

Meeting Business Goals and Managing Office Bandwidth: A Predictive Model for Organizational Change

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ABSTRACT *While it is recognized that implementing organizational changes impacts both employee and organizational health, there is a lack of research that utilizes these known impacts to empirically build functional models that are predictive of future change event outcomes. Although diagnostic tools are available to businesses to guesstimate the impact of large-scale corporate changes, these tools are not designed for assessing impact rapidly, nor are these designed to effectively assess the impact of concurrent changes. Additionally, a clear link between the issues identified by the diagnostic tool and what occurs when the change is rolled out cannot be made. The purpose of this work was to build a predictive model of organizational change impact that incorporates the achievement of strategic business goals. Prior knowledge of change-related impacts is of particular importance when a change or multiple changes must occur and must be implemented rapidly. By building a predictive tool that eliminates the need to undergo lengthy evaluations of the viability of each individual change, the organization can adapt the business at the pace of market demand without severely disrupting its operational performance. A procedure was developed to prioritize initiatives based upon alignment with corporate strategy and a scientific predictive model was constructed that quantitatively predicts the impact of change initiatives.*

KEY WORDS: Organizational change, change strategy, change management, employee capacity, managing impact, organizational health

Introduction

Organizational change can often be disruptive. However, the ability of a business to adapt to changing customer needs is vital to maintain competitiveness in an ever-changing market (Conner, 1992; Wanberg and Banas, 2000). In this

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century, the rate at which a business must adapt to meet the needs of its market has substantially increased (Wanberg and Banas, 2000; Arena, 2002; Voelpel *et al.*, 2004a; Voelpel *et al.*, 2004b). Consequently, to meet this demand, employees are often required to digest a multitude of organizational changes (Conner and Hoopes, 1997). Yet, there is an intrinsic finite cognitive limit to employee capability to assimilate changes (Sternberg, 2002). The impacts of change and overrunning employee ability to handle change on employee and organizational health are well documented. Organizational change, and to a larger extent improperly managed organizational change, has the potential to lead to stress, fear, irritation, conflict, resistance, lack of process adoption, job dissatisfaction, decrements in work performance and employee absenteeism and turnover (Miller and Monge, 1985; Ashford, 1988; Schweiger and DeNisi, 1991; Nelson *et al.*, 1995; Rush *et al.*, 1995; Becker *et al.*, 1996; McHugh, 1997; Spector, 1997; Wahlstedt and Edling, 1997; Schabracq and Cooper, 1998; Kirkman *et al.*, 2000; Wanberg and Banas, 2000; Jones *et al.*, 2002). Additionally, the effects of mediating factors such as personality characteristics and corporate communication strategies on employees' ability to handle change are thoroughly documented. For example, some employees exhibit characteristics that improve their ability to cope with, accept and adapt to change (Taylor and Brown, 1988; Aspinwall and Taylor, 1992; Armenakis *et al.*, 1993; Lau and Woodman, 1995; Nelson *et al.*, 1995; Meyer and Allen, 1997; Dean *et al.*, 1998; Kirkman *et al.*, 2000; Wanberg and Banas, 2000; Kohn *et al.*, 2003). Furthermore, employee input into the change and how the change is communicated can also affect employee acceptance rates (Kotter and Schlesinger, 1979; Armenakis *et al.*, 1999; Wanberg and Banas, 2000; Arena, 2002; Goodman and Truss, 2004; Knodel, 2004; Lines, 2004) as well as employee perception of an organization (Schweiger and DeNisi, 1991).

Improving employee environment or limiting adverse consequences are often listed as superfluous goals of change initiatives. However, in practice, the degree to which these goals are actually achieved is rarely measured. Failure to measure such impacts is likely the result of not understanding the true utility of how doing so can maintain or improve organizational health. Although the literature provides insight into how implementing changes impacts both employee and organizational health, and how to control deleterious impacts, there is a lack of empirical research focused on the pre-implementation prediction of future change event outcomes. It can be argued that such a model would not only allow possible impacts to be addressed proactively, but would allow possible mitigative actions to be evaluated for efficacy, thereby saving both the company and associates considerable time, effort and/or finances over a retroactive 'hole-plugging' approach. From the literature, it appears that the approaches having come closest to such a concept are a diagnostic model produced by Vollman (1996) and a roadmap produced by Knodel (2004). The Vollman (1996) model utilizes a structured matrix of factors to assess the viability of a change effort. Taken a step further, the Knodel (2004) roadmap quantitatively ranks changes (projects) based upon strategic business objectives and addresses initiative accountability by requiring true measurement of business goals associated with the change. Yet although these models stress the importance of addressing the impact that

implementing a change can have on employees, this is not fully measured. Furthermore, neither of these models quantitatively links the impact of a change to a model that can be used to scientifically predict the impact of future organizational changes.

