Impact of Change Commitment to Information Systems Change in the South African Construction Industry

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Abstract

Business competition and growth in the Information age is fuelled by rapid innovation of Information Systems. In turn, business leaders' demand rapid Information System (IS) adaption that would enable all stakeholders even in the small part of the organization to take advantage of innovation. Therefore, organizations upgrade in order to keep abreast with competitors in the global market. In addition, there is often a lack of commitment to IS change programmes from employees who may even go to the extent of resisting Information Systems change initiatives. In this article the author is investigating the associations and impact of IS change communication and understanding worth of IS change on commitment to IS change in the construction industry using a survey research design. Results indicate that both communicating IS change and understanding of worth of IS change are moderately related to commitment to IS change. Moreover, regression analysis results proved that understanding worth of IS change is a better predictor for commitment to IS change when compared to communicating IS change.

Keywords: Change management, commitment to IS change, resistance to IS change, Strategic planning

Introduction

In this information age business IS practices change rapidly in line with the fast-evolving technology that supports them in order to keep up with an ever-changing global marketplace (Misra, Kumar & Kumar 2006). Among other

objectives many organization strive to gain competitive edge over their competitors (Clarke & Varma 1999; Bhattacharjee & Chakrabarti 2015). Johnson (2009) notes that many organizations undergo information systems planning; initiate and implement projects; systems and applications for maximum benefit in their businesses; these projects encounter IS changes along the way either formal or informally. Such IS change initiatives are geared towards taking advantage of opportunities instead of creating havoc. According to Porter (1996), change could be a disaster where there is strategic inadequacy and lack of proper change management.

Lack of planning, communication, understating the worth of the IS change, strategic vision and poor or no change control system in place is a problem that needs to be looked at by organizations to ensure that change control procedures are followed accordingly (Schuh *et al.* 2017). The changes have to be managed, communicated, and controlled.

This article examines and evaluates the best predictor of getting commitment to change management (communication or understanding the worth of IS change) in the construction industry when change management principles have to be applied to support strategic information systems planning. That way the organizations can achieve success during project implementation. This article argues that by knowing the best predictor of commitment to IS change project success can be improved. To achieve this, an organization needs to understand its strategy, where change management fits in and how change management can contribute to the success of any project.

Problem Statement

Rapid technological innovations enable organizations to take advantage of the global marketplace and thereby improve organizational performance. According to Hiatt and Creasey (2002) most organizations are struggling to keep up with changing their business environment because they do not understand the importance of change management. In the same breath, change management is as good as degree of commitment to IS change from an organization's employees. Such IS change could result in knowledge gaps, where employees would have to gain new knowledge. Acquisition of new knowledge could be perceived as added responsibility to already heavy work-load. In this article, the author will investigate factors affecting employees'

commitment to Information Systems change in the South African construction industry.

Johnson (2009) reports that leading factors to project failure are: lack of strategy and planning, change management and managing relationships (communication). The report also states that only 32% of projects were successful, 44% had challenges and 24% failed. An organization's Information Systems plan is meant to sustain the organization's competitive edge in line with overall organizational strategic objectives. All that said, change agents in the organization are faced by challenges to carrying out implementation plans that involve people who may not like IS change or even resist IS change.

Literature Review

Organizations in different industries are constantly on the lookout for better and improved business solutions. These business solutions are aimed at helping the organization gain a competitive edge. Organizations need to have a well-defined vision and strategy to give the rest of the organization clear direction for the future. Information systems' planning comes into play when the organization decides to support the organizational strategy with technology (Singla 2009; Kasemsap 2015).

Due to the possibility of serious business project impact that could be caused by inadequate strategic planning in relation to IS change in the organization, change agents should ensure that employees as stakeholders in the IS change initiative buy-in to the undertaking of the organization. As mentioned by Johnson (2009) a contributing factor to project failure is resistance to IS change attributed to lack of commitment to IS change and communication about IS change. In the following section the author discusses factors that could influence IS change initiative success or failure.

Knowledge Gap Attributed to IS Change

Lee and Bai (2003) in their proposed evolution of IS/IT planning approach introduced four evolutionary phases. One of the phases promotes change management in Information Systems planning as dynamic and contextual; in relation to the business environment and organizational need. IS change compels knowledge change, because current systems knowledge could be

obsolete in the new systems environment depending on the amount of IS change (Chataway & Wield; 2000; Alavi & Leidner 2001; Bloodgood & Salisbury 2001; Liao & Teo 2017). Most construction giants operate in the global business environment, doing business across countries faced with demand to upgrade their IS in order to sustain competitive edge. However, a business cannot gain competitive advantage associated with new IS, if users lack practical knowledge that would enable them to prosper in global marketplace. Failure of most IS plan and IS change project could be attributed to failure to recognize the importance of knowledge management and change management issues (Johnson 2009).

