

**THE IMPACT OF CHANGE MESSAGES ON THE COMMITMENT TO A
CHANGE: AN ANALYSIS OF IT PROFESSIONALS IN INDIA AND MALAYSIA**

By

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ABSTRACT

Affective commitment of individuals is critical for the success of an organizational change initiative. In order to secure this desired form of commitment, managers spend a great deal of time and money implementing elaborate change management and communication strategies, often with little success. Three important types of change messages that are expected to drive commitment to change are: (1) the organizational need for change (discrepancy), (2) the support of organizational leaders (principal support), and (3) the benefit of the change to the individual (personal valence). In this quantitative survey-based study conducted at a large global bank, we analyzed the perceptions of 575 information technology (IT) software professionals in India and Malaysia regarding an enterprise-wide change. The goal of this research is to understand the impact of these change messages on the affective commitments to change. Further, we also look to understand the impact on continuance commitment to change, which is a less internalized, obligatory commitment. Findings are organized through a push-pull framework for change communication that categorizes change messages as either “pull” or “push”, depending on the nature of their impact on the affective commitment (want to change) and the continuance commitment (have to change). Through structural equation modeling analysis, we show that change messages of discrepancy and support are “push” messages (since they either increase the negative desire for change or decrease the positive desire for change, which are unintended consequences). Only valence messages demonstrate a “pull” effect (increases the positive desire for change and, at the same time, lowers the negative desire for change). These findings clearly indicate that to create a positive desire for change (affective commitment) among individuals, managers should focus more on the personal valence as a central change-communication strategy. Our findings also test the robustness of seminal change-message and commitment-to-change scales in a multicultural setting, and highlight specific areas where these scales may need to be adjusted through future studies.

Keywords: change, communication, message, commitment.

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Equal motivation came from various senior executives with whom I have worked over the years (some opened their organization for this research study) who shared their sentiment on how difficult it is to push a change (especially a large, IT-enabled process change) through an organization unless the people at the bottom of the organizational pyramid want to change. Their names would reveal the identity of the organization, but their practical insights have shaped this research in many ways. I just hope my research findings can provide some practical ideas that will help improve the effectiveness of their change initiatives.

Tracing others' research on the positive desire to change led me to work done by Professor John P. Meyer of the University of Western Ontario, who was very helpful in providing initial input and who shared key articles that helped clarify the model.

On almost a weekly basis, discussions with Professor Alladi Venkatesh turned into an exciting dialogue that helped me to think like a researcher and scholar and to trust my data, looking for interesting micro-patterns rather than one big finding. I cannot thank him enough for the valuable time he spent with me over long, morning-coffee sessions where he patiently listened to my confusing thoughts and pointed me in new and exciting directions that helped me keep the research moving forward.

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Professor Jagdip Singh is a grand master when it comes to quantitative methods and statistical techniques. He opened my eyes to the rigor of analysis that is needed to produce high-quality, scholarly work.

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INTRODUCTION AND PROBLEM STATEMENT

Modern organizations need their employees to adapt to constant change initiatives with a minimal amount of disruption. However, dysfunctional reactions to change, in terms of poor commitment to change, appear far more prevalent than the authentic embracing of new changes (Fedor, 2006). Therefore, organizations spend inordinate amounts of time, effort, and capital in building suitable change messages to achieve better acceptance of each change. While the importance of an individual's commitment to the success of a change has been well established in the literature (Meyer & Allen, 1996; Meyer & Herscovitch, 2001), there has been little research on the impact of change messages on individual commitments to change.

The purpose of this study is to determine how various change messages (Armenakis et al., 2007), through which individuals make sense of the change, affect their positive or negative commitment towards the change. The change message may be generated through various communication channels, both formal and informal. Rather than having to "push" the change into the organization against a lack of employee support, management would typically prefer that employees "pull" (embrace change willingly) and even go beyond the call of duty in ensuring its success (Herscovitch & Meyer, 2002).

Commitment to change is particularly important, given the speed and complexity of change in a distributed, global business environment. The command and control model of shaping employees' behaviors and attitudes at work (Arthur, 1994) is giving way to a model of developing committed employees who can be trusted to use their discretion to carry out job tasks in ways that are consistent with changing organizational goals. Having a committed workforce is becoming a competitive advantage in the industry, and various studies (Arthur,

1994; Huselid, 1995; Macduffie, 1995) have shown that commitment strategies are associated with lower levels of turnover and higher levels of productivity and corporate financial success. Commitment has also been shown to be positively associated with improved organizational functioning (Meyer & Allen, 1997), and even small changes in employee performance often have a significant impact on the bottom line (Cascio, 1982).

The research objective of this study is to explore how managers can proactively manage the change messages that contribute to the shaping of sentiments and beliefs about the change. If the relationship between various change messages and types of commitment to change can be understood, these change messages can become the levers through which positive employee commitment to change can be enhanced and negative commitment to change can be minimized.

To better understand the impact of change messages on individual commitment to change, we surveyed 575 software developers from two business units (India and Malaysia) of a global financial organization to understand individual perspectives on both the change messages and commitments related to a particular change. This paper is organized as follows: first, we review the literature on commitment to change and change messages, then we develop our research model, present our analysis of 575 responses, and report our findings. We conclude the paper with implications for research and practice.

Commitment to Change

The concept of commitment has evolved over the last three decades, starting with Porter, Steers, Mowday, & Boulian (1974) who conceptualized commitment with the following factors: (a) strong belief in and acceptance of the organization's goals and values, (b) a willingness to exert considerable effort on behalf of the organization, and (c) a definite

desire to maintain organizational membership. Organizational commitment has been shown to be significantly related to organizational adaptability (Angle & Perry, 1981).

More current research conceptualized commitment as a psychological state or mindset that increases the likelihood that an employee will maintain membership in an organization (Meyer, 1990; Meyer, 1991). They used the labels “affective commitment” to describe the desire to remain; “continuance commitment” to describe the perceived cost of leaving; and “normative commitment” for the perceived obligation to remain. These factors enable the differentiation among commitment forms that are characterized by different mindsets, while simultaneously allowing for individuals to experience varying combinations of all three mindsets. Together, these three components reflect what they referred as an employee’s commitment profile.

Although all three components of organizational commitment reduce the likelihood that employees will leave the organization, perhaps the most important reason for distinguishing among them is that they can have quite different implications for on-the-job behavior.

Meyer (1991) argued that employees who want to remain (affective commitment) are likely to go the extra mile, those who remain out of a sense of obligation (normative commitment) will go as far as it feels part of their duty against the benefits received, while employees who remain primarily to avoid costs (continuance commitment) may do little more than is required to maintain employment. It has been shown that affective commitment correlates positively and continuous commitment correlates negatively with multiple measures of performance (Meyer, Paunonen, Gellatly, Goffin & Jackson, 1989).

Another desired outcome of commitment is the employee's willingness to participate in the organizational change initiatives. Using the original commitment scale, Herscovitch & Meyer (2002) customized commitment scale for the purpose of measuring commitment to change and established it as a valid construct.

It is also important to recognize other employee's psychological reactions to change, such as openness to change (Miller, Johnson & Grau, 1994; Wanberg & Banas, 2000b), readiness for change (Armenakis, Harris & Mossholder, 1993), and coping with change (Judge, Thoresen, Pucik & Welbourne, 1999). These psychological reactions may be related to the commitment such that openness to change—a willingness to support change as well as anticipating a positive affect about a change (Miller, Johnson & Grau, 1994; Wanberg & Banas, 2000b)—and readiness to change—a perception that change is needed and that the organization has the ability to change (Armenakis, Harris & Mossholder, 1993)—will be positively related to affective commitment to change. In order for change to be successful, it is critical that affective commitment to change is broadly present among the employee base; otherwise, change will not likely get implemented, adopted, or sustained.

Whether mere compliance is sufficient will depend on how clearly the requirements for change can be spelled out, how closely behavior can be monitored, and how effectively management can tie rewards to desired behavior. Given that effective implementation of change often involves some trial and error, that reductions with the managerial ranks often require greater employee autonomy, and that it is often difficult to monitor and reward desired behavior, it is very likely that mere compliance will not be sufficient (Herscovitch & Meyer, 2002).

Change Messages

Most change-management programs now have communication as their dominant theme (Stewart, 1999). Many surveys have shown that most people in the organization want improved communication and that such improvements are correlated with job satisfaction

and commitment (Hargie & Tourish, 1996b; Hargie, 1996a; Tourish, 1997). Research findings clearly indicate that improved communication brings large-scale organizational benefits. For example, Hansen (1988) found that the presence of good interpersonal relationships between managers and staff was three times more powerful in predicting profitability in 40 major corporations over a five-year period than the four next most powerful variables combined: market share, capital intensity, firm size, and sales growth rate. In a much wider study, Clampitt (1993) concluded that benefits obtained from quality internal communication include improved productivity, higher quality of service and products, increased level of innovation, and reduced costs. In addition to some of the above findings, Snyder & Morris (1984) found a positive correlation between employee perceptions of communication and job satisfaction that, in turn, was correlated with overall organizational effectiveness. Similarly, Kanter (1988) argued that communication within and between organizations and sections of organizations stimulates higher levels of innovation. This change-related innovation can be stifled when groups work in isolation and when people share minimal information across inflexible boundaries.

Employee commitment is also positively correlated with employee perception of legitimate modes of participation and the incentives to encourage maximum participation (Brewer, 1996). Miller, Ellis, Zook, & Lyles (1990) found that improved participation impacts organizational outcomes because participation in decision making and the existence of social support reduces workplace stress and burnout while raising the level of satisfaction and commitment.

In any organization, targets of the change try to make sense of the transformation based on what they hear, see, and experience; and they formulate their beliefs that become

part of their process of deciding whether to support or resist the change. A belief is an opinion or conviction about the truth of something that may not be readily obvious or subject to systematic verification. The beliefs that have been identified as being most significant to an organizational change are discrepancy, appropriateness, efficacy, principal support, and personal valence (Armenakis, Bernerth, Pitts & Walker, 2007). Change messages are typically exchanged through social interaction between various levels of the organization (top leaders, change agents, supervisors, and peers). These messages are typically transmitted through various influence strategies such as persuasive communication, active participation, human resource practices, and rites and ceremonies, depending on the need or life-cycle stage of the change initiative.

By understanding the active role of change recipients in sensemaking, we can better understand the resistance process.

Change recipients are not solely passive recipients of change. They play active roles in organizational change processes—making sense of them, having feelings about them, and judging them—and these activities of theirs encompass much more than “resistance.” It is crucial for change agents and for change researchers alike to develop more adequate understanding of the roles that recipients’ sensemaking and affect play in change initiatives (Bartunek et al., 2006).

As the content and effectiveness of the change message is critical for the recipient’s sensemaking, we argue that the form and nature of the change message will have a significant impact on an individual’s commitment to a given change.

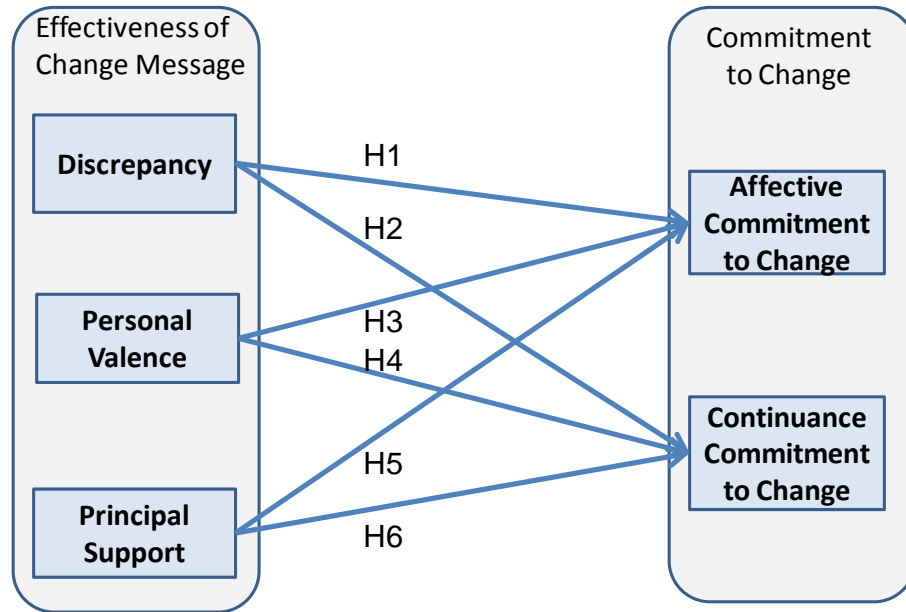
Relationship between Change Messages and Commitment to Change

In the previous sections, we have established the importance of commitment to change, particularly affective commitment to change, to the success of change initiatives. We have also established the importance of change messages, and we concluded with the central

thesis of this research: the content and effectiveness of specific change messages can affect the commitment to change of individuals. In other words, the effectiveness of a change message can be determined through its impact on the nature of the commitment towards the change. We chose three change messages to drive our research: (1) the support of organizational leaders (principal support), (2) the organizational need for change (discrepancy), and (3) the favorable relevance to the individual of the change (personal valence) (Armenakis et al., 2007). As dependent variables, we leveraged the well-established constructs relating to affective and continuance commitments to change (Meyer, 1991). Figure 1 below illustrates the research model that we developed in order to test this argument.

Here it is important to note that we did not appropriate the full instruments of Armenakis et al (2007) and Meyer (2002). Due to a combination of the literature review (Armenakis, Bernerth, Pitts, & Walker, 2007) with the content analysis of questions in the study and the pilot study, we decided not to use the appropriateness and efficacy change messages in our research study due to their close similarity to the commitment-to-change construct definitions and items. Further, Meyer's normative commitment construct has similarly been criticized for having limited discriminant validity from the other constructs in their commitment measure (Ko et al., 1997). . Based on this work, we chose to focus primarily on well-established constructs from both instruments.

