation. The paper addresses this gap by presenting a conceptual model that proposes the effect of OD interventions on employee attitude towards IS implementation. Taking a change management standpoint, it underscores that an organization can choose to undertake certain OD interventions to influence employee readiness, openness and/or commitment to IS implementation. As per the socio-technical perspective, implementation can be effective when appropriate interventions influencing employees are embedded in it.

The conceptual model presented in the paper can also be understood by comparing it to existing models in the IS and OC literature. Analyzing the model from the standpoint of IS implementation theory suggested by Lapointe and Rivard (2007), organizations can initiate interventions at the project chartering stage so that employees are influenced in the desirable manner during configuration and roll out.

This would prevent resistance at the group level and facilitate routinization at the organizational level, which would let the implementation move forward.

Besides, existing literature on IS implementation has discussed models exploring the relationship of institutional, contextual, social and psychological factors to employee attitude (Armenakis et al., 2011; Chau & Hu, 2002; Kim & Kankanhalli, 2009; Lapointe & Rivard, 2005; Lewis et al., 2003; Lin et al., 2018; Sabherwal, Jeyaraj, & Chowa, 2006; Venkatesh, 2000). However, these models have been more analytical, rather than constructive, in nature. None of them have investigated possible measures or actions that organizations can proactively take to favorably influence employee attitude. By considering OD interventions, the model in this paper brings a change management approach, and underscores the multiple ways in which organizations can purposefully impact employees.

Further, the model extends the work on change management strategies by Aladwani (2005). He had suggested a process-oriented approach for the organization to deal with employee resistance to ERP implementation. As per his model, implementation has a knowledge formulation, strategy implementation and status evaluation phase. In the strategy implementation phase, organization can initiate change management strategies like awareness, feelings and adoption strategies to help employees manage their risk perceptions and develop required habits. Drawing comparison between the two models, OD interventions represent these change management strategies that impact employees' level of awareness, extent of feelings and ability for adoption of IS, and therefore influence their readiness, openness and commitment to change.

The paper also extends the OD literature by suggesting the influence of different OD interventions on specific employee attitudes to change. Existing OD literature has mainly discussed the process through which interventions are carried out (Cummings & Worley, 2012; French et al., 2008; Ramnarayan & Rao, 2011). It has not paid sufficient attention to the actual impact they can have on employees. By proposing effect on specific attitudes, the paper paves the way for empirical research on consequences of different OD interventions.

PRACTICAL IMPLICATIONS

Designing an effective intervention may be challenging since stakeholders at different organizational positions may hold incongruent perspectives with regard to the new IS (Hafeez & Hussain, 2008). Top management may perceive IS as a channel for controlling organizational activities and defining business strategies.

Middle management may see it as a mechanism to increase efficiency and accountability. Lower management may view it as a threat to their employment, ways of working and professional growth. For the IT department, IS may be a way to create credibility, visibility and dependence within the organization. For the users, it may appear to be a platform to enhance their skills and competencies or an unnecessary burden to manage, depending on their individual personality and preferences. Therefore, organizations need to design OD interventions based on a careful and comprehensive assessment of these perspectives. They should also have a well thought out strategy for their execution in order to produce the desired change.

OD interventions are carried out by OD practitioners, who may be either employees or external consultants. In both cases, OD practitioners can face obstacles in execution due to reasons like absence of trust, poor sense of ownership and lack of awareness about organizational processes and culture (Vohra & Nair, 2009). To deal with such obstacles, OD practitioners have to take certain actions. They need to establish a strong relationship with key decision makers for building mutual trust and commitment. They also need to maintain a neutral and objective association with employees who may be affected by the proposed change in any way. Their interaction with employees has to be free of pre-conceived notions and biases since that can color their perception and judgment. Besides, OD practitioners need to be open and attentive to informal as well as formal sources of information and power. Finally, they need to make the employees in the interventions comfortable enough to be honest in their response.