It is clear that failure to address employee capability to handle change can result in implementation failure (Gilmore *et al.*, 1997; Knodel, 2004). Herein lies the value in being able to proactively assess the impact of organizational change. For example, if a given change initiative is predicted to lead to a high impact on employee 'capacity' (e.g., the initiative will consume substantial time and/or focus for assimilation), then it may be advisable that the change be implemented during slower business periods (this is relative) when employees are likely to have a greater quantity of available resources to devote to adaptation to the change. Additionally, by isolating those initiatives predicted to result in the highest levels of impact, the business can strategically focus organizational change management activities on these initiatives. A priori knowledge of change-related impact becomes even more critical when multiple changes must be implemented simultaneously or in rapid succession. Knowing the impact of each individual change would allow the business to systematically choose, within given parameters, the number and types of changes that can be rolled out within a given timeframe without exceeding employees' ability to handle the changes. By building a predictive model that eliminates the need to undergo lengthy evaluations of the viability (both in meeting business goals and by knowing the impact) of each change, the organization can adapt the business at the pace of market demand without severely disrupting its operational performance (Arena, 2002; Voelpel *et al.*, 2004b).

Purpose of the Research

In a seminal publication, Collins (2001) identified that a primary indicator of 'great' companies is a focus not only on strategic goals to be accomplished but also on the avoidance and/or cessation of counterproductive activities. Although the company of focus in this study must roll out changes to accomplish strategic business goals, there was also an awareness that a transformation in the way in which these changes were rolled out was needed to reduce negative operational consequences. The goal was to find what Conner and Hoopes (1997: 17) refer to as 'an appropriate balance between capacity and demand'. It was determined that current methods for prioritizing and rolling out change initiatives had to be modified to account for both business goals and employee capacity to handle changes (Voelpel *et al.*, 2004b). The company therefore initiated the development of a change strategy model that incorporated the company's strategic business objectives (Voelpel *et al.*, 2004b).

Change Initiative Context

Organizational Environment

The predictive impact model described here was based on data from a large Midwestern insurance and financial services company. In addition to a corporate

home base, the company has a number of 'field' offices across the United States and abroad that support the local marketing of insurance and financial products and servicing of customers. Each of these offices typically consists of a single office manager and an average of three to four employees. Therefore when a global change must be rolled out to the field offices, it can impact more than 60,000 employees. If assimilating and adapting to these change rollouts exceeds the offices' operating capabilities, the ability of field associates to focus on their main task (customer relationships) can be hindered. It is important to note that the field offices in question act as independent businesses and the associates therefore have a personal vested interest in their success beyond the goal of overall company success. Consequently, anything that is perceived by these individuals (correctly or not) to impact their ability to serve customers can garner a severely negative reaction and/or stiff resistance. Additionally, the ability of typical organizational performance measures to assess the utility of change rollouts is mediated by these associates' vested interest in their success. They work relentlessly to meet the demands of this business regardless of the adversity. This means that side-effects of corporate changes such as workplace climate can go unnoticed (Gilmore *et al.*, 1997).

The company in question has strategically focused on increasing the utility of its computer-based systems to meet the needs of customers and to meet the needs of field associates to be able to use data systems to aid in the selling of company products. Adapting the business to meet these needs often requires implementing multiple changes rapidly or concurrently. Understanding the demands placed upon associates that result from these changes, as well as how such demand varies across different types and combinations of changes, is crucial to the effective management of change rollouts within the company.

Types of Changes

The concept of a 'change initiative' can encompass organizational directives ranging from radical modifications of operating methods, systems and applications to incremental changes within operating models (Bartunek and Moch, 1987). Specific to the situation at hand, items that may impact field offices include modifications to communications, marketing, pricing, product, compliance procedures, contractual obligations, training, office model, office procedures, corporate support and computer systems.