FIGURE 1
Hypothesis Model to Test the Relationship between Change Messages and Commitment to Change



Discrepancy establishes a sense of urgency; more importantly, people have to believe that the discrepancy is serious, important, and that some change is needed (Armenakis, Bernerth, Pitts, & Walker, 2007). Various research studies (Bandura, 1986; Bartunek et al., 2006; Kotter, 1995; Nadler, 1989; Pettigrew, 1987; Rafferty & Griffin, 2006; Rousseau, 1999) establish that employees must believe that there is a need for change; otherwise, the motive for change may be interpreted as arbitrary. Therefore, our first two hypotheses are as follows:

Hypothesis 1. A discrepancy change message will be positively related to affective commitment to change.

Hypothesis 2. A discrepancy change message will be positively related to continuance commitment to change.

Valence belief has its roots in work on motivation (Vroom, 1964) and refers to the perspective of the change target regarding the attractiveness associated with the outcome of the change. Valence can be further segmented into extrinsic and intrinsic parts with extrinsic valence being the rewards or benefits realized from adopting the new behaviors (such as a new incentive system) and intrinsic valence including satisfactions like self-actualization that may come through people having more autonomy as a result of the change initiative (Morse & Reimer, 1956). Intrinsic valence is considered important in change initiatives (Bandura, 1986), so both need to be considered together when understanding the impact of valence during change. There are more-recent, published research studies on valence (Bartunek et al., 2006; Fedor, 2006; Van Dam, 2005; Wanberg & Banas, 2000a) under various contexts, such as the role of valence in job changes of hospital employees where the findings showed that attitudes towards job changes were related to beliefs about expected extrinsic and intrinsic benefits and costs (Van Dam, 2005).

Given that the effective implementation of change often involves some trial and error and usually creates more work for the employees up front when they are dealing with the existing day-to-day situation as well as trying to make sense of how to move forward with the new change, it becomes important for them to see personal benefits as well. Typically, employees assume that the leadership driving the change is already convinced of the organizational benefits but that they may not have considered equally the benefits to the employees. Therefore, our hypotheses for the personal valence change message are as follows:

Hypothesis 3. A personal valence change message will be positively related to affective commitment to change.

Hypothesis 4. A personal valence change message will be positively related to continuance commitment to change.

Empirical research (Lam & Schaubroeck, 2000) has demonstrated that opinion leaders play a useful role in organizational change by facilitating the success of organizational changes. According to social learning theory (Bandura, 1986), people sense through their social network the support that exists throughout the organization. This principal support could come from the top leadership, change agents, or the immediate supervisor. One key aspect of this sensemaking involves determining if these principals genuinely support the change. Also, individuals look for behavioral integrity (Simons, 2002) and try to determine if there is alignment between the words and actions of the principals.

Leadership and change agents typically focus on making sure that their messages are loud and clear in terms of support for change. In fact, most organizations overdo this form of push communication, overloading employees with redundant information through multiple channels such as e-mails, presentations, newsletters, meetings, workshops, online portals, etc. (Rashid, 2006). Even though this excessive communication may result in employees ignoring the information flow, it does show the management support behind the change. We would therefore hypothesize as follows:

Hypothesis 5. A principal support change message will be positively related to affective commitment to change.

Hypothesis 6. A principal support change message will be positively related to continuance commitment to change.

RESEARCH METHODS

Sample

The study focused on collecting data from two software development centers of a large global bank. The survey was done through an online service, and all fully completed surveys were accepted into the dataset. The demographic breakdown of the two sample datasets is provided in Table 1.

TABLE 1
Demographic Profile of Survey Participants from the Two Software Development Centers

TABLE 1
Demographic profile of survey participants from the two software development centers

		India Center		Malaysia Center		Total	
Number of respondents		333		244		577	
Gender	Male	283	85%	158	65%	441	76%
	Female	50	15%	86	35%	136	24%
Ethnic Background	Local Malaysian			170	70%		
	Foreigner in Malaysia			74	30%		
	Local Indian	332	100%				
	Foreigner in India	1	0%				
Job Status	Full-time employee	327	98%	193	79%	520	90%
	Contractor	6	2%	51	21%	57	10%
Age bracket	<25 years	49	15%	31	13%	80	14%
	25-30 years	124	37%	109	45%	233	40%
	31-35 years	102	31%	56	23%	158	27%
	36-40 years	32	10%	31	13%	63	11%
	41-50 years	23	7%	16	7%	39	7%
	>50 years	3	1%	1	0%	4	1%
Education	High School/GED	0	0%	2	1%	2	0%
	Diploma	6	2%	16	7%	22	4%
	College Degree (Bachelor)	140	42%	184	75%	324	56%
	Masters Degree	187	56%	42	17%	229	40%
Years with Organization	<1 year	97	29%	92	38%	189	33%
	<2 years	88	26%	54	22%	142	25%
	<3 years	54	16%	40	16%	94	16%
	<4 years	30	9%	21	9%	51	9%
	<5 years	27	8%	20	8%	47	8%
	5 to 10 years	32	10%	12	5%	44	8%
	>10 years	5	2%	5	2%	10	2%
Years in Current Role	<12 months	139	42%	114	47%	253	44%
	<18 months	70	21%	47	19%	117	20%
	<24 months	54	16%	27	11%	81	14%
	<30 months	30	9%	18	7%	48	8%
	<36 months	10	3%	6	2%	16	3%
	<48 months	14	4%	9	4%	23	4%
	>48 months	16	5%	23	9%	39	7%
Current Role Level	Individual Contributor	122	37%	143	59%	265	46%
	Project/Team Lead	94	28%	63	26%	157	27%
	Manager/Sr. Project Manager	77	23%	35	14%	112	19%
	Sr. Manager/Department Head	40	12%	3	1%	43	7%
Primary Role Activity	IT Project Implementation	164	49%	170	70%	334	58%
	Production Support (PSS)	78	23%	48	20%	126	22%
	Testing, Quality & Release	71	21%	24	10%	95	16%
	Other (Administration etc.)	20	6%	2	1%	22	4%

One of the centers is in Malaysia, and the other one is in India. The Malaysia center has about 800 employees out of which 244 completed the survey. The e-mail to participants was sent out by three separate department heads, each of whom is responsible for roughly 200 employees, which means that about 600 people received the survey invitation. Of that number, 438 visited the link and 81 exited after partially completing the survey. Except for a handful, all of the workers in the Malaysian sample were Chinese (70 percent local Malay-Chinese and 30 percent foreign Pilipino-Chinese). The India center has about 1,300 employees out of which 333 completed the survey. In the case of India, the e-mail was sent out to all employees by the head of the information technology (IT) center out of which 1,066 visited the online link and 418 exited after partially completing the survey.

The senior managers of the bank were interviewed first to determine the specific change initiatives that were underway at their centers, and then the survey was customized to include additional antecedent constructs that were of interest to the bank. Approximately 50 interviews were conducted (about 40 in Malaysia and 10 in India). Each lasted one to two hours and gave the researcher a very detailed and deep understanding of the objective, purpose, and challenge of each of the two change initiatives since most of interviews were recorded and their content analyzed. The researcher spent one week in Malaysia and three days in India with the respective management teams to interview the managers and explain the purpose and objectives of the research study in order to get their support. During the EFA/confirmatory factor analysis (CFA) analysis, one outlying survey was removed based on a significance test for outliers.

Measurement of Study Variables

Table 2 summarizes the key independent and dependent variables in the study. Two

dependent variables consist of affective and continuance commitments to change and three independent variables consist of the three change messages – discrepancy, valence, and support. Details for each of the constructs are provided below.

TABLE 2
Construct Definitions and Sources

Construct Name	Construct Definition	Source
Affective commitment to change	A desire to provide support for the change based on a belief in its inherent benefits.	Herscovitch & Meyer (2002)
Continuance commitment to change	Recognition that there are costs associated with failure to provide support for the change.	Herscovitch & Meyer (2002)
Discrepancy change message	Belief that the need for change exists - why an organizational change is needed.	(Armenakis, Bernerth, Pitts, & Walker, 2007)
Valence change message	Belief in the attractiveness (from the change recipient's perspective) associated with the perceived outcome of the change. Commonly referred to as "whats in it for me".	(Armenakis, Bernerth, Pitts, & Walker, 2007)
Support change message	Belief in the extent to which leaders are committed to successful implementation and institutionalization of the change	(Armenakis, Bernerth, Pitts, & Walker, 2007)

Commitment to change. Herscovitch & Meyer (2002) define “commitment to change” as “a force (mindset) that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative.” This mindset can be reflected to a varying degree in three dimensions: (a) a desire to provide support for the change based on a belief in its inherent benefits (affective commitment to change), (b) a recognition that there are costs associated with failure to provide support for the change (continuance commitment to change), and (c) a sense of obligation to provide support for the change (normative commitment to change). That is, employees can feel bound to support a change because they want to, have to, and/or ought to. Herscovitch & Meyer argue that these mindsets can be measured and shown to be distinguishable from one another and from mindsets relating to other workplace commitments, most notably commitment to the organization itself. Their three component scales have 18 items, six each for affective, continuance, and normative

commitment to change with alphas of .92, .71 and .78 respectively. As applied to our sample and study and per EFA/CFA analysis, we dropped the normative commitment subscale and trimmed four items from affective commitment and two items from continuance commitment, resulting in composite reliabilities of .804 and .693 for affective and continuance. In dropping the normative commitment measure, we are consistent with the findings of Ko et al. (1997), who found discriminant validity issues relating to the normative commitment construct. We decided to separate the affective and continuance commitments to change into two distinct dependent variables to test the “want to change” desire of the employees (pulling change) separately from the “have to change” desire (being pushed into change). Although normative commitment can be expected to impact behavior, its very nature assumes it should be more of a constant across an organization (Mayer, 1998); and since our two samples are part of the same organization, its inclusion has been problematic from both the analysis and theoretical standpoints.

Change messages. In a set of articles, Armenakis, Harris, & Mossholder (1993) and Armenakis, Harris, & Feild (1999) outline frameworks specifying the five domains for effective change efforts. The five domains identified by Armenakis, Harris, & Feild (1999) are discrepancy, efficacy, appropriateness, principal support, and personal valence. The resulting sentiments created by the content of these message domains combine to shape an individual’s motivations—positive (readiness and support) or negative (resistance)—towards the change. These five change messages are measured through a 26-item scale that was developed across three studies (Armenakis, Bernerth, Pitts & Walker, 2007) and produced an alpha ranging from .70 to .92 for discrepancy, from .89 to .95 for appropriateness, from .76 to .86 for efficacy, from .69 to .87 for principal support, and from .78 to .90 for personal

valence. Also, the overall composite reliability of change message scale ranged from .90 to .94; however, in our study we are using the individual subscales.

Discrepancy addresses the sentiment as to whether change is needed and is typically demonstrated by clarifying how an organization's current performance differs from some desired end-state (Katz & Kahn, 1978). In order for individuals to be motivated to change, they must believe that something is wrong and something needs to change. Out of the four items in the original scale for discrepancy, we used three items; and during the EFA/CFA, we dropped one item, resulting in a composite reliability of .751.

Appropriateness of the change is distinct from discrepancy because individuals may feel some form of change is needed, but may disagree with the specific change being proposed. Their resulting resistance is clearly well intentioned and potentially beneficial because it is based on a disagreement about the appropriateness of a particular change. If a change message cannot convince others of the appropriateness of the change, then effort should be made to reconsider whether it really is appropriate. From both the EFA analysis and the literature review of this scale (Armenakis, Bernerth, Pitts & Walker, 2007), appropriateness scale items turned out to be very close to affective commitment to change items, which is one of the dependent variables in the study. Therefore, we decided to drop this scale from the study.

Efficacy refers to sentiments regarding confidence in one's ability to succeed (Bandura, 1986). Consistent with the expectancy theory of motivation (Vroom, 1964), individuals will only be motivated to attempt a change to the extent that they have confidence that they will succeed. We found efficacy items to be very close to the affective commitment to change in the EFA, and so we decided to drop the scale from the study even though, based

on content analysis, it is supposed to be different (Armenakis, Bernerth, Pitts & Walker, 2007). However, no actual study so far has tested them to be different.

Principal support is important because change requires resources and commitment to see it through to institutionalization. Employees have seen so many change efforts stall due to lack of support that they have become skeptical and unwilling to actively support a change until a clear demonstration of support is made. Out of the six items in the original scale for principal support, we used five items; and during the EFA/CFA, we dropped three of them, resulting in a composite reliability of .874.

Personal valence is important because members of the change target ask, what's in it for me? During organizational change, Cobb, Wooten, & Folger (1995) emphasized that members of the change target will assess the distribution of positive and negative outcomes, the fairness of the change, and the manner in which individuals are treated. Thus, if an individual's self-interest is threatened, a proposed change will likely be resisted (Clarke, Ellett, Bateman, & Rugutt, 1996). We used all five items in the original scale for personal valence and kept three items after the EFA/CFA analysis, resulting in a composite reliability of .819. In excluding the appropriateness and efficacy measures from our analysis, we are consistent with Armenakis et al. (2007), who found discriminant validity issues between these constructs and the other dimensions they identified for messages in certain contexts.