Although the purpose of OD interventions is to facilitate an enterprise-wide change, the impetus and the roadmap for the interventions can come about only through a top-down approach within the organization. Therefore, the top leadership has to be fully involved and committed to organizational development. Besides, the management has to be primarily responsible for initiating, designing and executing the interventions.

RESEARCH AVENUES

This paper presents several avenues for research in future. Readiness, openness and commitment to change are employee attitudes that are more relevant in the initial stage of IS implementation. However, certain employee attitudes become pertinent in the later stages or post the implementation, like acceptance of change. Studies can be conducted to identify the OD interventions relevant to such attitudes to change. This would provide a comprehensive understanding about the

organizational and individual factors and interventions that are salient to IS implementation. Besides, empirical research can be carried out to explore the impact of different OD interventions on employee attitudes. For this purpose, a series of studies can be conducted in organizations implementing IS.

Further, a comparative analysis of the different OD interventions can be done in terms of their impact on IS implementation. The actual interventions carried out in organizations can be evaluated by using multiple measures for data analysis, creating structured interpretation from insights and assessing immersion of OD values throughout the organization (Church, 2017). This would further understanding about the interventions most likely to succeed. Finally, future research can investigate how different aspects of employee attitudes (readiness, openness, commitment) can influence effectiveness of OD interventions. This would provide interesting insights into the dynamics of the relation between OD interventions and employee attitudes.

CONCLUSION

An IS is associated with large scale changes at the organizational level in areas like functional processes, reporting and analytics, and sometimes the business model itself (e.g. ecommerce). An IS implementation is successful when these changes occur as intended, which is possible only when employees are ready, open and committed to change. OD interventions facilitate this change in employee attitude. They address employee concerns regarding change, and help them comprehend and deal with the change process. This enables employees to adapt to the change, and thus ensures effective implementation of the IS.

The continuously evolving nature of technology signifies that the role of IS in organizational activities would only increase in the coming years. Moreover, the changing nature of work, data and workforce composition would bring about a shift in emphasis of the organization towards employee talent and digital operations (Church & Burke, 2017). Under such conditions, attitude of employees would become increasingly instrumental for success of IS implementation. Consequently, OD interventions would become all the more pertinent for organizations. It is hoped that this paper enhances understanding about OD interventions as tools for managing employee attitude, and takes forward the discourse on the success of IS in the desired direction.

REFERENCES

Ajzen, I. (2002). Perceived Behavioral Control , Self-Efficacy , Locus of Control , and the Theory of Planned Behavior1. *Journal of Applied Social Psychology*, *32*(4), 665–683.

Aladwani, A. M. (2005). Change management strategies for successful ERP implementation. *Business Process Management Journal*, *7*(3), 266–275.

Amis, J. M., & Aïssaoui, R. (2013). Readiness for Change: An Institutional Perspective. *Journal of Change Management*, *13*(1), 69–95. https://doi.org/10.1080/14697017.2013.76843

Appelbaum, S. H. (2010). Socio-technical systems theory: An intervention strategy for organizational development. *Management Decision*, *35*(6), 452–463.

Armenakis, A. A., Harris, S. G., & Mossholder, K. W. (1993a). Creating Readiness for Organizational Change. *Human Relations*, *46*(6), 681–704.

Armenakis, A. A., Harris, S. G., & Mossholder, K. W. (1993b). Creating Readiness for Organizational Change. *Human Relations*, *46*(6), 681–704. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=12149022&site=ehost-live

Armenakis, A. A., Oreg, S., & Vakola, M. (2011). Change Recipients' Reactions to Organizational Change: A 60-Year Review of Quantitative Studies. *The Journal of Applied Behavioral Science*, *47*(4), 461–524. https://doi.org/10.1177/0021886310396550

Axtell, C., Wall, T., Stride, C., Pepper, K., Clegg, C., Gardner, P., & Bolden, R. (2002). Familiarity breeds content: The impact of exposure to change on employee openness and well-being. *Journal of Occupational & Organizational Psychology*, *75*(2), 217–231.