Change Governance

Currently within the company, each change initiative must undergo a process of identifying alignment with corporate business goals and is required to measure to a certain extent whether the objectives of the initiative were achieved subsequent to implementation. However, the sheer volume of such initiatives required the creation of a governance programme to effectively manage them. Although each initiative chosen for funding aligns with company business goals, executives recognized the need for a robust method of prioritizing these initiatives based upon which were best aligned with corporate objectives. Additionally, it was recognized that

while initiatives were required to measure the achievement of associated business goal(s), none of the initiatives were required to measure the impact on field office environment that results from implementing these changes. It was agreed that to better manage the impact of these initiatives, the governance programme should also devise a method to predict initiative impact prior to actual deployment.

Prioritizing Initiatives Based Upon Business Goals

While previous methods for prioritizing initiatives existed at the company, missing was a structured approach that quantitatively linked the alignment of these initiatives to corporate business goals. Based upon industry demand and corporate vision, business goals at this company are ranked according to achievement of these purposes. The business systematically assigns a percentage focus on the achievement of particular goals. Whereas one goal might receive 25 per cent of the company's focus, another goal might receive a 30 per cent focus. Using this structure as a foundation, the governance programme revised its methodology for ranking initiatives to directly align with corporate focus. Procedurally, this required weighting initiatives based upon the percentage of initiative alignment to meeting corporate business goals. Using this methodology, initiative prioritization now directly aligns with corporate strategic focus and primacy is placed on those initiatives that best align with organizational objectives.

Building a Predictive Model of Organizational Impact

While the methodology developed for prioritizing initiatives allowed for structured management of initiatives based upon corporate focus, the governance programme needed to devise a method to predict and manage the impact of these initiatives on company field offices. The first step in developing this model was to determine what aspects could be impacted that would mediate an associate and/or office's ability to conduct work.

Defining Office Bandwidth

It was determined that implementation of initiatives in an office has the potential to impact the available resources and efficiency of both the individual associates and the office as a whole. We have termed the theoretical construct that captures both as 'Office Bandwidth'. Based upon a thorough literature review, human factors and organizational expertise and subject matter knowledge, it was determined that office bandwidth was an overarching construct best defined by two subordinate constructs: Employee Workload and Office Operational Capacity. Measurement of these two constructs would allow for determination of how office bandwidth would be impacted by a corporate change.

Employee Workload

While uni-dimensional measures of workload exist, it was determined that a multi-dimensional measure would better describe the workload experienced by

individual associates within company field offices. A modified version of the NASA-TLX (Hart and Staveland, 1987) was used to determine the relative amount of resources required by associates to assimilate and adapt to a specific change. The NASA-TLX is an oft-employed measure of human workload that has been found to be statistically valid and reliable in a variety of task conditions (Hart and Staveland, 1987). The NASA-TLX was modified to account for differences between the tasks for which the measure was originally developed and the tasks performed by the associates in question. The tool measures subjective workload as a function of six specific components: mental demand (i.e., thinking, deciding), physical demand (i.e. moving, lifting), time demand (pressure felt due to task pace), effort (how hard one has to work to reach desired performance), frustration (i.e., irritation, stress) and perceived performance (self-evaluation of task success) (Hart and Staveland, 1987).

Predicting the amount of additional workload associated with a change could help assess the likelihood that the change would impede an associate's ability to perform his or her normal work tasks. For example, a change resulting in a higher predicted workload score would indicate that a large amount of the associate's resources will be required to assimilate the change. If the additional resources required by the change exceed the associate's available resources, it could result in the shifting of resources away from the primary work tasks (i.e., marketing and customer service), which in turn could cause performance on those tasks to decline.

Office Operational Capacity

The literature was reviewed to determine whether an existing measure of operational capacity could be utilized, but as the construct is strongly context-dependent, no measure appropriate for the situation at hand could be found. Operational capacity was determined to be a multidimensional construct best described by the measurement of four specific components: Assimilation Hours, Necessary Talent, Financial Resources Consumed and Expected Return on Investment (ROI). Assimilation Hours was defined as the amount of time it took for the office to incorporate/assimilate a change into office practices. Necessary Talent was defined as the level of expertise (KSAs) required to effectively implement a change. Financial Resources Consumed was defined as the amount of financial resources required to implement a change. Expected ROI was defined as the level of financial gain (positive/negative ROI) anticipated as a result of implementing a change.