Control Variables

Change significance & change impact (Herscovitch & Meyer, 2002). Since participants were from different subsidiaries, operating in different countries, and undergoing slightly different types of organizational changes, we included two change-related control variables in the study. The first control variable was a single-item measure (change

significance) that assessed, on the same 7-point Likert scale as the other commitment and communication survey questions, the respondents' perceptions of how significant the change was for their organization. The second control variable was a 3-item construct to measure the respondents' perceptions of the effect/impact of the change on their job performance, organizational climate, and life outside of work. Change impact was also measured on the standard 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Competence (Spreitzer, 1995). During the prior qualitative study (Rashid, 2006), the respondents were more willing and ready for change when they felt competent about their abilities. These individuals felt that the change would open new learning and career opportunities for them to grow professionally. On the other hand, people who were not very confident about their skills and competencies considered change as a threat to their job security and were generally resistant to the change. Since this attitude was independent of the nature of the change itself but influenced their commitment towards the change, it was important to control for its effect in this quantitative study. Therefore, competency (work-related self-efficacy) was defined as an individual's belief in his or her capability to perform activities with skill and is analogous to personal mastery (Spreitzer, 1995). It was measured via a 3-item scale on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree) and had a alpha of .85 and .83 in samples collected during two separate time periods in the Spreitzer (1995) study.

Social desirability (Ballard, 1992). The respondents in the survey were either of Chinese or Indian ethnic background. Both of these cultures think in collective terms rather than in individual terms, and they are typically known for social sensitivity when answering questions about the organization or people they work with. To control for social desirability

as a response tendency with self-reported measures, an 11-item variation of the short form of the Marlowe-Crowne social desirability scale was used as it appeared in the Ballard (1992) study with an alpha of .69. All questions were presented in the survey as a yes/no choice with values of 0 and 1. The composite index was created by the addition all 11 items, and it was used as a control variable.

Additional control variables included the following: (details on how they are operationalized through categorical variables are included in the next section)

- Years with the Organization
- Educational Level
- Years in Current Role
- Current Role Level
- Work Role
- Gender
- Job Status

Operational Measures Used for Study Constructs

We measured the following items on a 7-point Likert scale where 1 = strongly disagree and 7 = strongly agree. Bold items represent items that were part of the final EFA/CFA analysis and used in the SEM. Items represented by (R) were reverse scored. The items marked [O] were removed from the analysis because of poor internal consistency with their respective scales, as demonstrated by the inappropriate factor-loading pattern (e.g., low loading < 0.40) or cross-loading on other items within the construct or with items in another construct. The symbol [q####] next to an item refers to the actual location of the question in the survey. In the original survey, the blanks in the items were replaced with the context of

the specific change initiative, as recommended by the authors of the items. Please see the details in the survey's introduction and exact questions in Appendix A.

Method of Analysis

Our method of analysis involved the following steps using a combination of SPSS (version 16) and AMOS (version 16): (1) initial construct validity and reliability was explored using EFA analysis in SPSS to ensure that items were loaded on their corresponding construct and were sufficiently distinct from other IV and DV constructs. Clean items from EFA were moved to AMOS for further analysis; (2) a measurement model was created in AMOS to conduct CFA to provide substantive evidence of acceptable reliability as well as convergent and discriminant validity. The measurement model analysis was performed using first-order factors and their associated scale items for the combined dataset as well as for the various multigroup analyses; (3) an analysis of overall model fit for the hypothesized structural model was also performed; (4) all items that are independent and dependent variables were standardized and then split into various subsets based on the five-group analysis that was later conducted. Since all the items in the model use the same scale, we did not standardize the items for the EFA/CFA analysis but only for the SEM multigroup analysis; (5) in testing the proposed hypotheses, structural equation modeling was performed using AMOS (version 7.0) for the combined dataset as well as for the various multigroup analyses; (6) a thorough analysis of the structural coefficients and associated hypotheses was carried out for the combined as well as the various multigroup analyses. The analysis of structural model fit, structural coefficients, and hypotheses was performed using the underlying constructs.

FINDINGS

Measurement Model Analysis

For all the study constructs, we directly borrowed or adapted the survey construct items from the existing literature. Minor wording changes were also done based on the personal interviews conducted with participants. The operational measure section provides the exact questions in the survey along with the introductory set-up to frame the survey. Table 3 provides the univariate statistics for the constructs and the intercorrelations among them.

Most of the intercorrelations among the study constructs are significant ($p < .01$ or $p < .05$) except for some of the items from the continuance-commitment construct. All the intercorrelations demonstrate that the relationship between the constructs are relevant to each other ($r > .15$); however, the correlation between continuance commitment and various change messages appears to be weak relative to that of the affective commitment-to-change construct.

TABLE 3
Item-Level Descriptive Statistics and Bivariate Correlations

Construct	Mean	SD	CCA5	CCA6	CCC3	CCC4	CCC5	CCC6	CMD1	CMD3	CMD4	CMV1	CMV2	CMV5	CMS4	CMS5	
1) Commitment to change (Affective)	4.47	1.33	CCA5	1.000													
2)	4.76	1.28	CCA6	.673**	1.000												
3) Commitment to change (Continuance)	3.48	1.25	CCC3	-.335**	-.357**	1.000											
4)	3.77	1.34	CCC4	-.207**	-.244**	.354**	1.000										
5)	3.38	1.32	CCC5	-.421**	-.532**	.392**	.435**	1.000									
6)	3.93	1.35	CCC6	-.178**	-.175**	.243**	.360**	.378**	1.000								
7) Change Message (Discrepancy)	5.55	1.05	CMD1	.124**	.185**	-.030	-.002	-.063	.038	1.000							
8)	5.53	1.08	CMD3	.211**	.289**	-.117**	-.054	-.142**	.085*	.440**	1.000						
9)	5.50	1.06	CMD4	.314**	.425**	-.183**	-.054	-.236**	.012	.418**	.645**	1.000					
10) Change Message (Valence)	5.16	1.25	CMV1	.392**	.541**	-.241**	-.126**	-.303**	-.054	.287**	.468**	.511**	1.000				
11)	5.23	1.19	CMV2	.378**	.516**	-.239**	-.136**	-.332**	-.035	.293**	.486**	.572**	.789**	1.000			
12)	4.77	1.31	CMV5	.121**	.254**	-.052	-.041	-.088*	-.035	.104**	.283**	.314**	.489**	.545**	1.000		
13) Change Message (Support)	4.87	1.19	CMS4	.171**	.319**	-.104**	-.058	-.210**	-.005	.171**	.274**	.395**	.482**	.483**	.387**	1.000	
14)	4.82	1.15	CMS5	.200**	.344**	-.093*	-.031	-.207**	-.004	.225**	.289**	.451**	.509**	.544**	.356**	.776**	1.000

Note:

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Prior to testing the hypothesized model, we estimated a fully disaggregated measurement model with the key observed indicators to ensure that the measures

corresponded only to their hypothesized constructs and evidenced acceptable reliability as well as convergent and discriminant validity.

First, EFA was performed using the three change-message constructs—discrepancy, principal support, and personal valence—and the two commitments-to-change constructs— affective commitment and continuance commitment. Items were iteratively trimmed till the five constructs demonstrated reliability and discriminant validity in the EFA process (using SPSS software). The final results, included 14 scale items for a 5-factor model, are shown in Table 4 below. The pattern matrix was executed using the Maximum Likelihood method (note: values less than .10 are suppressed) with a strong 5-factor result, except for the weak continuance commitment-to-change construct. In the factor-correlation matrix, there appear to be stronger correlations between affective commitment and continuance commitment, probably because they are sub-constructs of the three-construct commitment-to-change profile (Myer, 2002) and are being used as separate dependent variables in this study. Also, the first three factors in the pattern matrix are all sub-constructs from the change-message scale; so they are showing a higher-than-desired correlation in the factor-correlation matrix. However, we consider this acceptable, based on the definition and idea behind these related constructs, which are being treated as separate independent variables that share a common parent construct in the original scale.

TABLE 4
Exploratory Factor Analysis (EFA)

Pattern Matrix^a

	Factor				
	1	2	3	4	5
CCA5					.818
CCA6					.915
CMV1		.750			.127
CMV2		.873			
CMV5		.712			-.112
CCC3				.436	-.146
CCC4				.737	.155
CCC5				.573	-.253
CCC6				.600	
CMD1	.590				
CMD4	.706		.119		
CMD3	.882				
CMS4			.813		
CMS5			.933		

Extraction Method: Maximum Likelihood.
 Rotation Method: Promax with Kaiser Normalization.
 a. Rotation converged in 6 iterations.

Factor Correlation Matrix

Factor	1	2	3	4	5
1	1.000	.664	.464	-.153	.478
2	.664	1.000	.628	-.273	.595
3	.464	.628	1.000	-.166	.402
4	-.153	-.273	-.166	1.000	-.577
5	.478	.595	.402	-.577	1.000

Extraction Method: Maximum Likelihood.
 Rotation Method: Promax with Kaiser Normalization.

Alpha reliability estimates for the five constructs are .804 for affective commitment to change, .693 for continuance commitment to change, .751 for discrepancy change messages, .819 for valence change messages, and .874 for support change messages. Furthermore, all loadings are large (> .40) with acceptable cross-loading, except for one item in the continuance commitment-to-change constructs. For all constructs, item loadings were substantial, ranging from a low of .436 to a high of .933, indicating convergent validity (Nunnally, 1978).

Second, using the confirmatory factor analysis (CFA) procedure available in AMOS, we estimated a measurement model that included the 14 items that we hypothesized to measure the five constructs that are part of the study (three independent and two dependent). We proposed the individual measures to load only on their corresponding single factor, in accord with the conceptual definitions. This measurement model produced the following fit statistics: Chi-square = 187.20 d.f. = 67, $p = .000$, NFI = .947, TLI = .953, CFI = .965, RMSEA (90% CI) = .056 (.047 and .065). Based on the sample size of 576, the $\div 2$ statistic was not considered to be a reliable indicator of model fit (Fornell, 1981); rather, the other indicators of fit suggest a hypothesized measurement model that provides an adequate representation of the variance-covariance matrix of the study measures.

The estimated parameter estimates in Table 5 (which summarizes factor loadings and measurement properties of key constructs used in the study) reveal that the standardized factor loadings, without exception, are statistically significant ($t\text{-value} > 2$, $p < .05$) and substantively large ($> .30$). In addition, the composite reliability estimates exceed .70 (except for continuance commitment to change), and variance-extracted exceeds .50 with the exception of continuance commitment to change. Note that the composite-reliability estimates differ slightly from the alpha estimates provided earlier; the former are based on maximum-likelihood estimates. Variance shared with other constructs is less than variance extracted, again with the exception of continuance commitment to change. Consequently, the Fornell and Larcker's (1981) criterion for discriminant validity is satisfied. Finally, average variance shared between constructs ranges from .17 to .36 and is substantially less than the variance extracted, demonstrating strong constructs. Overall, our results suggest that the

modeled constructs have reasonable psychometric properties and appear suitable for substantive analysis and interpretation.

Since two separate samples were collected (India and Malaysia), a measurement equivalence test was performed using multigroup analysis. Only two items (CMV1 and CMS5) failed the measurement equivalency test. Based on the success of the multigroup test, it was considered appropriate to combine the two datasets for further SEM analysis.

The combined dataset was normalized to produce z-score values of all the relevant construct items in the model. The normalized dataset was split into the following multigroups for further measurement equivalency testing: Country (Malaysia vs. India), Years of Employment (Under 2 years vs. Over 2 years), Role Level (Front Line vs. Other), Work Role (Implementation vs. Support), and Age (Under 30 vs. Over 30). Files that were created for the multigroup analysis for the various moderation analyses were based on the normalizing that was performed on the combined dataset, thereby preserving the item variances across the groups once the separate group files were created for the various moderators. Before hypothesis tests (SEM) were carried out for combined as well as various moderators using the multigroup analysis, we performed a separate measurement equivalency test for each of the multigroup scenarios. This process helped assure that we did not have significant differences in the scales of measurement and demonstrated factorial similarity (scale items load on the same factor or construct) and factorial equivalence (each scale item has the same loading within statistical bounds and on the same factor) for the constructs that were used to explore the structural differences across the various multigroups (Singh, 1995). All items passed the measurement equivalency test for the Years of Employment multigroup analysis. Only one item (CCC6) failed the measurement equivalency test for the Role Level

multigroup analysis. For both Work Role and Age, all items passed the measurement equivalency test. These measurement equivalency tests demonstrated the overall robustness of the measurement items so that we could proceed to the various hypotheses testing using SEM.

TABLE 5
Factor Loadings, Reliability and Variance Measures

Construct/Item	Loading	t-value	Composite Reliability	Variance Extracted	Highest Variance Shared	Average Variance Shared
Affective Commitment to Change (CCA)			0.81	0.69	0.42	0.29
CCA5	0.72	18.26				
CCA6	0.94	24.81				
Continuance Commitment to Change (CCC)			0.68	0.36	0.42	0.17
CCC3	0.53	12.01				
CCC4	0.55	12.46				
CCC5	0.82	19.31				
CCC6	0.46	10.27				
Discrepancy change message (CMD)			0.76	0.52	0.49	0.26
CMD1	0.50	11.89				
CMD3	0.75	19.20				
CMD4	0.87	22.75				
Principal support change message (CMS)			0.87	0.78	0.42	0.22
CMS4	0.84	22.25				
CMS5	0.92	24.91				
Personal valence change message (CMV)			0.83	0.62	0.49	0.36
CMV1	0.87	25.04				
CMV2	0.92	27.34				
CMV5	0.57	14.43				

Goodness of Fit Stats

Chisquare (df)	187.20 (67)
CFI	0.965
NFI	0.947
TLI	0.953
RMSEA	0.056
RMSEA (LO 90%)	0.047
RMSEA (HI 90%)	0.065
SRMR	0.054

Note: Loadings represent standardized estimates produced by AMOS. The t-values greater than 1.645 indicate significant effects at p=.05 for a one-tailed test. Variance extracted is based on Fornell and Larcker's (1981) formula. Highest variance shared is computed as the square of highest R (correlation). Average variance of a construct shared with other constructs is computed as the mean of squared correlations. Composite reliability is based on formula by Fornell and Larcker (1981, formula 10, page 45). Breaks in item number sequence indicate items trimmed from the survey construct during the EFA/CFA analysis.