Information Systems change obviously impacts on employees/users of IS. The construction industry has seen growth to become one of dynamic industry especially after the property boom leading to the Soccer World Cup finals of 2010 in South Africa, and long after the Soccer World Cup final. Knowledge gap could be detrimental to the success of an IS change project where those affected by change do not understand the worth of the initiated IS change. It is important to communicate IS change in any available platform to users, so that they become part of the change initiative. That way, they feel ownership of the change programme; instead of feeling the imposition of the IS change.

Change Management Challenges

As competition is heating up across the world construction companies compete at the creativity and innovation level supported by latest technology (Misra, Kumar & Kumar 2006). To succeed, the organization of the future must serve customers better, create new advantages, and survive in bitterly contested markets. To stay competitive, companies must do away with work and processes that do not add value and consequent change is inevitable (Donovan, Tully & Wortman 1998; Cho 2017).

Organizations realize the need for project development or system development to maximize their worth in the different industries they operate in and to help them be competitive enough to survive in their robust fields (Jelinek & Adler 1988). With that in mind, skilled individuals have to be recruited, people who have the zest for what they do, who will be able to keep the pace the entire industry is moving at. New trends are forming and they ought to be

exploited with the correct expertise. With the development and undertaking of new trends or applications, organizations must understand that defects are likely. To minimize these defects, change control plays a big part where departments responsible for undertaking the mentioned changes have to be dazzling – understanding what the finished products are presumed to comprise.

According to Leavitt (1975) and Bordum (2010) Managers (good ones) (1) think up problems, (2) find solutions (or make decisions or whatever), and (3) try to get things done through people. This supports the notion of good change management practices

Resistance to IS Change

Open communication plays a critical part of change management (Proctor & Doukakis 2003). Resistance to IS change will be higher if the levels of involvement, information sharing and communication are low (Ford, Ford & D'Amelio 2008; Petty & Cacioppo 1986). Changing a way of working or thinking or culture is not an overnight job and it takes a certain amount of time and dedication. Different levels of resistance exist and can be classified as shown in Figure 1.

Failure to communicate IS change effectively will lead to resistance by those most affected by new IS changes, dooming the change project to eventual failure (Zafar *et al.* 2017). Employees can be resistant to IS changes for a variety of reasons. Some of the reasons are illustrated in the above figure where employees do not understand, do not agree with the IS change, or do not personally agree with the person initiating the IS change. The literature validates the use of effective communication in overcoming resistance to IS change, improving feedback, and the participation of all employees within an organization (Ford, Ford & D'Amelio 2008). Effective communication and involvement by the entire organization is the key to successful change management (Mendy & Proctor 2016).

Resistance is a natural reaction to IS change, and it can take many forms. The easiest form of detecting resistance to recognize is those who loudly indicate their dissatisfaction with the IS changes taking place in the organization. Soliciting feedback from these individuals lets you know where they stand, so that you can overcome their objections. Employees often resist

IS change through denial. These individuals refuse to acknowledge that a problem exists.

Level of resistance

Figure 1: Levels of Resistance to Change

Figure 2 clearly illustrates individual resistance and organizational resistance. However, both of them can be managed effectively by:

- Anticipating the resistance to change and planning for it
- Taking time to understand the reasons for the resistance (positive and negative)
- Address the resistance and don't ignore it
- Keep the people informed at all times and be aware of the silent assassin' as their impact can create a catastrophically unmanageable situation
- Micro and Macro management- Provide a realistic and holistic view of the change and ensure that actionable steps are communicated on a day-to–day basis.
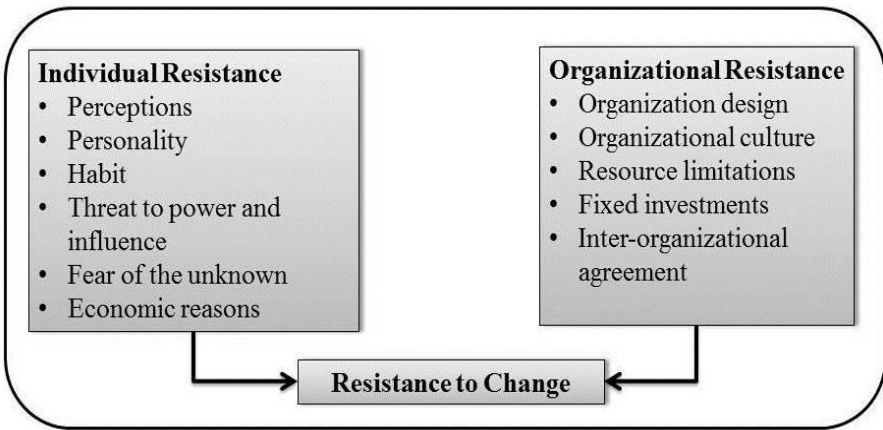
Figure 2: Sources of Resistance to Change