Banas, J. T., & Wanberg, C. R. (2000). Predictors and outcomes of openness to changes in a reorganizing workplace. *Journal of Applied Psychology*, *85*(1), 132–42. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10740964

Bhattacherjee, A., & Premkumar, G. (2004). Understanding changes in belief and

attitude toward information technology usage: A theoretical model and longitudinal test. *MIS Quarterly*, *28*(2), 229–254. https://doi.org/Article

Bouckenooghe, D. (2010). Positioning Change Recipients' Attitudes Toward Change in the Organizational Change Literature. *The Journal of Applied Behavioral Science*, *46*(4), 500–531. https://doi.org/10.1177/0021886310367944

Bradford, D. L., & Burke, W. W. (2004). Introduction: Is OD in crisis? *The Journal of Applied Behavioral Science*, *40*(4), 369–373. https://doi.org/10.1177/0021886304270821

Bruque, S., Moyano, J., & Eisenberg, J. (2008). Individual Adaptation to IT-Induced Change: The Role of Social Networks. *Journal of Management Information Systems*, *25*(3), 177–206. https://doi.org/10.2753/MIS0742-1222250305

Burke. (2010). A Perspective on the Field of Organization Development and Change: The Zeigarnik Effect. *The Journal of Applied Behavioral Science*, *47*(2), 143–167. https://doi.org/10.1177/0021886310388161

Cady, S. H., & Neubert, M. J. (2001). Program commitment : A multi-study longitudinal field investigation of its impact and antecedents. *Personnel Psychology*, *54*, 421–448.

Caldwell, S. D., Fedor, D. B., & Herold, D. M. (2007). Beyond Change Management: A Multilevel Investigation of Contextual and Personal Influences on Employees' Commitment to Change. *Journal of Applied Psychology*, *92*, 942–51. https://doi.org/10.1037/0021-9010.92.4.942

Caldwell, S. D., Fedor, D. B., Herold, D. M., & Liu, Y. (2008). The effects of transformational and change leadership on employees' commitment to a change: a multilevel study. *Journal of Applied Psychology*, *93*, 346–57. https://doi.org/10.1037/0021-9010.93.2.346

Campbell, R. H., & Grimshaw, M. (2016). User resistance to information system implementations: A dual-mode processing perspective. *Information Systems Management*, *33*(2), 179–195. https://doi.org/10.1080/10580530.2016.1155951

Cecez-Kecmanovic, D., Galliers, R., Henfridsson, O., Newell, S., & Vidgen, R. (2014). The sociomateriality of information systems: Current status, future

directions. *MIS Quarterly*, *38*(3), 809–830.
https://doi.org/10.1016/j.infoandorg.2013.02.001

Chaikan, S., & Stangor, C. (1987). Attitudes and attitude change. *Annual Review of Psychology*, *38*, 575–630.

Chau, P. Y. K., & Hu, P. J. (2002). Examining a model of information technology acceptance by individual professionals : An exploratory study. *Journal of Management Information System*, *18*(4), 191–229.

Choi, M. (2011). Employees' attitudes toward organizational change: A literature review. *Human Resource Management*, *50*(4), 479–500.
https://doi.org/10.1002/hrm

Church, A. H. (2017). The art and science of evaluating organization development interventions. *OD Practitioner*, *49*(2), 26–36.

Church, A. H., & Burke, W. W. (2017). Four trends shaping the future of organizations and organization development. *OD Practitioner*, *49*(3), 14–22.

Collerette, P., Legris, P., & Manghi, M. (2006). A successful IT change in a police service. *Journal of Change Management*, *6*(2), 159–179.

Compeau, D., Higgins, A., Huff, S., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS Quarterly*, *23*(2), 145–158.
https://doi.org/10.2307/249749

Conway, E., & Monks, K. (2008). HR practices and commitment to change: An employee-level analysis. *Human Resource Management Journal*, *18*(1), 72–89.