Fit of Hypothesized Structural Model and Estimated Coefficients

Table 6 provides the estimated coefficients and model fit statistics from the final model, using the combined dataset (Malaysia and India) for which measurement equivalency has already been established. The hypothesized model achieved the following acceptable fit statistics: Chi-square = 546.96, d.f. = 280, $p = .000$, NFI = .935, TLI = .948, CFI = .967, RMSEA (90% CI) = .041 (.047 and .065). Due to the relatively large sample size ($N = 576$), the χ^2 and its associated significance are not considered a reliable indicator of fit, and focus is placed on the individual fit statistics. Given these statistics, the model appears to provide an acceptable representation of the study data. Table 6 also lists the estimated coefficients for the hypothesized model.

Figure 2 displays the results graphically and shows that, overall, the model provides reasonable explanation levels for both affective commitment to change ($R^2 = .47$) and continuance commitment to change ($R^2 = .68$).

To establish the robustness of the results and to explore differences due to some potential moderators, we utilized multigroup procedure in SEM. This analysis was carried out by constraining both measurements and the hypotheses for each of the multigroup analyses.

Measurement invariance occurs when the factor loadings of indicator variables on their respective latent factors do not differ significantly across groups. If lack of measurement invariance is found, this means that the meaning of the latent construct is shifting across groups or over time. Interpretational confounding can occur when there is substantial measurement variance because the factor loadings are used to induce the meaning of the latent variables (factors).

While demonstrating invariance of the measurement model across groups is much more common, it is also possible to test for structural invariance across groups (see Vandenberg, 2002 and Vandenberg & Lance, 2000). The procedure is similar to testing for measurement invariance. The model is re-run but constrained so that the structural paths are set to be equal. A chi-square difference test is run. If the baseline and constrained models are not significantly different, it is concluded that the structural model is invariant between the groups. On the other hand, if the baseline and constrained models are significantly different, one inference is that there is a moderating effect that may be causing the difference.

For the hypothesis equivalency, we constrained all the hypothesis paths to be equal across groups and the model was fitted, yielding a chi-square value for the constrained model. A chi-square difference test was then applied to see if the difference between the unconstrained and the constrained model was significant. If it was not significant, we could conclude that the constrained-equal model was the same as the unconstrained multigroup model, leading to the interpretation that the model does apply across groups and does display measurement invariance.

To find non-invariance across groups, we separated the measurement invariance analysis from the structural invariance analysis for each of the multigroup analyses. We selected and deleted groups to leave a pair to be tested, then used the chi-square difference test again to see if some pairs of samples were invariant between the two groups in the pair. The chi-square difference should not be significant if the model is invariant between the two groups. Once the pairs that are non-invariant had been identified, one went back and unlabeled the loadings for a given factor (thereby making them no longer constrained to be equal) and tested for invariance between the two groups. Using labeling or deleting labeling,

we freed or constrained parameters to pinpoint the invariance. We systematically went through the possibilities, one at a time, constraining or freeing indicator loadings on factors first to establish measurement models for each multigroup and the structural path coefficients to look for structural invariance.

Between two groups, there is model invariance only if the model can be accepted (using fit statistics) when all parameters are constrained to be equal. To the extent that various parameters must be freed to yield acceptance of the model, those freed parameters pinpoint non-invariance and pinpoint where the model differs between the groups.

The proposed model was initially fitted on the groups by constraining each structural coefficient to be identical across groups. This process was conducted separately for each of the five group analyses (country, years of employment, role level, work role, and age). When all or nearly all estimated coefficients meet this invariance property, it is safe to conclude that the proposed model itself is fairly robust.

To further illuminate the sensitivity of our proposed model, we conducted an additional multigroup SEM analysis where Age was nested within Country, resulting in a four-group SEM model. Because such analysis models the simultaneous influence of Country and Age, this is more reasonable for interpretation of the differences. Specific details of the multigroup analysis will be presented in the next section after the hypotheses are presented for the combined dataset for which measurement equivalency results were presented at the start of this section.

Hypotheses Tests

TABLE 6
Structured Coefficients from Combined Analysis

Hypothesis	Combined dataset (Malaysia & India) (n=575)		
	Coeff	p-val	t-value
Change Message - Discrepancy (CMD)			
CMD -> CCA (Commitment to Change - Affective)	-0.03	0.569	-0.57
CMD -> CCC (Commitment to Change - Continuance)	0.12	0.014	2.46
Change Message - Valence (CMV)			
CMV -> CCA (Commitment to Change - Affective)	0.16	0.016	2.41
CMV -> CCC (Commitment to Change - Continuance)	-0.16	0.020	-2.33
Change Message - Support (CMS)			
CMS -> CCA (Commitment to Change - Affective)	-0.12	0.000	-3.38
CMS -> CCC (Commitment to Change - Continuance)	0.09	0.022	2.29
CONTROL VARIABLES			
CCA (Commitment to Change - Affective)			
Change Impact (CI -> CCA)	0.33	0.000	3.65
Change Significance (ZCS1 -> CCA)	0.05	0.266	1.11
Competence (COMP->CCA)	0.08	0.018	2.36
Social Desirability (SOD -> CCA)	-0.06	0.000	-4.52
Years with Organization (YRORG -> CCA)	-0.01	0.571	-0.57
Education Level (EDUC -> CCA)	0.10	0.010	2.56
Years in current role (YRROLE -> CCA)	0.03	0.028	2.19
Current Role level (CURRLVL -> CCA)	0.10	0.002	3.14
Work role (WORKRL -> CCA)	0.07	0.006	2.77
Gender (GENDER -> CCA)	0.01	0.921	0.10
Job Status (JOBST -> CCA)	-0.06	0.467	-0.73
Age (AGE -> CCA)	-0.03	0.196	-1.29
CCC (Commitment to Change - Continuance)			
Change Impact (CI -> CCC)	-0.12	0.177	-1.35
Change Significance (ZCS1 -> CCC)	-0.01	0.862	-0.17
Competence (COMP->CCC)	-0.15	0.000	-4.12
Social Desirability (SOD -> CCC)	0.06	0.000	4.34
Years with Organization (YRORG -> CCC)	0.01	0.422	0.80
Education Level (EDUC -> CCC)	0.03	0.533	0.62
Years in current role (YRROLE -> CCC)	0.00	0.946	-0.07
Current Role level (CURRLVL -> CCC)	-0.05	0.144	-1.46
Work role (WORKRL -> CCC)	-0.04	0.136	-1.49
Gender (GENDER -> CCC)	0.00	0.940	0.08
Job Status (JOBST -> CCC)	0.10	0.243	1.17
Age (AGE -> CCC)	-0.03	0.323	-0.99
Goodness of Fit Statistics			
Chisquare (df)	546.96 (280)		
CFI	0.967		
NFI	0.935		
TLI	0.948		
RMSEA	0.041		
RMSEA (LO 90%)	0.036		
RMSEA (HI 90%)	0.046		
SRMR	0.044		
PCLOSE	0.999		

Hypothesis 1 predicted that a discrepancy change message will have a positive relationship to affective commitment to change. However, this relationship is not supported by the results since the relationship is not significant. As predicted by Hypothesis 2, a discrepancy change message indeed has a positive relationship to continuance commitment to change ($\beta = .12, p < .05$).

Hypothesis 3 predicted that a personal valence change message will have a positive relationship to affective commitment to change. The results indeed provide support for this relationship ($\beta = .16, p < .05$). Regarding Hypothesis 4, even though there is support for the relationship between a personal valence change message and continuance commitment to change, the relationship is negative rather than positive as was predicted by the hypothesis ($\beta = -.16, p < .05$).

Hypothesis 5 predicted that a principal-support change message will be positively related to affective commitment to change. The results reveal this relationship to be highly significant but negative rather than positive ($\beta = -.12, p < .001$). Hypothesis 6 predicted that a principal-support change message will be positively related to continuance commitment to change. Even though this relationship is significant and positive, the effect size appears weak relative to other significant hypotheses results ($\beta = .09, p < .05$).

To further test the robustness of these results, we performed multigroup analysis using the following categorical variables as moderators: Country, Years of Employment, Role Level, Work Role, and Age. The measurement equivalence for each of these five multigroup analyses was established separately using the approach outline in the previous section. Table 7 tabulates the hypothesis results from these five mediation effect analyses, using the multigroup method.

TABLE 7
Structured Coefficients from Five Multigroup Analyses

Hypothesis	Country			Years of Employment			Role level			Work Role			Age		
	Malaysia / India (n=244 / n=331)			Under / Over 2 years (n=330, n=245)			Frontline / Other (n=264 / n=311)			Implement / Support (n=334, n=241)			Under 30 / Over 30 (n=311 / n=264)		
	Coeff	p-val	t-value	Coeff	p-val	t-value	Coeff	p-val	t-value	Coeff	p-val	t-value	Coeff	p-val	t-value
Change Message - Discrepancy (CMD)															
CMD -> CCA (Commitment to Change - Affective)	-0.01	0.867	-0.17	-0.03	0.503	-0.67	-0.04	0.384	-0.88	0.01	0.905	0.12	-0.04	0.396	-0.85
CMD -> CCC (Commitment to Change - Continuance)	0.09	0.054	1.92	0.12	0.012	2.51	0.12	0.011	2.55	0.10	0.042	2.03	0.10	0.045	2.01
Change Message - Valence (CMV)															
CMV -> CCA (Commitment to Change - Affective)	0.35	0.000	4.27	0.16	0.015	2.43	0.20	0.003	2.96	0.11	0.090	1.69	0.20	0.004	2.90
	-0.02	0.833	-0.21												
CMV -> CCC (Commitment to Change - Continuance)	-0.15	0.024	-2.25	-0.16	0.020	-2.33	-0.18	0.013	-2.47	-0.13	0.062	-1.87	0.00	0.998	0.00
													-0.47	0.000	-3.70
Change Message - Support (CMS)															
CMS -> CCA (Commitment to Change - Affective)	-0.11	0.001	-3.19	-0.11	0.001	-3.22	-0.11	0.003	-2.99	-0.10	0.004	-2.85	-0.22	0.000	-4.18
													-0.04	0.391	-0.86
CMS -> CCC (Commitment to Change - Continuance)	0.08	0.022	2.30	0.09	0.018	2.36	0.08	0.049	1.97	0.05	0.143	1.46	0.10	0.007	2.68

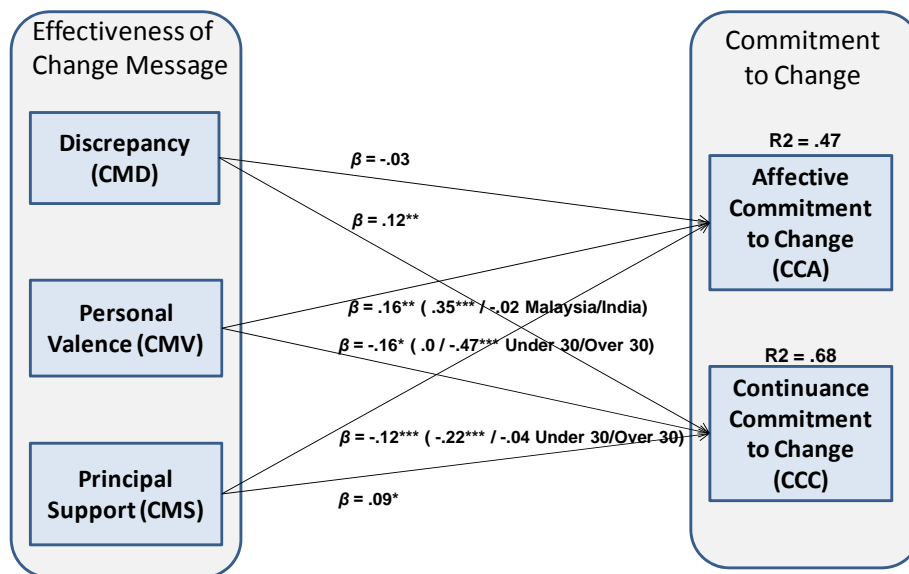
Goodness of Fit Stats					
Chisquare (df)	937.20 (575)	841.82 (551)	852.09 (550)	790.62 (550)	871.46 (550)
CFI	0.953	0.963	0.959	0.970	0.958
NFI	0.891	0.904	0.897	0.911	0.898
TLI	0.929	0.946	0.940	0.956	0.939
RMSEA	0.033	0.030	0.031	0.028	0.032
RMSEA (LO 90%)	0.029	0.026	0.027	0.023	0.028
RMSEA (HI 90%)	0.037	0.034	0.035	0.032	0.036
SRMR	0.051	0.046	0.055	0.044	0.049
PCLOSE	1.000	1.000	1.000	1.000	1.000

Control Variables in the model include: Change Impact, Change Significance, Competence, Social Desirability, Years with Organization, Education Level, Years in Current Role, Current Role level, Work Role, Gender, Job Status.
 Years of employment: data was re-categorized into 0 (categories 1 and 2) and 1 (categories 3, 4, 5, 6, and 7).
 Role level: data was re-categorized into 0 (categories 1) and 1 (categories 2, 3, 4).
 Work role: data was re-categorized into 0 (categories 1 and 2) and 1 (categories 3, 4, 5, 6, and 7).
 Age: data was re-categorized into 0 (categories 1 and 2) and 1 (categories 3, 4, 5, 6, and 7).
 All non-bold items are structurally equivalent for both the groups within each of the five multigroup column sets.
 Bold item highlight the difference within each of the multigroup analyses with top row associated with the first group and the second row associated with the second group within the column.

