



## Critical success factors for the sustainability of Kaizen event human resource outcomes: An empirical study

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### ABSTRACT

Kaizen events have been widely reported to produce positive change in business results and human resource outcomes. However, sustaining or improving upon the results of a Kaizen event over time can be difficult for many organizations and has received limited empirical research attention to date. This paper identifies the factors that most strongly influence the sustainability of work area employee attitudes and commitment to Kaizen events based on a field study of 65 events in eight manufacturing organizations. The findings also present guidelines for organizations and areas for future research.

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### 1. Introduction

The design of effective improvement programs continues to be a focus in the operations management (OM) and industrial engineering communities (e.g., Warnecke and Huser, 1995; Hales and Chakravorty, 2006; Kumar et al., 2008; Chakravorty, 2009a). As a part of the continued academic study of improvement programs, researchers have recently explored critical success factors (e.g., Chan et al., 2005; Stock et al., 2007; Bayazit and Karpak, 2007; Farris et al., 2009), the social system (i.e., human resource) and technical system (i.e., business-related) factors of improvement (e.g., Olorunniwo and Udo, 2002; Chakravorty, 2009b; Farris et al., 2009), and the long-term success of improvement efforts (e.g., Bayazit and Karpak, 2007).

This paper addresses these areas of interest as they relate to Kaizen events, an increasingly common type of improvement mechanism. A Kaizen event is a “focused and structured improvement project, using a dedicated cross-functional team to improve a targeted work area, with specific goals, in an accelerated timeframe” (Farris et al., 2008, p. 10). In addition to a variety of technical system improvements, practitioners also report significant social system improvements from Kaizen events (e.g., Melnyk et al., 1998; Minton, 1998; McNichols et al., 1999). Kaizen

events are one way organizations seek to implement the broader concept of kaizen (Brunet and New, 2003), by introducing the concept of continuous improvement techniques and the development of an organizational culture that supports continuous improvement in the long-term.

However, it can be difficult for many organizations to sustain the outcomes of a Kaizen event after it concludes (Bateman, 2005; Friedli, 1999; Mackle, 2000). While previous research has examined immediate (i.e., initial) Kaizen event social and technical system outcomes (e.g., Farris et al., 2009) and the sustainability of technical system outcomes (e.g., Bateman, 2005), there is little research or practitioner guidance regarding the sustainability of human resource outcomes. Specifically, there is limited research about the factors that may promote the development of positive longer-term attitudes and commitment toward Kaizen events among employees in the targeted work area after the Kaizen event.

This research contributes to the current body of knowledge by increasing the understanding of what factors most contribute to sustaining the human resource outcome *work area attitude and commitment* to Kaizen events. The present work represents the second phase of a multi-year Kaizen event research initiative and builds upon the first phase which identified critical success factors of initial Kaizen event outcomes, assessed immediately after the event’s conclusion (i.e., Farris et al., 2009). In the overall study, both technical system and social system outcomes are measured; however, the scope of this paper focuses only on the social system outcome, *work area attitude and commitment*, while

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results related to other technical system and social system outcomes will be presented in future works. Using data from a field study of 65 Kaizen events across eight manufacturing organizations, multiple regression was used to test hypothesized relationships and to identify the critical success factors, i.e., variables, that are the most significant predictors of *work area attitude and commitment*. In addition to examining critical success factors for sustainability of *work area attitude and commitment*, the relationship between this longer-term social system outcome and the perceptions of *attitude* toward Kaizen events among team members immediately after the event were also explored. Qualitative data regarding event goals were used to further interpret the findings. Study results are used to develop recommendations for organizations using Kaizen events.

The remainder of this paper is organized as follows. Section 2 presents the literature used to develop the working theory of Kaizen event outcome sustainability. Section 3 describes the research methodology, Section 4 presents the analysis results, and Section 5 concludes the paper with the research findings, limitations, and areas for future research.

## 2. Literature review

### 2.1. Background

Kaizen events are known in the U.S. using other terms as well, for example, “rapid improvement events,” “accelerated improvement workshops,” “gemba kaizen,” and “Kaizen blitz” (Melnyk et al., 1998; Cuscela, 1998; Martin, 2007; Alexander and Williams, 2005). Often used in conjunction with lean production (Alukal, 2006; Manos et al., 2006; Ting, 2004), practitioners report a variety of social system improvements from Kaizen events (e.g., Melnyk et al., 1998; Minton, 1998; McNichols et al., 1999). For example, the development of an increased appreciation and enthusiasm for both Kaizen events and continuous improvement amongst employees who participate in Kaizen events is often a formal objective and a reported benefit of Kaizen events (Sheridan, 1997; Melnyk et al., 1998; Laraia et al., 1999). Kaizen events are also beneficial to participants in that they can serve as a “just-in-time” training mechanism (Drickhamer, 2004), impacting employee knowledge and skills, usually within a cross-functional team. These social system benefits of Kaizen events support previous studies that emphasize the need of employees to have enriched jobs through learning mechanisms such as cross-training (e.g., Muramatsu et al., 1987).