Crick, C., & Chew, E. K. (2017). Business processes in the agile organisation: A socio-technical perspective. *Software and Systems Modeling*, *16*(3), 631–648. https://doi.org/10.1007/s10270-015-0506-9

Cummings, T. G., & Worley, C. G. (2012). *Theory of Organization Development and Change* (9th ed.). New Delhi: Cengage Learning.

Dayal, I. (1969). Role analysis technique in job descriptions. *California Management Review*, *11*(4), 47–50.

Devos, G., Buelens, M., & Bouckenooghe, D. (2007). Contribution of content, context, and process to understanding openness to organizational change: Two experimental simulation studies. *Journal of Social Psychology*, *147*(6), 607–630.

Dick, R. Van, Drzensky, F., & Egold, N. (2012). Ready for a Change ? A Longitudinal Study of Antecedents, Consequences and Contingencies of Readiness for Change. *Journal of Change Management*, *12*(October), 37–41.

Ertürk, A. (2008). A trust-based approach to promote employees' openness to organizational change in Turkey. *International Journal of Manpower*, *29*(5), 462–483. https://doi.org/10.1108/01437720810888580

Finch, E. (2013). Change Readiness: A Multilevel Review. *Journal of Management*, *39*(1), 110–135. https://doi.org/10.1002/9781119967316.ch2

French, W. L., Bell, C. H., & Vohra, V. (2008). *Organization Development:Behavioral Science Interventions For Organizational Improvement* (6th ed.). New Delhi, India: Prentice Hall.

Gaskin, J., Berente, N., Lyytinen, K., & Yoo, Y. (2014). Toward generalizable sociomaterial inquiry: A computational approach for zooming in and out of sociomaterial routines. *MIS Quarterly*, *38*(3), 849–871. https://doi.org/10.25300/MISQ/2014/38.3.10

Ghobakhloo, M., & Tang, S. H. (2015). Information system success among manufacturing SMEs: Case of developing countries. *Information Technology for Development*, *21*(4), 573–600. https://doi.org/10.1080/02681102.2014.996201

Griffiths, A., Jimmieson, N. L., & Jones, R. A. (2005). The impact of organizational culture and reshaping capabilities on change implementation success : The mediating role of readiness for change. *Journal of Management Studies*, *42*(2), 361–386.

Gurtoo, A., & Tripathy, A. (2000). Assessing workers' attitude towards technological change: Scale Construction. *Indian Journal of Industrial Relations*, *35*(4), 519–531. https://doi.org/10.2307/27767683

Hafeez, K., & Hussain, Z. (2008). Changing Attitudes and Behavior of Stakeholders During an Information Systems-Led Organizational Change.

The Journal of Applied Behavioral Science, *44*(4), 490–513. https://doi.org/10.1177/0021886308326564

Harper, K., & Middleton, P. (2004). Organizational alignment: a precondition for information systems success? *Journal of Change Management*, *4*(4), 327–338. https://doi.org/10.1080/1469701042000303820

Hayashi, E. C. S., & Baranauskas, M. C. C. (2013). Affectibility in educational technologies : A socio-technical perspective for design. *Educational Technology & Society*, *16*(1), 57–68.

Herscovitch, L., & Meyer, J. (2002). Commitment to organizational change: Extension of a three-component model. *Journal of Applied Psychology*, *87*, 474–487. https://doi.org/10.1037//0021-9010.87.3.474

Hirschheim, R., & Newman, M. (1988). Information Systems and User Resistance: Theory and Practice. *The Computer Journal*, *31*(5), 398–408. https://doi.org/10.1017/CBO9781107415324.004

Howard, G. (2017). IT-Related Organisational Change: An IS Theory of Reciprocal Change. *5th International Conference on Management Leadership and Governance*, *5*(1), 183–190.