As the bottom part of Table 7 shows, the fit statistics came out very strong in support of the fit of the data to the model. Year of Employment, Role Level, and Work Role showed measurement and hypothesis equivalence across all six hypotheses, demonstrating that there is no moderation effect due to these three categorical variables. This is interesting since it is commonly believed in India and Malaysia that people with less than two years of employment have a different sense of commitment than those with over two years of employment. Also, it is a commonly held view that front-line workers are different in their

commitment than senior workers and that project implementation staff are very different from operational support professionals. In our analysis, all three of these groups showed that when it comes to their sensemaking of the change messages and their commitment towards a change, they exhibit no difference in their mindset and desire. However, the Country group analysis showed a difference in Hypothesis 3 (valence change message → affective commitment to change). This difference in hypothesis results is shown in bold in the first set of columns. Also, results from the Age group analysis reveal a moderation effect as two of the hypotheses (H4 and H5) show a difference due to the age of professionals being less than or greater than 30 years. These differences are shown in bold in the last set of columns in Table 7. Figure 2 also displays in parentheses the measurement difference due to the moderation effect of Country and Age along with the baseline estimated results from the combined dataset.

FIGURE 2
Estimated Model to Test the Relationship between Change Messages and Commitment to Change



Note: first column represents results from combined dataset while parentheses point out the differences due to Country or Age.
 *P<.05, ** p<.01, ***p < .001

As can be seen from Table 7 and Figure 2, in the case of Country group analysis, there is strong support for H3 for Malaysia ($\beta = .35, p < .001$), while H3 (Valence \rightarrow Affective) is not supported for India ($\beta = .02, p < ns$). For group analysis based on age (under 30 and over 30), there was no support for H4 (Valence \rightarrow Continuance) for ages under 30 ($\beta = .0, p < ns$), while there was a strong negative relationship for the over-30 age group sample ($\beta = -.47, p < .001$). This does not support the hypothesis, but it is consistent with the results from the combined dataset. In analyzing the differences in H5 (Support \rightarrow Affective) due to age, we note that age shows a negative and significant relationship for ages under 30 ($\beta = -.12, p < .001$) and a nonsignificant relationship for ages over 30. In either case, H5 is not supported; however, the results for ages under 30 run in the same direction as those revealed during the hypothesis analysis on the combined dataset.

Since out of the five-group analysis, only Country and Age demonstrated moderation effects, we decided to further explore the relationships in detail by performing a four-way multigroup analysis by nesting Age within Country. The measurement equivalence test was again performed for the four-way grouping and three items (CMV1, CMV2 and CMS5) failed the measurement equivalency test. Since 11 items did pass the measurement equivalency, we considered the measurement model to be equivalent across the four groups and so proceeded with the SEM to test the hypotheses, for which the estimation results are tabulated in Table 8.

TABLE 8
Structured Coefficients from Age within Country Multigroup Analysis

Hypothesis	MALAYSIA						INDIA					
	Age -> Under 30 (n=140)			Age -> Over 30 (n=104)			Age -> Under 30 (n=171)			Age -> Over 30 (n=160)		
	Coeff	p-val	t-value	Coeff	p-val	t-value	Coeff	p-val	t-value	Coeff	p-val	t-value
Change Message - Discrepancy (CMD)												
CMD -> CCA (Commitment to Change - Affective)	0.20	0.095	1.67	-0.01	0.862	-0.17	0.02	0.907	0.12	0.12	0.231	1.20
CMD -> CCC (Commitment to Change - Continuance)	-0.02	0.877	-0.16	0.00	0.992	-0.01	0.11	0.350	0.93	0.17	0.106	1.62
Change Message - Valence (CMV)												
CMV -> CCA (Commitment to Change - Affective)	-0.06	0.654	-0.45	0.22	0.006	2.76	0.00	0.973	0.03	0.01	0.909	0.12
CMV -> CCC (Commitment to Change - Continuance)	0.05	0.679	0.41	-0.22	0.008	-2.65	-0.15	0.175	-1.36	-0.21	0.062	-1.87
Change Message - Support (CMS)												
CMS -> CCA (Commitment to Change - Affective)	-0.10	0.005	-2.82	-0.10	0.005	-2.82	-0.10	0.005	-2.82	-0.10	0.005	-2.82
CMS -> CCC (Commitment to Change - Continuance)	0.06	0.083	1.73	0.06	0.083	1.73	0.06	0.083	1.73	0.06	0.083	1.73

CONTROL VARIABLES

CCA (Commitment to Change - Affective)

Change Impact (CI -> CCA)	0.38	0.000	4.27	0.38	0.000	4.27	0.38	0.000	4.27	0.38	0.000	4.27
Change Significance (ZCS1 -> CCA)	0.06	0.182	1.34	0.06	0.182	1.34	0.06	0.182	1.34	0.06	0.182	1.34
Competence (COMP->CCA)	0.04	0.258	1.13	0.04	0.258	1.13	0.04	0.258	1.13	0.04	0.258	1.13
Social Desirability (SOD -> CCA)	-0.07	0.000	-4.95	-0.07	0.000	-4.95	-0.07	0.000	-4.95	-0.07	0.000	-4.95
Years with Organization (YRORG -> CCA)	-0.07	0.058	-1.90	0.01	0.653	0.45	-0.01	0.886	-0.14	-0.01	0.794	-0.26
Education Level (EDUC -> CCA)	0.04	0.726	0.35	0.27	0.000	3.57	0.07	0.426	0.80	0.02	0.782	0.28
Years in current role (YRROLE -> CCA)	0.05	0.047	1.99	0.03	0.164	1.39	-0.02	0.689	-0.40	0.02	0.363	0.91
Current Role level (CURRLVL -> CCA)	0.03	0.762	0.30	0.02	0.756	0.31	0.10	0.239	1.18	0.19	0.000	4.06
Work role (WORKRL -> CCA)	-0.02	0.784	-0.27	-0.16	0.038	-2.08	0.09	0.075	1.78	0.14	0.000	3.34
Gender (GENDER -> CCA)	-0.21	0.033	-2.14	-0.04	0.710	-0.37	0.18	0.176	1.35	0.14	0.340	0.95
Job Status (JOBST -> CCA)	-0.14	0.172	-1.37	0.10	0.488	0.69	-0.55	0.065	-1.85	-0.43	0.405	-0.83

CCC (Commitment to Change - Continuance)

Change Impact (CI -> CCC)	-0.11	0.180	-1.34	-0.11	0.180	-1.34	-0.11	0.180	-1.34	-0.11	0.180	-1.34
Change Significance (ZCS1 -> CCC)	-0.03	0.566	-0.57	-0.03	0.566	-0.57	-0.03	0.566	-0.57	-0.02	0.566	-0.57
Competence (COMP->CCC)	-0.13	0.000	-3.52	-0.13	0.000	-3.52	-0.13	0.000	-3.52	-0.13	0.000	-3.52
Social Desirability (SOD -> CCC)	0.07	0.000	4.72	0.07	0.000	4.72	0.07	0.000	4.72	0.07	0.000	4.72
Years with Organization (YRORG -> CCC)	0.01	0.711	0.37	-0.07	0.022	-2.28	0.05	0.115	1.58	0.03	0.311	1.01
Education Level (EDUC -> CCC)	0.21	0.034	2.12	-0.12	0.156	-1.42	0.04	0.606	0.52	-0.05	0.565	-0.58
Years in current role (YRROLE -> CCC)	-0.02	0.483	-0.70	0.01	0.847	0.19	-0.02	0.603	-0.52	0.01	0.615	0.50
Current Role level (CURRLVL -> CCC)	-0.07	0.465	-0.73	-0.05	0.423	-0.80	-0.04	0.585	-0.55	-0.16	0.001	-3.18
Work role (WORKRL -> CCC)	-0.06	0.319	-1.00	0.16	0.059	1.89	-0.04	0.400	-0.84	-0.11	0.023	-2.27
Gender (GENDER -> CCC)	0.16	0.084	1.73	0.10	0.394	0.85	-0.12	0.259	-1.13	-0.03	0.830	-0.22
Job Status (JOBST -> CCC)	0.20	0.047	1.99	-0.12	0.418	-0.81	0.24	0.333	0.97	0.21	0.719	0.36

Fit Statistics

Chisquare (df)	1616.04 (1117)
CFI	0.934
NFI	0.824
TLI	0.904
RMSEA	0.028
RMSEA (LO 90%)	0.025
RMSEA (HI 90%)	0.031
SRMR	0.070
PCLOSE	1.000

Note: Based on the number of control variables and the sample size in the four-way multigroup analysis, p < 0.1 is considered significant and shown in bold.

The four-way multigroup analysis (Age within Country) yielded fit statistics as follows: Chi-square = 1616.04, d.f. = 1117, $p = .000$, NFI = .824, TLI = .904, CFI = .934, RMSEA (90% CI) = .028 (.025 and .031). NFI is below .90 and SRMR at .070 is greater than .05, which was expected in the four-way multigroup simultaneous analysis of the two mediators that had already shown differences in their separate two-way mediation analysis. The original model as specified produced negative variances for one of the items of affective commitment to change (CCA6 = -.002) and the disturbance term (error term = -.081) of the latent construct continuance commitment (CCC). Based on the modification indices and the nature of the construct relationship, we modified the model slightly to allow the error terms of two of the items (CC4 and CCC6) of continuance commitment to change (CCC) to correlate and also the error terms of the latent constructs (dependent variables), CCC and CCA (d1 and d2). Since these two constructs are part of the same commitment-to-change profile scale, we feel this is not a serious violation of the construct definitions. With these two slight changes, the negative variance problem was resolved; and we were able to get clean results.

In the constrained structural model, we were able to constrain H5 (support → affective) and H6 (support → continuance) and establish model invariance. All other hypotheses were constrained one by one, but eventually they had to be left unconstrained (released) to establish the invariance between the unconstrained and the constrained model, using the approach outlined in the previous section. Following are the results from the final constrained, four-way multigroup model (with only H5 and H6 constrained). The details are in Table 8.

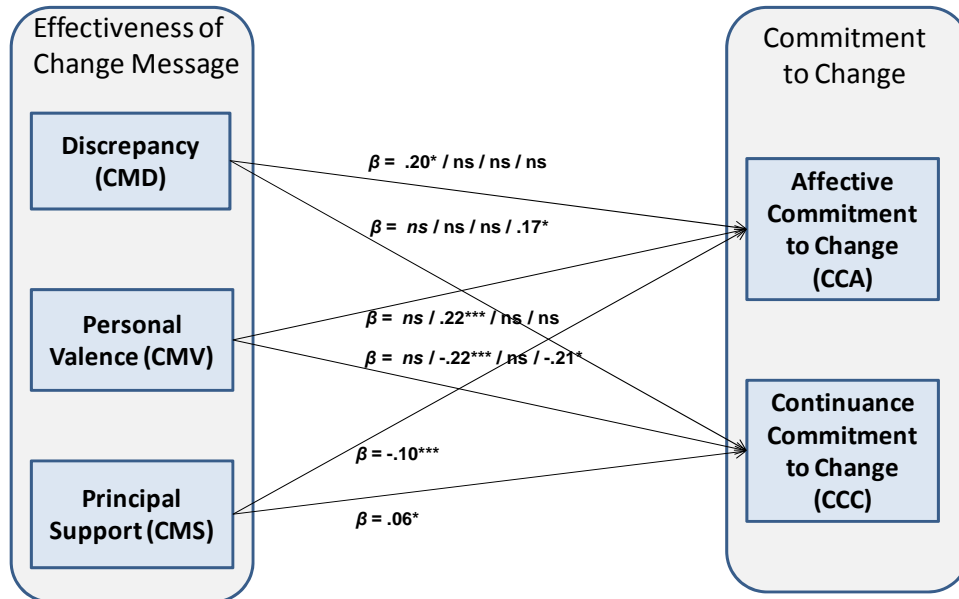
Discrepancy change message was significant on affective commitment to change only for Malaysian professionals under age 30 \rightarrow H1 ($\beta = .20, p < 0.1$), and it was significant on continuance commitment to change only for Indian professionals over age 30 \rightarrow H2 ($\beta = .01, p < 0.1$).

Valence change message was only significant for the over-30 group within Malaysia with a strong positive relationship to affective commitment to change \rightarrow H3 ($\beta = .22, p < .01$) and a strong negative relationship to continuance commitment to change \rightarrow H4 ($\beta = -.22, p < .01$). Valence also had a strong negative relationship to continuance commitment to change for Indian professionals over age 30 \rightarrow H4 ($\beta = -.21, p < 0.1$). The valence change message relationship to affective and continuance commitments to change was insignificant for all remaining groups.

Support change message was negative and equivalent for all four groups \rightarrow H5 ($\beta = -.10, p < .01$) on affective commitment to change, but it was mildly positive and significant on continuance commitment to change for all the groups \rightarrow H6 ($\beta = .06, p < 0.1$).

Hypothesis results of the four-way multigroup analysis (Age nested within Country) are also shown graphically in Figure 3 below.