As previously indicated, Kaizen events are related to, but can be clearly distinguished from the broader concept of kaizen (Brunet and New, 2003). Kaizen refers to the continual search for improvement and is recognized as one of the key principles of Japanese manufacturing as developed by the Toyota Motor Company (Imai, 1986). Similar to kaizen, Kaizen events use process improvement tools and techniques (e.g., Melnyk et al., 1998), focus on low-cost changes (Sheridan, 1997), aim to produce an organizational culture of continuous improvement (Imai, 1986; Laraia et al., 1999; Melnyk et al., 1998; Sheridan, 1997), focus on employee empowerment through training and providing opportunities to improve work systems (e.g., Melnyk et al., 1998; Minton, 1998), and emphasize making relatively incremental changes to improve performance (e.g., Laraia et al., 1999; Melnyk et al., 1998). Thus, Kaizen events can be used as a vehicle for the implementation of *kaizen* within an organization, systematically creating change and driving performance improvement (LeBlanc, 1999; Kumar and Harms, 2004). However, in comparison to the improvement mechanisms traditionally used in conjunction with *kaizen*, such as continuous process

improvement (CPI) teams, Kaizen events are short-term improvement projects that usually occur across three to five days (Melnyk et al., 1998).

### 2.2. Kaizen event and general improvement sustainability literature

Previous academic research has reported that the sustainability of technical and social system benefits from Kaizen events varies (e.g., Doolen et al., 2008). One empirical study found that three of the 11 Kaizen events studied (27%) were unable to sustain any of the implemented changes (Burch, 2008). Similarly, some practitioners report difficulty in sustaining 50% or more of the initial improvements over time (Laraia et al., 1999) and others anecdotally report that improvements may disappear entirely within six months of an event (Veech, 2004). Greater understanding of the determinants of Kaizen event outcome sustainability could decrease this variability so that organizations could more systematically sustain Kaizen event outcomes.

While there have been some previous studies that explore Kaizen event sustainability (Bateman and David, 2002; Bateman and Rich, 2003; Bateman, 2005; Burch, 2008; Doolen et al., 2008; Magdum and Whitman, 2007; Marin-Garcia et al., 2009; Patil, 2003), there are opportunities for additional research to extend this body of knowledge and to potentially increase the effectiveness of Kaizen events in organizations. A majority of the current literature focuses on the sustainability of Kaizen event technical system outcomes (e.g., Bateman and Rich, 2003; Bateman, 2005; Patil, 2003; Marin-Garcia et al., 2009), with fewer studies considering social system outcomes (Burch, 2008; Doolen et al., 2008; Magdum and Whitman, 2007).

Also, several of the current Kaizen event sustainability studies represent single organization case studies (Patil, 2003; Magdum and Whitman, 2007; Doolen et al., 2008) and thus, their findings are more likely to be limited in terms of generalizability. To date, it appears that only Burch (2008) has considered the sustainability of social system-related factors across multiple organizations. However, Burch (2008) included only a relatively small number of Kaizen events ( $n=13$ ), and the research model omitted several Kaizen event characteristics and post-event mechanisms, which the academic and practitioner literature suggest may impact Kaizen event outcome sustainability.

Because there is limited research on Kaizen event sustainability specifically, the literature regarding the sustainability of continuous improvement approaches in general (Kaye and Anderson, 1999; Upton, 1996; Readman and Bessant, 2007; Anand et al., 2009) and other process improvement approaches (Dale et al., 1997; Keating et al., 1999; Oxtoby et al., 2002; Pillet and Maire, 2008) was also reviewed to develop a working model of Kaizen event sustainability. The difficulty of sustaining outcomes has also been identified as an issue for other types of improvement mechanisms (e.g., Keating et al., 1999) and organizational change efforts in general (e.g., Cummings and Worley, 1997). The use of these related literature streams to build the model is further justified by the fact that the present research studied only relatively mature organizations that had established standard procedures for using Kaizen events in a “programmatically” sense, which is more similar to the use of other process improvement mechanisms discussed in the literature.

Further, there are currently limitations to the general continuous improvement and process improvement body of knowledge as well that create the need for additional research on the sustainability of the outcomes of improvement approaches in general. For example, most of the continuous improvement literature tends to focus on the improvement program as a whole, rather than individual change interventions (e.g., Kaizen events),

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