Huang, J., Newell, S., & Tansley, C. (2006). ERP Implementation : A Knowledge Integration Challenge for the Project Team. *Knowledge and Process Management*, *13*(4), 227–238. https://doi.org/10.1002/kpm

Jaros, S. J. (2010). Commitment to organizational change: A critical review. *Journal of Change Management*, *10*, 79–108. https://doi.org/10.1080/14697010903549457

Jiang, J. J., Muhanna, W. a, & Klein, G. (2000). User resistance and strategies for promoting acceptance across system types. *Information & Management*, *37*(1), 25–36. https://doi.org/10.1016/S0378-7206(99)00032-4

Jones, M. (2014). A matter of life and death: exploring conceptualizations of sociomateriality in the context of critical care. *MIS Quarterly*, *38*(3), 895–925.

Joshi, K. (1991). A model of users' perspective on change: The case of information systems technology implementation. *MIS Quarterly*, *15*(2), 229–242.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*, 263–292.

Karahanna, E., & Polites, G. L. (2012). Shackled To The Status Quo: The Inhibiting Effects Of Incumbent System Habit, Switching Costs, And Inertia On New System Acceptance. *MIS Quarterly*, *36*(1), 21–42.

Kim, H.-W., & Kankanhalli, A. (2009). Investigating User Resistance To Information Systems Implementation: A Status Quo Bias Perspective. *MIS Quarterly*, *33*(3), 567–582.

Kwahk, K. Y., & Kim, H. W. (2008). Managing readiness in enterprise systems-driven organizational change. *Behaviour & Information Technology*, *27*(1), 79–87.

Lapointe, L., & Rivard, S. (2005). A multilevel model of resistance to information technology implementation. *MIS Quarterly*, *29*(3), 461–491.

Lapointe, L., & Rivard, S. (2007). A triple take on information system implementation. *Organization Science*, *18*(1), 89–107.

Lewis, W., Agarwal, R., & Sambamurthy, V. (2003). Sources of influence on beliefs about information technology use: An empirical study of knowledge workers. *MIS Quarterly*, *27*(4), 657–678.

Lin, T.-C., Huang, S.-L., & Chiang, S.-C. (2018). User resistance to the implementation of information systems: A psychological contract breach perspective. *Journal of the Association for Information Systems*, *19*(4), 306–332. https://doi.org/10.17705/1jais.00493

Lyytinen, K., & Newman, M. (2008). Explaining information systems change: A punctuated socio-technical change model. *European Journal of Information Systems*, *17*(6), 589–613. https://doi.org/10.1057/ejis.2008.50

Lyytinen, K., Newman, M., & Al-Muharfi, A. R. A. (2009). Institutionalizing enterprise resource planning in the Saudi steel industry: A punctuated socio-technical analysis. *Journal of Information Technology*, *24*(4), 286–304. https://doi.org/10.1057/jit.2009.14

Markus, M. L. (1983). Power, politics, and MIS implementation. In *Communications of the ACM* (Vol. 26, pp. 430–444). https://doi.org/10.1145/358141.358148

Martinko, M. J., Henry, J. W., & Zmud, R. W. (1996). An attributional explanation of individual resistance to the introduction of information technologies in the workplace. *Behaviour & Information Technology*, *15*(5), 313–330. https://doi.org/10.1080/014492996120085a

Michaelis, B., Stegmaier, R., & Sonntag, K. (2010). Shedding light on followers' innovation imple- mentation behavior: The role of transformational leadership, commitment to change, and climate for initiative. *Journal of Managerial Psychology*, *25*(4), 408–429.

Miller, V. D., Johnson, J. R., & Grau, J. (1994). Antecedents to willingness to participate in a planned organizational change. *Journal of Applied Communication Research*, *22*(1), 59–80.

Neves, P. (2009). Readiness for change: Contributions for employee's level of individual change and turnover intentions. *Journal of Change Management*, *9*(2), 215–231. https://doi.org/10.1080/14697010902879178

Orlikowski, W. J. (2007). Sociomaterial Practices: Exploring Technology at Work. *Organization Studies*, *28*(9), 1435–1448. https://doi.org/10.1177/0170840607081138

Pasmore, W. A., & Friedlander, F. (1982). An action-research program for increasing employee involvement in problem solving. *Administrative Science Quarterly*, *27*, 343–362.