FIGURE 3
Estimated Model to Test the Relationship between Change Messages and Commitment to Change for the Four-Way Multigroup Analysis (Age within Country)



Note: four values per hypothesis represent Malaysia-under30 / Malaysia-over30 / India-under30 / India-over30. *P<.1, **p<.05, ***p < .01, ns = nonsignificant

DISCUSSION

Even though there is support for the relationship between the communication of change messages and commitment to change, which is consistent with the literature and hypotheses, some of the findings have uncovered various differences and unintended consequences.

Our findings clearly indicate that when it comes to commitment to change, change messages matter. However, the three change messages have different effects on the two dimensions of commitment-to-change. Also, there are differences due to culture and age that have important research and practical implications.

It is generally accepted that communication is good for commitment (hence, the hypothesis was set up in a positive direction). However, we found that not all communication is good when it comes to generating commitment.

Combined Model

A discrepancy change message, which indicates that something is wrong and needs to be changed, is only relevant when employees feel they have to change (continuance), when they are being pushed into the change. Discrepancy has no significant impact on affective commitment to change because employees don't need an external explanation if they internally believe in the change.

A discrepancy change message only has a positive impact on continuance commitment to change because it requires the employees to improve to the least of the commitment levels (continuance or "have to change"). Another explanation for this may be that people may be non-believers in the change because they don't understand the reasons why change is needed, and so discrepancy messages help move them to the state of continuance commitment to change. In other words, a discrepancy change message may be the necessary trigger to help employees rise to the least of the commitment levels, and now they may be more open to other change messages that may move them from a "have-to" mindset to a "want-to" mindset. We feel this is an implication for research on change readiness, which is defined as "beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organization's capacity to successfully undertake those changes" (Armenakis et al., 1993). The first half of the change readiness definition is essentially about the importance of the discrepancy change messages, and since we establish discrepancy to only impact the continuance commitment, we conclude that change readiness may not a

preferred situation during change, especially if it does not ensure affective commitment to change. In other words, an expanded definition of change readiness may need to be established that incorporates beliefs that are strongly associated with affective commitment, such as valence.

A personal valence message is the strongest of the change messages in terms of impact on the commitment to change in two different ways. Personal valence (what's in it for me) has a strong positive influence on affective commitment to change and a strong negative relationship with continuance commitment to change. In other words, people have to be able to make sense of how the change will benefit them personally. Though a positive relationship between valence and affective commitment was expected, the negative relationship to continuance commitment was not expected by the hypothesis—we had expected a weak relationship, but not a negative relationship. It appears that when people feel they have to change (continuance), it is largely because employees don't see any personal benefit coming out of the change.

A valence change message has a positive impact on affective commitment to change and a negative impact on continuance commitment to change: it has a dual effect, increasing affective commitment and decreasing continuance commitment. Since the increases and decreases are in the same proportions, it may be argued that valence messages help shift or move the commitment from continuance towards affective. This would indeed make valence the most effective of the change messages in terms of generating desire for change in the organization. Part of the reason for this stronger relationship of valence with both affective and continuance commitments to change could be that “as the personal importance of the

topic increases, recipients are postulated to become more motivated to allocate their limited cognitive resources to processing the message” (Petty & Cacioppo, 1990).

Another interesting finding is that support from management has a negative impact on the affective commitment to change and a very weak positive impact on continuance commitment to change. The negative relationship between a support message and affective commitment is, of course, very surprising since “perceived organization support has been found to be strongly associated with affective commitment” (Rafferty and Simons, 2006). Employees may feel that the reason behind the support message could be management’s expectation of high resistance or their belief that the change will not be in the best interest of the employees. Trust in management could be another factor that would explain the negative relationship between a support message and affective commitment to change. For example, in both of the change initiatives, even through the framing was different, the underlying intention of management was to increase retention rate by giving employees the feeling that things are being made better (overall in the case of India and for individuals in the case of Malaysia). This does pose a dilemma for management in how to communicate change intentions when the objective of the change is to retain employees, and desire and willingness from these same employees is needed to embrace the change. Every company has to find the right balance, but evidence shows that employees can discern management’s true intentions. Of course, being too explicit in such intentions may also frame the initiative quite negatively from the start.

A support change message has a negative impact on affective commitment to change—a surprising, negative, unintended consequence. Instead of helping improve commitment, it decreases the affective commitment (desire and willingness) to change. In

other words, the more people sense that management is behind the change and supports the change, the less they are willing to commit to that change. This may reflect the mistrust employees have in the leadership and the true intentions that management has behind the change. In other words, employees are able to see through the change; and the more they see management being behind the change and pushing the change, the less they are willing to change. A support change message does show a slightly positive relationship to continuance commitment to change, indicating that in situations where the change has to be pushed through the organization, a support change message can help generate continuance commitment to change. This may also reflect a partial shift from affective towards continuance commitment to change, which certain unpleasant but necessary situations may require.

Cultural Differences

Overall, the instrument reacted well to culture and change as shown by the structural equivalency in Table 7 for the five multigroup analyses. Differences that do exist lead to deeper understanding by looking at Age within Country, which shows that certain hypotheses do not hold between cultures, based on the age of the professional.

Looking at the Malaysia vs. India analysis (column 1 in Table 7), it is interesting to note how valence messages impact affective commitment to change. Since this relationship is the most potent in terms of generating desire and willingness towards change, it is important to understand the difference between the two groups. Valence has a very strong and positive relationship to affective commitment for the Malaysia group, while the same relationship was insignificant for the India group. One explanation for this could be that the Malaysia change was framed as an individual-level change initiative (please see the introductory survey text

message) while the India change was framed more as an organizational-improvement change effort in which the personal benefit was implied, but not as explicitly as in the Malaysia change. This may highlight the importance of framing the push communication to create effective pull conditions for other change messages. Even though we controlled for the change impact and change significance, we may need to control for the level at which the impact of the change will be felt (individual, departmental, company-wide) since that seems to matter in terms of how the change messages impact the affective commitment to change. It is ironic to note that the Malaysia change initiative (where we found high willingness to change) has been disbanded while the India change initiative is gaining momentum from the top, although the willingness to change is not yet present. This highlights an important point: one cannot read too much into the relationship between change messages and commitment to change and assume that affective commitment to change implies automatic, successful change implementation. In other words, affective commitment helps and may indeed be necessary, but it is by no means a sufficient condition for the success of change in an organization.

Age Differences

Another interesting group analysis was based on age under 30 vs. age over 30. Consistent with the results from the combined dataset, results from the group analysis based on age confirm the negative relationship of valence messages on continuance commitment to change, but only for the age group over 30. In other words, the effect of valence on continuance commitment to change is amplified for the age group over 30, and it is highly insignificant for the age group under 30. This may be due to the fact that, for the older group, being pushed to change ends up lowering their negative desire to change once they believe

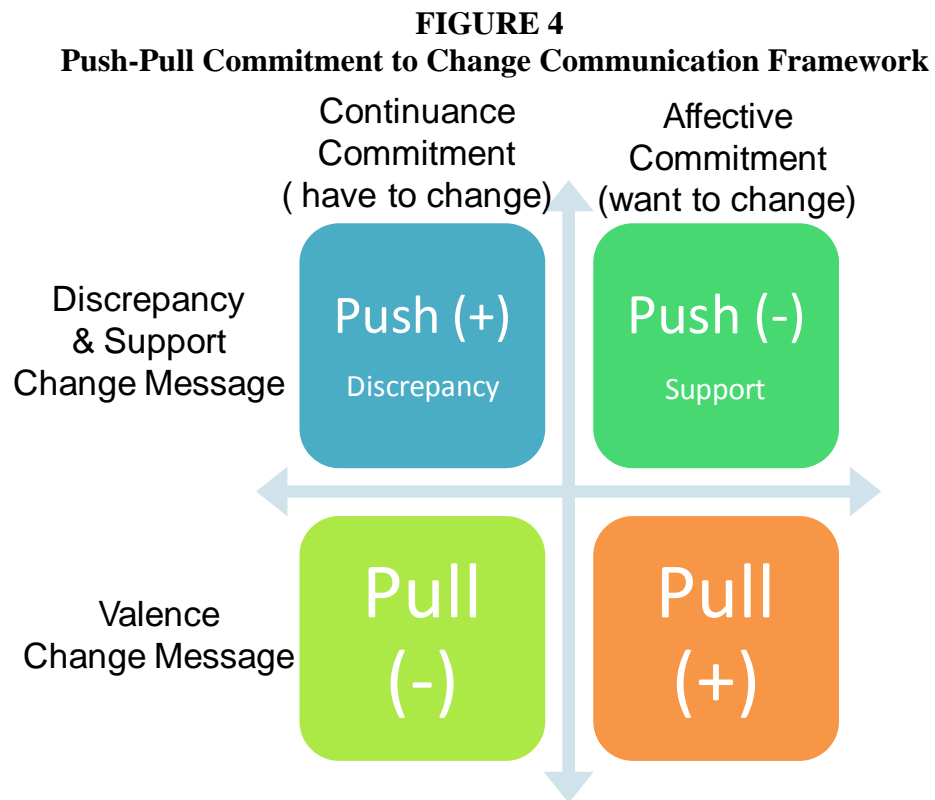
the change will benefit them. In this case, valence may be at its most potent form, lowering negative commitment and increasing the positive commitment at the same time. For the age group under 30, valence has no effect on continuance commitment because they only seem to react to affective commitment in the positive manner and don't have the "have-to" sentiment to change. (In other words, they cannot be pushed, which also means that their negative desire cannot be lowered with valence that they don't have to begin with).

Age also has an interesting impact on the relationship between support change messages and affective commitment to change. Consistent with the results from the combined dataset, for the age group under 30, a support change message has a negative relationship with affective commitment to change. However, this relationship is amplified (compared to the combined dataset results), and almost entirely due to the under-30 age group, since the over-30 age group shows a nonsignificant relationship between support messages and affective commitment to change. One explanation for this could be that the younger age group does not trust the management or their intentions behind the change, and so the support messages from management only translate into a lower desire (affective commitment) for the change.

Push-Pull

Each change message has both a pull and push component. Messages like discrepancy and support have more push component than pull while personal valence is strongly composed of pull. These views are supported by the hypotheses, which highlight the weaker effects of push-laden messages (support and discrepancy) when compared to pull-laden messages (valence) that seem to have the magical power of intensifying the positive (affective) commitment to change while at the same time dampening the effect of negative

(continuance) commitment to change. Management can use these results to create a focused change-communication strategy since the ultimate object of any change communication is to create willingness and desire among the people to embrace the change rather than to cause them to feel pushed or forced into going along with the change.



We also found competence to be an important control variable. This is a contribution we are making to research since only change significance and change impact were considered previously as important controls. The importance of competency was first uncovered during the qualitative study when several people expressed a positive feeling towards the change because they felt confident about their abilities and saw the change opening new opportunities that they would be able to capitalize on in the future. An equal

number of people, mostly with lower education levels, felt that they might lose their job or not be able to adapt to the changes that a new role may require. Based on these views, we felt it important to control for the sense of competency.

We also found change impact to be an important control variable (Herscovitch & Meyer, 2002). This has been highlighted by Rafferty and Simons (2006) while examining the differences in antecedents depending on whether the change is of the fine-tuning type or a corporate-transformation change.

If people want to accept the change, a discrepancy message is not significant for affective commitment to change (hypothesis 1) because they are already ready to act and may not need additional reasons for the change. On the other hand, when people are being pushed towards a change and feel they have to change (continuance commitment to change), then they may need more explanation to understand the reasons behind the change; hence, the discrepancy message becomes important, as supported by hypothesis 2. The size of the discrepancy change message is surprisingly small since one would expect that understanding the reasons for change would be a precondition to developing any kind of change sentiment. That is why management spends most of its time clarifying the reasons and logic behind the change and hoping that this will help employees develop an understanding and be won over.

As the results for hypothesis 3 and 4 show, personal valence is clearly the most dominant change message impacting both affective and continuance commitments to change. Both of the relationships are also highly significant. Based on the results, one can argue that, unless people see a personal benefit from the change, it will be very hard for management to generate any form of commitment towards the change, regardless of how well the other change messages are received by the employees.

During most change initiatives, especially during the initial phases, senior management typically communicates extensively to build momentum and excitement among the employees. Regardless of whether employees want to change (affective) or feel they have to change (continuance), they do not consider principal support to be a major factor in creating or changing their belief one way or the other. Employees typically assume that, based on the excitement being reflected in the leadership's communication, management must already be convinced and believe in the change that is being pushed on the employees. This could explain why principal support has a small impact on continuance commitment to change (hypothesis 6). However, it is surprising to see principal support change messages having a negative relation to affective commitment to change (hypothesis 5), pointing to other factors such as management intentions of change and trust in the change agents.

Appropriateness and efficacy change messages were not tested for their impact on commitment to change primarily because these beliefs may get established concurrently with the affective commitment to change. Employee agreement on how the change will be implemented (appropriateness) and its chance of success (efficacy) may be too close to their desire (affective commitment) for change. Timing could be another reason why we were not able to separate appropriateness and efficacy change messages from the affective commitment to change. It may be that appropriateness and efficacy beliefs get formed just before affective sentiment, and so they are not distinguishable through the current measures for these constructs. The readiness-for-change scale (Holt, 2007) incorporates these items and also implies a possible overlap with the affective commitment-to-change construct.

It is important to understand why improving communication and relationships have such a profound impact on organizational outcomes such as commitment towards a change.

The explanation is that people do not set aside their normal human needs during working hours. We, therefore, need to stop viewing organizations through the distorting lens of positivist-inspired machine metaphors. Such metaphors assume a watertight separation between thinking and feeling and conceptualize organizations as impersonal systems to be manipulated into new forms exclusively at management's will. In reality, organizations are chiefly systems of human interactions; and people carry their emotions and wider social needs into their work, which is why most change-management programs now have communication as their dominant theme (Stewart, 1999). As Lewis & Seibold (1998) point out, the problem of managing change, to a very large extent, is a problem of managing communication.