Measuring office operational capacity could help predict the likelihood of a change impeding a field office's ability to conduct its operations. A change that results in a higher capacity score would indicate that an office's operational resources would be consumed by implementing the change. For example, while the installation of a printer is not likely to require a large degree of operational capacity, rolling out a new application could require a large portion of office capacity. As with associate workload, if the amount of required resources exceeds the amount of available resources, the potential is created for a shifting of resources from other activities, resulting in decreased operational performance.

Scale Qualitative Evaluations

Each of the six components of associate workload and of the four components of operational capacity was presented as a single scale divided into 20 equal intervals and anchored by three descriptors: two endpoint descriptors and a middle-point descriptor, with higher numbers indicating higher quantity. These initial scales were viewed by company experts as valid measures of intended constructs.

In order to further assess the face validity of the scales, two separate preliminary studies were conducted with actual field office associates to identify any potential logical and structural problems with the scales. In the first study, a focus group of field associates was asked to review a set of possible changes and to determine the level of impact for each change initiative. They were then asked to review and comment on the Office Bandwidth scales relative to the change initiatives in order to determine the extent to which associates' understanding of the scales matched the intended meanings. Based upon these interviews, some of the scales were modified to increase the likelihood of scale validity.

Following these modifications, a second study was conducted to assess the degree of associate comprehension of the new scale items and phrases used in the scales. Additionally, this study was designed to determine the factors that contribute to associates' answers to scale items, to determine how they arrive at their answers and to assess perceived item difficulty and perceived utility of the scales. In-depth structured cognitive interviews were conducted with a group of associates that was representative of a variety of geographic regions and range in customer base. This study led to a number of revisions aimed at improving the utility and validity of the scales. Scales for inclusion, associated spectrums and anchor descriptions were modified based on this data. Based upon these studies, it was felt that the final scales exhibited reasonable initial levels of construct, content and face validity for assessing Office Bandwidth.

Predictive Bandwidth Impact Model Data Population

Using the final Office Bandwidth scales, company representatives conducted a field experiment with a sample of 20 field office associates to collect the data necessary to populate and build the predictive Bandwidth Impact Model. Field associates were asked to sort a variety of changes that could hit their offices on a continuum of impact that ranged from 'no impact' to 'very high impact'. For each of these changes they were then asked to describe the reasons why they sorted a particular change into a specified impact level. Post-data collection, these descriptions were qualitatively coded to identify themes that lead changes to be identified at a particular impact level. Four overarching themes were realized: Learning Time and Effort; Associate Control Over Pace of the Change; Time Away from the Office; and Support Processes and Business Processes. Associates were also asked to rate each of the changes on the Office Bandwidth scales. This provided the data necessary to establish the approximate quantitative Office Bandwidth impact specific to each type of change. Post-data collection, these scores were converted to 100-point scores in which a low score indicated a low level of impact and a high score indicated a high level of impact.

Predictive Bandwidth Impact Model Use

Using the data from this experiment, a predictive model of Office Bandwidth Impact was built. The model consists of a theme × impact level 20-cell grid (4 themes × 5 impact levels). To use the model, a field office subject matter expert (SME) codes the impact level of a change initiative for each of the four themes. Within each theme, an impact level (‘no impact’ to ‘very high impact’) is chosen by reviewing five cells consisting of qualitative comment data associated with each of the five impact levels for that particular theme. Each impact level is directly linked to the quantitative bandwidth impact data. This produces four Bandwidth Impact scores (one per theme) that are equally weighted and averaged to produce a combined Bandwidth Impact score for the change initiative – see Figure 1.