Porras, J. I., & Silvers, R. C. (1991). Organization development and transformation. *Annual Review of Psychology*, *42*, 51–78.

Ramnarayan, S., & Rao, T. V. (2011). *Organization Development: Accelerating learning and transformation* (5th ed.). New Delhi: Sage Publications.

Rivard, S., & Lapointe, L. (2012). Information Technology Implementers' Responses To User Resistance: Nature and Effects. *MIS Quarterly*, *36*(3), 897-A5. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=78168532&lang=pt-br&site=ehost-live

Sabherwal, R., Jeyaraj, A., & Chowa, C. (2006). Information System Success : Individual Organizational Determinants. *Management Science*, *52*(12), 1849–1864. https://doi.org/10.1287/mnsc.l060.0583

Samuelson, W., & Zeckhauser, R. (1988). Status Quo Bias in Decision Making.

Journal of Risk and Uncertainity, *59*(1), 7–59.

Schein, E. (1969). *Process consultation: Its role in organization development*. Addison-Wesley.

Seo, M.-G., Shin, J., & Taylor, S. (2012). Resources for Change : The Relationships of Organizational Inducements and Psychological Resilience to Employees ' Attitudes and Behaviors toward Organizational Change. *Academy of Management Journal*, *55*(3), 727–748.

Shum, P., Bove, L., & Auh, S. (2008). Employees' affective commitment to change: The key to successful CRM implementation. *European Journal of Marketing*, *42*(11/12), 1346–1371. https://doi.org/10.1108/03090560810903709

Sykes, T. A. (2015). Support structures and their impacts on employee outcomes: A longitudinal field study of an enterprise system implementation. *MIS Quarterly*, *39*(2), 473–495. https://doi.org/10.25300/MISQ/2015/39.2.09

Sykes, T. A., Venkatesh, V., & Johnson, J. L. (2014). Enterprise system implementation and employee job performance: Understanding the role of advice networks. *MIS Quarterly*, *38*(1), 51-A4. https://doi.org/10.25300/MISQ/2014/38.1.03

Titah, R., & Barki, H. (2009). Nonlinearities between attitude and subjective norms in information technology acceptance: A negative synergy? *MIS Quarterly*, *33*(4), 827–844.

Trist, E. L., & Bamforth, K. W. (1951). Some Social and Psychological Consequences of the Longxwall Method of Coal-Getting: An Examination of the Psychological Situation and Defences of a Work Group in Relation to the Social Structure and Technological Content of the Work System. *Human Relations*, *4*(1), 3–38. https://doi.org/10.1177/001872675100400101

Vakola, M. (2014). What's in there for me? Individual readiness to change and the perceived impact of organizational change. *Leadership and Organization Development Journal*, *35*(3), 195–209. https://doi.org/10.1108/LODJ-05-2012-0064

Van De Ven, A. H., & Sun, K. (2011). Breakdowns in implementing models of organization change. *Academy of Management Perspectives*, *25*(3), 58–74.

Retrieved from http://energy.gov/sites/prod/files/2014/01/f7/OCIO-Org-Chart_0.pdf

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, *11*(4), 342–365. https://doi.org/10.1287/isre.11.4.342.11872

Venters, W., Oborn, E., & Barrett, M. (2014). A trichordal temporal approach to digital coordination: The sociomaterial mangling of the CERN grid. *MIS Quarterly*, *38*(3), 927–949. https://doi.org/10.1227/01.NEU.0000156796.28536.6D

Vohra, N., & Nair, N. (2009). Bringing about Large-Scale Change in an Engineering College: Lessons and Implications. *Organization Development Journal*, *27*(4), 57

Volkoff, O., Strong, D. M., & Elmes, M. B. (2007). Technological Embeddedness and Organizational Change. *Organization Science*, *18*(5), 832–848. https://doi.org/10.1287/orsc.1070.0288

Worley, C. G., & Jamieson, D. W. (2008). The practice of organization development. In T. G. Cummings (Ed.), *Handbook of Organizational Development* (pp. 99–122). New Delhi: Sage Publications.