According to Wanberg & Banas (2000a), information is necessary about changes that will occur and how they will affect the organization. Without adequate information, individuals may be uncertain about what specific changes will occur, how a given change will affect their job and organization, or how to respond to a change (Milliken, 1987). In addition to improving attitudes towards a given change, information received about organizational changes helps to reduce employee anxiety and uncertainty (Miller & Monge, 1985; Schweiger & DeNisi, 1991).

Lewis (1992) points out that, when managers are introducing change, they frequently regard resistance as something to be overcome. According to Lewis (1992), resistance is also feedback and always useful. Such feedback must be institutionalized into organizational decision making in order to avoid the emergence of a collective uniform consciousness.

“Uniform thinking,” in any event, is an oxymoron. In many cases, it is the manner in which a

change is introduced rather the change per se which alienates people (Turnbull & Wass, 1998). A lack of consultation and communication is particularly prone to sparking resistance.

Implications for Practice

Need for communication increases during the time of organizational change because employees are trying to make sense of the situation as it is unfolding and are likely to attend to the words and actions of immediate supervisors, rather than top management, in making judgments regarding change (Neubert, 2001). It is important to realize that, even though organizational actions affect employees' commitment, merely doing something may not be enough. Employees will have to perceive it was done, attribute the action to the organization, and interpret it as being motivated by good intentions (Meyer & Allen, 1997). One cannot assume that these perceptions will take place automatically, which makes communication very important. Management should not only inform employees of its actions and intentions but also listen to and seek out reactions of employees to determine whether the messages are being accurately received.

Positive communication (such as accurate information, high levels of trust, and a desire for interaction) has been shown to have a strong relationship to levels of job satisfaction (Pettit, Goris & Vaught, 1997). Push communication strategies can help create a positive organizational environment that can increase the likelihood of generating the pull.

Some of the typical communication interactions in the context of change are (1) communication from top management to the rest of the organization (Mathieu, 1990), (2) the influence of mid-level management/supervisors in shaping the thinking and actions that are driving the change implementation (Mayer, 1998), and (3) a sense of involvement and participation of front-line employees in providing input and feedback to mid-level and top

management (Mayer, 1998). Participation has been found to be positively linked to attitudinal variables such as commitment to change (Lines, 2004). When appropriate, input from employees should also be sought before policies and practices get implemented (Niehoff, 1993) since only then will employees have a sense of involvement and participation that is associated with the pull effect.

It is equally important for management to note that not all forms of change messages are equal and not all forms of commitments are equal. As the change unfolds in their organization, management has to be aware not only of the state of these multiple change messages and commitments but also how the various change messages may be impacting the various types of commitments towards the change. Ideally, management should reinforce the change messages that have the greatest impact on affective commitment to change and minimize the negative effect of those change messages that may be strongly associated with continuance commitment to change.

Overall, this research provides a practical methodology for managers to use the survey constructs of change messages and commitment to change to baseline the organizational readiness to change at the start of the journey. By understanding the commitment levels and which specific change messages are causing positive and negative commitments to change, managers can fine-tune and make adjustments to their change management strategies to focus on specific change messages that need attention rather than overloading employees with nonrelevant and redundant communication that may not have any impact towards enhancing their commitment to change.

We also believe that organizational readiness for change needs to be relevant from the standpoints of both research and practice. Being ready implies a position from which one

can start the journey, but our findings suggest that the dynamic of push-pull require a different model that is based on shifting and adjusting readiness levels for adopting a change. Readiness implies a static and linear view that, once people are made ready, you can introduce the change and cushion the impact after which people will continue marching forward on the path of organizational change. The reality is that push-pull dynamics are adjusting and shifting all the time at individual levels and require understanding change as push-pull alignment that is constantly adjusting to the dynamics of change in the organizational environment. Doing frequent checks of the state of commitment levels and the effectiveness of change messages is the only way to know what adjustments need to be made to the communication and change strategy.

Now we shall present specific advice to the two centers where the sample data was collected. Since retention is an important factor for Malaysia, we suggest that the change should be framed so that real intentions are open, clear, and consistent; otherwise, management support will be negatively received and hurt the affective commitment to change. Consider making career path development an explicit focus in the change initiative to create a strong link between the purpose (retention) and the strong impact of personal valence. Right now, people under age 30 have no link to personal valence; that is alarming since this is precisely the target audience that needs to be retained. The above-30 age group in Malaysia seems to have strong, positive affective commitment and strong, negative continuance commitment, confirming that they understand well how the change will benefit them personally. This may be due to better communication from supervisors and management or to more maturity in discerning the change purpose and making the

connection, as intended by management. Better communication connections need to be made with the younger IT professional (under age 30).

For the Indian center, there seems to be an even bigger disconnect regarding the intentions behind the change. Not only is leadership support lowering the desire for change, but the explanations for the change are not connecting with the under-30 age group and are actually increasing the negative commitment to change for the over-30 age group. Either way, we see lack of clarity in the link between the change and personal valence (what's in it for me), which is negatively impacting the effectiveness of change communication. Part of the reason is that the change has been framed at a broad organizational level. It may be better to reframe it at an individual level and link it to something specific, such as career development. There is a slight effectiveness in personal valence messages since they lower the negative commitment to change for the over-30 age group; but since the positive desire is absent, we cannot really consider them that useful. For the under-30 age group, there is actually no significant link at all between valence and either commitment types, making it even more clear that change has to be more personal for the Indian professionals, especially for the under-30 group.

Limitations

The findings from this research could be subject to common method bias and response biases, such as acquiescence bias, since only social desirability bias was controlled for due to the cross-cultural nature of the sample. Also, these preliminary results do not control for relevant-control variables such as change significance, change impact, and competence (self-efficacy) of the respondent (Herscovitch & Meyer 2002), which could impact the findings.

There is also an inherent limitation in the findings when Western scales are used in the context of international research study. For example, behavior and attitudes Westerners consider indicative of commitment may not be valid from Asian perspectives; and their meaning may vary in different cultures (Swailes, 2002), as in Malaysia and India from where the two sample datasets were collected. Thus, general theories of commitment require more local interpretation to enhance the understanding, which we tried to do through interviews with several managers and front-line workers in both locations. These interviews focused on the specific change initiatives underway at these locations and were also the theme of the commitment-to-change survey questions. Through this triangulation of interpretation, we tried to overcome the cultural limitations of the survey instrument. The effect due to biases and controls will have to be tested in another study. It is important to note that the results from this study may be different for different demographic segments, so any broad and generic conclusions should be avoided. Even though two separate datasets were collected, they are still divisions of the same organization, therefore limiting how much the results can be generalized.

Language is the basis of how we process and interpret information and make sense of what is being communicated to us. For both Malaysian and Indian workers, English is a second language; so it is possible that some of the survey questions were not interpreted as specified. In fact, through informal discussion with Malaysian managers, we were repeatedly warned that their employees (mostly Chinese professionals) do not interpret well the negative worked questions. The same may be true for the Indian sample, but it was not highlighted by their local management. Also, we have a hunch that the pull may occur mostly in the native

language of the individual, making it even more difficult to determine alignment between push (English) and pull (native language).

This highlights why the push-pull alignment can become particularly challenging in a multicultural change initiative that is typical of IT-enabled scenario changes, such as global ERP implementations. However, a more thorough cultural literature review needs to be conducted to better understand how the change messages may get interpreted differently among IT professionals of Indian and Chinese backgrounds. Even though our data supports some key differences, the reason and explanations could be more grounded in the cross-cultural academic literature. For example, the differences in the results between the Chinese workers (Malaysia center) and Indian workers (South India center) could be due to the culture of these ethnic populations and not necessarily due to the nature of the change or the change messages. We have not explored the differences due to collectivism and individualism that exist between these two populations and may influence the responses. However, we feel that the differences should not be that huge since both groups generally have a strong work ethic and also a strong desire to develop. Besides, the IT profession seems to exhibit common professional values that are consistent in Asia and the Indian subcontinent. The values of the social-desirability control variables (bottom part of Table 8) also reflect this consistent mindset in the professional environment. We can probably assume some consistency due to the fact that both the Indian and Malaysian centers are part of the same organization that aspires to maintain its own global company culture.

Most change projects seem to go through a predictable cycle that includes high expectations followed by a sharp drop in satisfaction followed by a slow and steady increase

in adoption. The current control variables of change don't control for the stage (time horizon) a change is in, so results may be biased due to this effect.

Since almost of the workers in the Malaysia survey are Chinese, we are generalizing the finding for all Chinese workers because Chinese culture is well preserved in Malaysia; and this pattern is generally true across other Asian countries. However, we still feel that a separate sample from mainland China or Taiwan may be needed to truly generalize the results for the Chinese population before comparing and contrasting it with the Indian sample.

One of the key latent constructs—*affective commitment to change*, which is a dependent variable—has only two items, but the original Myer (Herscovitch & Meyer, 2002) scale had six items. We were only able to make two of the items work reliably across the Malaysia and India datasets. Even though two items can serve the purpose, it can be argued that they may not reliably represent the intent of the original construct and, therefore, may not be valid. We feel this is a limitation, but it may be resolved by conducting the EFA/CFA separately on the two datasets and then by adding two additional items that work reliably within each country to the combined dataset.

During the various multigroup analyses, we only tested for structural differences between the various groups and did not carry out a latent-mean difference test that could have highlighted additional differences between the Malaysian and Indian datasets in addition to years of employment, work roles, role level, and age.

The survey design also had a few limitations that could be avoided in the future. First, the length of the survey was too long (over 160 questions). This was a result of including important, practical topics of interest to the client along with the topics relevant to the

research. However, several participants expressed concern with the length of the survey; and we feel that it may have had an impact on the quality and quantity of the responses.

Secondly, on the 7-point Likert scale, four (neutral) was selected more than we expected.

This could be because participants lacked adequate information about the change or their cultural sensitivity did not allow them to answer questions that could be perceived as disrespectful or questioning authority. We feel that in future surveys, especially for people of Indian and Chinese background, a neutral response should be avoided, thereby forcing respondents to pick a choice that reflects their agreement or disagreement to the question.

Future Research Directions

Considering the differences between the country- and age-group analyses, future research should explore for possible mediators between communication and commitment. A starting point could be a four-way multigroup analysis of age within country to better explain the differences in the hypothesis.

To address some of the limitations, future research should combine data from multiple organizations in different industries and capture additional factors to determine if the findings from this study can be generalized across organizations and industries.

In a customer-centric profession like information technology, commitment to the customer is a very important dimension in any analysis of change since employees need to make sense of how a particular organizational change will benefit not only the organization or themselves but also the customers they serve on a day-to-day basis (Reichers, 1985). The sample data in this study does not include customer commitment measures, and so the results may not have captured all the critical sentiments regarding the change. For example, if employees realize that the change will not be good for customers, their commitment to the

change may be low, even though they may perceive the change to be beneficial for the organization and for themselves. The strength of the commitment towards customers may also vary between cultures. Because companies operate in a customer-driven business environment, it is important to consider this in a future commitment-to-change study.

Commitment to organization is often used as a moderator and mediator in various studies to measure its impact on various organizational outcomes. However, in the loosely coupled, flexible organizational structures of today, strong organizational commitment is slowly diminishing; meanwhile, professional career commitment is increasing, such as in IT. It would be important to see which one—organizational commitment or career commitment—has a stronger mediation or moderation effect on commitment to change, considering the changing organizational structures and career models of modern global enterprises.

Since personal valence change messages seem to have the most impact on affective commitment to change (pull the desire for change), it would be important to go one level deeper and explore the various antecedents of personal valence and see which ones have a positive impact on personal valence during organizational change. Some of the antecedents to consider could be work/life balance, fairness of rewards, growth opportunities, and workload.

Our research found that support change messages have a negative impact on affective commitment to change (H5). This was true across both the Malaysia and India samples as well as across the other four multigroup analyses. This relationship can be explained by looking at trust as a possible mediation variable between change messages and commitment to change.

Due to various factors that are operating during the dynamics of change, it becomes hard to interpret the results in the context of the change. Therefore, we suggest that future research combine the quantitative survey with the qualitative results so that we can better triangulate the change and interpret the results. The qualitative data could be collected by either interviewing some of the sample population that took the survey or embedding open-ended questions as part of the survey. These open-ended questions should allow respondents to write a few sentences about the change, communication, their sense of alignment, and the reasons for their commitment or lack of commitment towards the change. This multisided approach would provide us the insights necessary to better interpret the relationship between the various change messages and the commitment-to-change levels.

Since these two samples reflect Indian and Chinese IT professional workers, we feel there is an opportunity to collect additional data from India and China and frame the study to compare and contrast Indian and Chinese workers in a cross-cultural change-management study. This will help test the robustness of the scales and also help culturally sensitive change-message strategies.

Retention continues to be a major issue for companies in India and China. As these economies grow, we feel that additional research should incorporate intention to stay and/or retention as an explicit construct to measure how the strength of the personal-valence change messages impact retention rate. Retention can be tested as an outcome (dependent variable) to determine if commitment level mediates the effect between change messages and retention. We suggest going even further by applying constructs from this research in the career-development program (this is an explicit example of valence) and seeing how it improves retention rates. There is also debate about the overworked environment of IT shops

and the need for work/life balance. Companies in India and China are beginning to put programs in place to reduce working hours and implement better work/life balance. We feel that testing and an expanded version of our model will help companies determine the commitment of IT professionals towards such changes. Our conceptual hypothesis is that age will be a strong moderator in this since younger people want to go the extra mile and give everything as long as they can see their career moving forward and they can have a chance to be part of the global knowledge pool. Currently in India and China, employees often move to other companies after two years because they feel they have learned everything that their current employer has to offer. We feel this is largely the result of a lack of planned career-development opportunities for workers. Creating a learning organization may indeed be a necessary retention strategy for companies in India and China where new companies are forming through foreign direct investment and employees are truly in the driver's seat in selecting the best place where their careers can grow.