Basically, resistance to IS change can reduce a good initiative to a total disaster. Somehow, the resistance could be costly to the organization than the benefit of achieving the intended strategic objective. It is up to the change agent to ensure that all those who are affected by the IS change initiative understand the benefits associated with the change to a new Information System.

Defining the Worth of IS Change

Among other things, change management entails thoughtful planning, sensitive implementation, and above all, consultation with, and involvement of, the people affected by the IS changes. This is in an attempt to solicit consent from the employees affected by the IS change. However, consent is possible when IS change is realistic, achievable, and measurable (Herscovitch & Meyer 2002). In doing that the organization's change agents should be able address questions such as: What do we want to achieve with this IS change, why, and how will we know that the IS change has been achieved? Who is affected by this IS change, and how will they react to it? How much of the planned IS change can we achieve by ourselves; and what parts of the IS change do we need help with?

One of the challenges that come along with change control is how much IS change is worth to both the organization and the individuals affected

by IS change (Haveman 1992). Change agents should understand the whole concept of change control and its benefits; then ensure participating members or departments understand why the process of change control has to be formalized and undertaken. In most cases, IS change is attached to perceived performance improvement -- it could either be by improving operational efficiency or decision effectiveness. This should be coupled with immediate benefit for participating members (Armenakis, Harris & Field 2001).

An immediate benefit for participating could be their understanding of what the IS change is worth to their individual performance and in turn to their personal benefits. Meanwhile, the change agent and management could see strategic advantage for the organization. Strategic benefit has a long-term connotation, which could be interpreted as no benefit at all by employees affected by scheduled IS change. It is then the change agents' responsibility to outline the benefit of undertaking the scheduled IS change in the simplest terms (Hayes & Pierson 2005). According to Martin, Petty and Wallace (2009) an organization's change agents should have a clear sense of what are the benefits for changing. IS change is among other things that could present risks to an organization in a form of reputational risk where employees go to the extent of striking to demonstrate disapproval of IS change; or revenues loss risk where employees sabotage business functions that involve IS change.

Lack of Communication

Worth of IS change can be only understood if it is communicated to participating members that are affected by eminent IS change in the organization. Kulvisaechana (2001) suggests different modes of communicating IS change to affected parties such as face-to-face talks, presentations or meetings, e-mails, documents and other sorts of communication to disseminate information about worth of IS change to individuals, organization and even the industry at large (Dent & Goldberg 1999; Herscovitch & Meyer 2002). It is important to note that communication is a difficult task because it depends on two parties sending and receiving the same and correct information. This is another aspect of communication that should be taken into account when communicating IS change to affected employees. Meaning that the change agent may have to invest huge amounts of resources in workshops and other learning initiatives that can help in facilitating clear transfer of information and knowledge about IS change (Bordum 2010).

Elving (2005) asserts that communication is key to maintaining good business relationships especially in time for IS change. Lack of communication often results in a breakdown of business relationships that could further lead to mass resignations and fierce resistance. On the other hand, management needs to retain skilled employees in order to realize strategic objectives of the organization. Elving (2005) adds that communication about change should be forthright, easily understood, and not patronizing. Ideally, any change initiative should be communicated clearly, at a comfortable rate, with a practical vocabulary, and in an engaging manner. This would help ensure that the communicated message is the same message as the received message, so that the change agent can assess feedback to deduce whether employees would be likely to commit to change.

Lack of Commitment

Getting employees to commit to a change initiative could be a challenge, especially, if change has a negative effect on some employees. Parish, Cadwallader and Busch (2008) suggests that senior management should make an effort to promote commitment to the vision, mission, and objectives of the organization. This can be achieved if change is in line with organizational strategy (Powell & Dent-Micallef, 1997). Strategic alignment of a proposed change could be an opportunity that should be exploited by the organization. Therefore, change agents in the organization should try by all means possible to get commitment from all stakeholders in the organization.