CONCLUSION

There is a wide agreement that communication during the change process often results in communication overload when the change process is not progressing as desired. Over the last several years, research has identified specific change messages (discrepancy, appropriateness, efficacy, principal support, and personal valence) that are important for change initiatives; it has also identified various change sentiments or commitment levels (affective, normative, and continuance). In this research, we focused on messages of discrepancy, support, and valence to determine how they impact the affective (want to) and continuance (have to) commitments to change. We demonstrated that discrepancy messages only enhance the negative (continuance) form of commitment and support messages actually

decrease the positive (affective) form of commitment. In other words, both discrepancy and support change messages have unintended consequences that actually hurt the success of the change initiatives. It is only the valence message that has the desired impact on commitment to change and actually has a dual, simultaneous impact of increasing the positive form of commitment and decreasing the negative form of commitment. Also, the magnitude of this impact is larger than that of the other two messages. In an era where change is rapid and frequent and companies are experiencing greater problems of managing attention, they cannot afford to overload employees with unnecessary information because employees have become very good at ignoring all the information (Rashid, 2007). However, companies do have a choice, and they should focus on valence messages to create the pull within the employees to develop a positive sentiment towards the change. Push messages, such as discrepancy and support, can also be communicated through purposeful and authentic stories that help people understand the big picture and connect it to the parts that affect them on a day-to-day basis. In summary, we believe that the push-pull model not only addresses the attention problem referred to by Van De Van (1986) but also the whole-part challenge, how do we put the whole into the parts?

The ultimate objective of communication is to create a desire and willingness (affective commitment) among the employees so that they not only embrace the change but go the extra mile to influence others through their positive behavior that translates their commitment into action. We hope that this research will highlight the importance of valence change messages and affective commitment to change for both practitioners and scholars so that organizations can increase the success rate of their change initiatives through meaningful communication. The change-implementation process does not have to end in the painful

experience that most organizations go through (commonly referred to as “the valley of despair”). Unfortunately, most organizations seem to never get out of the valley, or they take much longer to crawl out than they care to admit. Even though management often thinks it knows how the organization should work, it is the employees on the front line who know how the organization actually works. During the redesign of a business process, the actual situation is never fully understood before the future state of affairs is designed. In most cases, organizations are designing the very thing they are trying to understand; therefore, it is critical that the people who will be affected are fully involved and participating in the process. Only then will organizations be able to accurately design the future state and generate “the energy and commitment that are needed among coalitions of interest” to ensure a successful implementation that generates sustainable benefits for the organization and the employees. As articulated by Heracleous and Barrett (2001):

It is not adequate to view successful organizational transformation as defined by changes in action, unless such behavioral changes are sustained over time and, by virtue of their persistence, constitute deeper changes in structures. The concept of organizational inertia can be seen partly rooted in the daily affirmation, through repeated actions, of deeper structures located in agents’ interpretive schemes.

We believe this inertia of change requires pull more than push to sustain over time.

Effective organizations are aware of their members’ personal needs and take care to nurture relationships at all levels. Communication is a vital means of furthering this objective. Through opening the channels of communication, people can articulate their needs, reduce uncertainty by gaining access to information, develop opportunities to influence the decision-making process, and satisfy the fundamental human need to make a difference.

Pull communication that enhances the sense of participation, involvement, and influence may be far more critical in the sensemaking of the change messages that shape an employee's belief about the change than push communication that is usually the sole focus of management communication during the change process.

Based on the research, which led to the push-pull framework, we now have a sharper understanding of the relationship between change, alignment, communication, and commitment. We understand that the final outcome is a dynamic state that is constantly adjusting to the push-pull forces; therefore, it is important to measure and adjust the communication and change strategy proactively at frequent intervals to ensure effective alignment. The central focus of this activity should be to enhance affective commitment to change. We remind practitioners and scholars that:

Organizational change is not an easy endeavor: Transformation (change) is impossible unless hundreds or thousands of people are willing to help, often to a point of making short-term sacrifices. Employees will not make sacrifices, even if they are unhappy with the status quo, unless they believe that useful change is possible (Kotter, 1995).

Every employee will define usefulness of the change from their perspective, which makes the push-pull framework a practical way to measure and enhance commitment to change. The key is for employees to see the link between personal relevance (pull) and organizational change outcomes so that the actions they take are aligned towards a shared objective even in the absence of shared meaning.

APPENDIX

MALAYSIA SAMPLE – survey intro and questions

As you are aware, ABC has gone through tremendous growth since its short history and currently several new initiatives are underway to help the organization go to the next level of maturity, scale and growth. Some of these initiatives include Green Tree, Top Gun and Shake Hand. One specific change that management has been discussing, which will affect all the other changes, is the need to move from fixed group model to a flexible resource pool model. Under the flexible pool model, resources would be part of larger specialized pools for training and career development but get assigned to different projects based on project skill requirements. Some of the resource pools that have been identified are: Project Managers, Business Analysts, Architects, Software Engineers, DBAs, Test Engineers, and Product Support Specialists etc. Each pool would have its own career path and performance measure in addition to the normal project performance measurements. This survey is designed to get your feedback and sentiment regarding change from the current fixed group model to the flexible pool model. Since moving to the pool model will be a major change for the organization as well as you, we would like your input and feedback through this comprehensive survey. Throughout the survey, please focus on this one change that has been outlined above - move from the current resource model to the flexible resource pool model. Please do not spend too much time thinking about each of the questions - go with your initial gut reaction and try to complete the survey in one continuous flow of thought. Maybe freshen up and get a coffee or a cold drink before you start the survey! Thanks - you are making a great contribution to the future of ABC as well as advancing research.

Commitment to Change (Herscovitch & Meyer, 2002)

Affective (cca1-6)

CCA1: I believe in the value of this change to the [pool model]. [q105] [O]

CCA2: This change to the [pool model] is a good strategy for this organization. [q108] [O]

CCA3: I think the management is making a mistake introducing this change. [q111] (R) [O]

CCA4: Change to the [pool model] will serve an important purpose. [q114]

[O]

CCA5: Things would be better without this change to the [pool model]. [q117] (R)

CCA6: This change to the [pool model] is not necessary. [q120] (R)

Continuance (ccc1-6)

CCC1: I have no choice but to go along with this change. [q107] [O]

CCC2: I feel pressure to go along with this change. [q110] [O]

CCC3: I have too much at stake to resist this change. [q113]

CCC4: It would be too costly for me to resist this change. [q116]

CCC5: It would be too risky to speak out against this change. [q119]

CCC6: Resisting this change is not a viable option for me. [q122]

Change Messages (Armenakis, Bernerth, Pitts, & Walker, 2007)

Discrepancy (cmd1-4)

CMD1: We needed to change the way we did some things in this organization. [q39]

CMD2: We needed to improve the way we operate in this organization. [q45]
[O]

CMD3: We needed to improve our effectiveness by changing our operations. [q51]

CMD4: A change was needed to improve our operations. [q57]

Principal Support (cms1-5)

CMS1: Most of my respected peers will most likely embrace this change. [q42] [O]

CMS2: Top leaders support the change from [team model] to [pool model]. [q48] [O]

CMS3: The majority of my respected peers are dedicated to making this change successful. [q54] [O]

CMS4: My immediate manager encourages me to support this change. [q60]

CMS5: My immediate manager is in favor of the change from [team model] to [pool model]. [q56]

Valence (cmv1-5)

CMV1: This change from [team model] to [pool model] will benefit me. [q43]

CMV2: With this change in my job, I will experience more self-fulfillment. [q49]

CMV3: The change in my job assignments will increase my feelings of accomplishment. [q55] [O]

CMV4: Not embracing this change will have a negative effect on my future career. [q61] [O]

CMV5: I will have the potential to earn higher pay from my job after this change. [q62]

INDIA SAMPLE – survey intro and questions

As you are aware, XYZ has gone through tremendous growth since its short history and currently several new initiatives are underway to take XYZ to the next level in powering PARENT CO's vision through innovative and efficient technology solutions. One of the most significant initiatives underway is A2R (Aspiration to Reality), which is designed to move XYZ from cost arbitrage model to capability arbitrage model. This survey is designed to get your

feedback and sentiment regarding A2R initiative and the change from cost arbitrage model to capability arbitrage model. If you need additional information on A2R, please review any of the management emails or PowerPoint sent out, or talk to your manager or peers. It is important that you are at least, somewhat familiar with the objectives/purpose of A2R and the change from cost arbitrage model to capability arbitrage model. Since A2R will impact the whole organization including you, we would like your valuable input and feedback through this comprehensive survey. Throughout the survey, please focus only on the A2R initiative as it has been communicated to you by your management as well as through your informal discussions with your peers. Please do not spend too much time thinking about each of the questions - go with your initial gut reaction and try to complete the survey in one continuous flow of thought. Maybe freshen up and get a coffee or a cold drink before you start the survey! Thanks - you are making a great contribution to the future of XYZ as well as advancing research.

Commitment to Change (Herscovitch & Meyer, 2002)

Affective (cca1-6)

CCA1: I believe in the value of this change to the [capability arbitrage model]. [q105] [O]

CCA2: This change to the [capability arbitrage model] is a good strategy for this organization. [q108] [O]

CCA3: I think the management is making a mistake introducing this change. [q111] (R) [O]

CCA4: Change to the [capability arbitrage model] will serve an important purpose. [q114] [O]

CCA5: Things would be better without this change to the [capability arbitrage model]. [q117] (R)

CCA6: This change to the [capability arbitrage model] is not necessary. [q120] (R)

Continuance (ccc1-6)

CCC1: I have no choice but to go along with this change. [q107] [O]

CCC2: I feel pressure to go along with this change. [q110] [O]

CCC3: I have too much at stake to resist this change. [q113]

CCC4: It would be too costly for me to resist this change. [q116]

CCC5: It would be too risky to speak out against this change. [q119]

CCC6: Resisting this change is not a viable option for me. [q122]

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CMD1: We needed to change the way we did some things in this organization. [q39]

CMD2: We needed to improve the way we operate in this organization. [q45] [O]

CMD3: We needed to improve our effectiveness by changing our operations. [q51]

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CMS1: Most of my respected peers will most likely embrace this change. [q42] [O]

CMS2: Top leaders support the change from [cost arbitrage model] to [capability arbitrage model]. [q48] [O]

CMS3: The majority of my respected peers are dedicated to making this change successful. [q54] [O]

CMS4: My immediate manager encourages me to support this change. [q60]

CMS5: My immediate manager is in favor of the change from [cost arbitrage model] to [capability arbitrage model]. [q56]

Valence (cmv1-5)

CMV1: This change from [cost arbitrage model] to [capability arbitrage model] will benefit me. [q43]

CMV2: With this change in my job, I will experience more self-fulfillment. [q49]

CMV3: The change in my job assignments will increase my feelings of accomplishment. [q55] [O]

CMV4: Not embracing this change will have a negative effect on my future career. [q61] [O]

CMV5: I will have the potential to earn higher pay from my job after this change. [q62]

Control Variables (same for both Malaysia and India sample).

Change Impact

CI1: This change will make a positive impact on my job performance. [q145]

CI2: This change will make a positive impact on the organizational climate. [q146]

CI3: This change will make a positive impact on my non-work life. [q147]

Change Significance

CS1: Overall, this change will be significant for my organization. [q144]

Competence

COMP1: I am confident about my ability to do my job. [q148]

COMP2: I am self-assured about my capabilities to perform my work activities. [q149]

COMP3: I have mastered the skills necessary for my job. [q150]

Social Desirability

- SD1: I sometimes feel resentful when I don't get my way. [q123]
- SD2: On a few occasions, I have given up doing something because I thought too little of my ability. [q124]
- SD3: There are times when I felt like rebelling against people in authority even though I knew they are right. [q125]
- SD4: No matter who I'm talking to, I'm always a good listener. [q126]
- SD5: I can remember "playing sick" to get out of something. [q127]
- SD6: There have been occasions when I took advantage of someone. [q128]
- SD7: I'm always willing to admit it when I make a mistake. [q129]
- SD8: I sometimes try to get even rather than forgive and forget. [q130]
- SD9: When I don't know something I don't at all mind admitting it. [q131]
- SD10: I am sometimes irritated by people who ask favors of me. [q132]
- SD11: I have never deliberately said something that hurt someone's feelings. [q133]

Years with Organization (categorical variable 1 to 7) [q157]

- <1 year
- <2 years
- <3 years
- <4 years
- <5 years
- 5 to 10 years
- >10 years

Education Level (categorical variable 1 to 4) [q156]

- High School/GED
- Diploma
- College Degree (Bachelor)
- Masters Degree

Years in current role (categorical variable 1 to 7) [q158]

- <12 months
- <18 months
- <24 months
- <30 months
- <36 months
- <48 months
- >48 months

Current Role level (categorical variable 1 to 4) [q159]

- Individual Contributor
- Project/Team Lead
- Manager/Sr. Project Manager
- Sr. Manager/Department Head

Work role (categorical variable 1 to 4) [q160]

IT Project Implementation
Production Support (PSS)
Testing, Quality & Release
Other (Administration etc.)

Gender (categorical variable 1 and 2) [q152]

Male
Female

Job Status (categorical variable 1 and 2) [q154]

Full-time employee
Contractor

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