A participatory approach could be useful in cultivating commitment to change project (Walker *et al.* 2002). Involving every employee affected by the change initiative from the beginning of the change initiative creates a sense of ownership of the change initiative. That way, change could be perceived as innovation not as an added burden to an already strenuous work environment. Commitment to change would see employees sticking through difficult phases of change without complaint, which could result in the organization achieving its objective; if the change is designed make strategic impact.

Research Aim and Hypothesis

The aim of this research is to identify the key variables that could help under-

stand commitment to Information Systems change and even indicate predictors for change commitment in the construction industry.

The hypotheses of this study are given below:

- Understanding worth of Information Systems change positively influences commitment to IS change by employees in the construction industry;
- Communicating change positively influences commitment to IS change by employees in the construction industry.
- Understanding worth of IS change is a better predictor of commitment than communicating change.

Research Methodology

The objective of the research methodology is to assist the researcher to gather relevant data from respondents in the construction industry; which has been experiencing expansion related to World Cup 2010 preparation. Along with expansion was a need to change and upgrade information systems that support expansion objectives in terms of efficiency and organizational performance improvement. In order to collect data, the author designed a questionnaire containing three dimensions. All dimensions are drawn from relevant literature on Commitment to IS change, change communication, and worth of IS change. Each dimension contains 6 – 7 items with 5-point Likert scales. Scores ranges from one equal to strongly disagree to five strongly agree. The questionnaire was designed with Adobe Lifecycle Designer that allows for distribution of pdf form to participants by e-mail.

The questionnaire was administered to Information Technology professionals working in the construction industry. Information Technology or computing is not the core function of the construction industry; therefore, the questionnaire was distributed to a snowball sample (Leedy & Ormrod 2005). With the help of a gatekeeper who works in construction industry also involved in new Information Systems roll-out, the researcher selected a convenience sample known to the gatekeeper then followed-up with snowball sample. Information Technology professional includes people involved in application development, end users and management of departments that are clients to Information Technology department.

Discussion of Results

Out of 200 questionnaires sent out, 105 questionnaires were completed and returned yielding a response rate of 52.5%. All questionnaires completed and returned to author were then edited and coded. In addition to that, a reliability test was performed to ensure that items and dimensions of the questionnaire could yield the same results if used by different researcher under the same circumstances. A reliability test was performed on both the dependent variable (commitment to change) and independent variable (change communication and worth of change). The resulting Cronbach Alpha is 0.810, which is an acceptable indication of reliability of the questionnaire and questions in the questionnaire (Gliem & Gliem 2003).

On the other hand, a validity test was performed to find out whether the questionnaire and the questions in it would yield the intended result when applied in the main research project (King & Bruner 2000). Due to the small size of the population, a small-scale pilot was conducted with eight respondents.

Level of Commitment to Change among IT Professionals in the Construction Industry

Literature suggests that top management and other change agents would be more like to commit to IS change than their junior counterparts would (Hiatt & Creasey 2002; Cerpa & Verner 2009; Bordum 2010; Johnson 2009; Misra, Kumar & Kumar 2006) Mostly top management are highly committed to change meanwhile most staff member's commitment level is low, which concurs with suggestions in literature (Donovan, Tully & Wortman 1998; Bordum 2010; Ford, Ford & D'Amelio 2008; Armenakis, Harris & Field 2001; Conner 1993). This could be explained by the fact that top management initiates the IS change in line with strategic objectives to the organisation, whereas, junior counterparts could perceive change as an imposition from management.

Middle management has its highest percentage of extremely high commitment level, as they are the custodians of change who plan and design the change procedure in order to achieve the strategic objective set out by top management. Meanwhile junior management has to ensure that change initiatives are carried out according to the plan and procedures. In order to

supervise change they must have some level of commitment to change as they are highly committed to change as shown in Table 1. Change is appreciated more by the top-level personnel in the organisational hierarchy compared to junior members of staff. Change agents have to ensure that junior staff members are equally appreciative of IS change as their colleagues in management position. In the following section of this article, the author will determine associations between dependent variable and independent variable in relation to influential impact on each other.

				Job position			
			Staff	junior management	middle management	top management	Total
Commitment to Change Level	extremely low	Count	6	1	3	1	11
		% within Commitment to Change Level	54.5%	9.1%	27.3%	9.1%	100.0%
	low	Count	11	4	5	0	20
		% within Commitment to Change Level	55.0%	20.0%	25.0%	.0%	100.0%
	moderate	Count	6	2	5	1	14
		% within Commitment to Change Level	42.9%	14.3%	35.7%	7.1%	100.0%
	high	Count	7	7	11	5	30
		% within Commitment to Change Level	23.3%	23.3%	36.7%	16.7%	100.0%
	extremely high	Count	6	3	6	1	16
		% within Commitment to Change Level	37.5%	18.8%	37.5%	6.3%	100.0%
Total		Count	36	17	30	8	91
		% within Commitment to Change Level	39.6%	18.7%	33.0%	8.8%	100.0%

Table 1: Cross Tabulation of Commitment to Change and Job Position

Determining Association of Variables

An explanation of who is more committed to IS change than others in the construction industry alone does not really suggest any solution, but helps in

explaining parts of the problem and sheds light into the areas of the organisation where communication and explanation of worth of IS change should be focused. Table 2 shows a correlation matrix, which depicts the association between commitment to IS change, understanding worth of IS change and communicating IS change. Understanding worth of IS change is positively and somewhat strongly related/associated to commitment to IS change as indicated by its R-value = 0.679 and significant as indicated by p-value of 0.000. Meanwhile, commitment to IS change is somewhat strongly associated to communicating IS change with R-value = 0.637 and significant with p-value = 0.000.

		Commitment to IS change	Worth of IS change Understanding	Communicating IS change
Commitment to IS change	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	91		
Worth of IS change Understanding	Pearson Correlation	.679**	1	
	Sig. (2-tailed)	.000		
	N	91	91	
Communicating IS change	Pearson Correlation	.631**	.637**	1
	Sig. (2-tailed)	.000	.000	
	N	89	89	89

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2: Correlation Matrix

This could mean that change agents in the construction industry should focus their change management strategy on communicating IS change, thus, ensuring that employees affected by IS change understand how change adds value to their lives and to their organisation (Walker *et al.* 2002). However, determining associations is insufficient without modelling the influence communicating IS change and understanding worth of IS change exerts on commitment to IS change. A regression modelling was performed to determine the best predictor of commitment to IS change between communicating IS change and understanding worth of IS change.

Multiple Regressions

Despite the correlation indicated in Table 2 above it is important to determine the most influential predictor among the independent variables. It would beneficial for change agents to know how much influence each of the independent variables has on dependent variable.

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	-1.630	1.964		-.830	.409
Worth of IS change Understanding	.834	.174	.462	4.789	.000
Communicating IS change	.328	.094	.337	3.491	.001

a. Dependent Variable: Commitment to IS change

Table 3: Coefficient Table

Table 3 show unstandardized coefficients which indicate that understanding the worth of IS change has almost double the coefficient of IS change communication. However, B value for both variables is not the true reflection of the variables impact on dependent variable. On the other hand, Beta weight indicates a change on dependent variable with one standard deviation on independent variable. Understanding worth of IS change is definitely a better predictor of commitment to IS change as it shows that 0.462 standard deviation change in commitment to IS change if understanding of worth of IS change is moved by one standard deviation. This impact is significant as its p-value = 0.000, meanwhile, impact of change in communicating IS change is also significant with p-value = 0.001. Both variables, understanding worth of IS change and communicating IS change, have stronger association with commitment to IS change together with R-value = 0.724, than each individually. Change agents would be doing well to commit effort and energy on clear, direct, and un-patronizing communication about IS change with employees affected by change initiatives; as well as ensuring that employees understand worth of IS change.

Conclusion

IS change could either have a devastating or beneficial impact on business processes knowledge and in turn to strategic objective of organisation in the construction industry, depending on change management principles applied. Therefore, in this article, the author set out to understand the impact that understanding worth of IS change and communicating IS change, have on commitment to IS change. This would enable change agents in the construction industry to redirect their resources and plan accordingly in order to increase commitment to IS change in employees through appropriate knowledge management mechanisms. Successful IS change initiatives could mean improved productivity and improved individual performance in turn sustaining an organisation's competitive edge, especially where systems knowledge has been successfully transferred (Ford, Ford & D'Amelio 2008; Herscovitch & Meyer 2002). Such competitive edge could also determine survival of the organisation in the global marketplace.

Even though, the results have shown that understanding worth of IS change is a better predictor of commitment to IS change; both independent variables including communicating IS change have a stronger association with commitment to IS change together than each alone. This could mean that change agents in the construction industry would yield better commitment results if they communicate aspects of IS change as well as communicating worth of IS change to employees' personal lives and work efficiency (Elving 2005).

Worth of IS change to employees' personal lives could be a result of improvement in their performance brought about IS change. This could be achieved by imparting up-to-date systems knowledge that would enable employees to perform with confidence. Meanwhile, employees would not know unless benefits associated with IS change are communicated effectively. Otherwise, employees' will resist IS change, which could result in opportunity loss for both employees and the organization.

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