Predictive Model Accuracy Assessment

The purpose of the predictive model is to accurately determine the level of impact that will be experienced by company field offices once a change initiative is rolled out to these offices. Therefore it was necessary to determine whether the predicted impact score of a change initiative would accurately reflect the actual impact felt once that change hit associate field offices. Two pre-deployment onsite tests of a new software application and a piece of hardware, as well as three post-deployment tests (two onsite, one offsite) of an additional new software application, a policy credit procedural change and a new medical product, were conducted to validate the model’s predictive accuracy. Prior to conducting the tests, field office SMEs were asked to predict the impact these changes were expected to produce once implemented in field offices. Field offices were then contacted and several associates (range of N = 37–105) were asked to provide an indication of the actual impact felt in their offices as a result of the

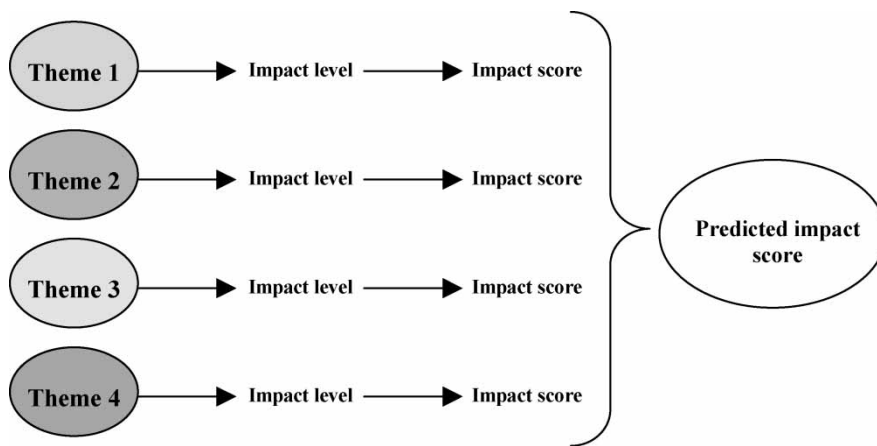


Figure 1. Bandwidth Impact Model procedure

change initiatives. Associates scored the five change initiatives on the Office Bandwidth scales. Bandwidth Impact scores predicted by SMEs, as well as the actual impacts field associates felt were associated with the deployment of these change initiatives, are shown in Table 1. The average difference between predicted scores and actual scores was 5.15 ($SD = 3.57$) on a scale that ranges from 0 to 100.

The Predictive Bandwidth Impact Model accurately predicted the impact field associates would experience as a result of the implementation. Although these initial findings were positive, in the future company analysts plan to further assess and strengthen the predictive capabilities of this initial predictive model.

Conclusion

Transforming a business requires rapidly adapting the business to meet the needs of its customers. Functionally, this translates into initiating changes that achieve strategic corporate goals. However, these initiatives often require a rapid rate of assimilation by company employees that can exceed employees' capacity to handle the changes. Exceeding this capacity can result in severe negative organizational consequences. Change initiatives can enhance associates' ability to meet customer needs, but *only* if these changes are properly implemented and account for both corporate strategic goals *and* office capabilities.

The company recognized a need to develop an effective method for prioritizing initiatives. To meet this need, a structured procedure was developed to prioritize change initiatives based upon alignment with corporate business goals. While the aim of most prioritized initiatives is to meet strategic goals designed to improve organizational health, the ability to meet these goals is mediated by employees' capacity to assimilate changes into their office practices. If improperly managed, implementing change initiatives can destroy the achievement of the corporate goals that the initiatives are aimed at improving. The company recognized a need to determine the potential impact of these initiatives so that the impact could be better managed. To determine the level of impact of change initiatives on employees' capacity to handle the changes, two subscales of Office Bandwidth Impact were developed – Employee Cognitive Workload and Office Operational Capacity. A variety of change initiatives were rated on these scales by field office associates and obtained data were used to build a quantitative predictive model of future change initiative impact on field offices. Two pre-deployment tests and three post-deployment tests revealed the model accurately predicted actual impact. Knowing the impact each initiative will have after implementation

Table 1. Change initiative bandwidth impact

Change initiative	Predicted impact	Actual impact	Difference
New software application I	40.48	48.1	7.62
New hardware	31.67	32.27	0.6
New software application II	46.48	44.37	2.11
Policy credit procedural change	28.48	35.29	6.81
New medical product	30.48	39.11	8.63

allows the company to manage the impact by mapping the pace of change rollouts onto field offices' abilities to handle the change. It is argued that not exceeding offices' bandwidth is key to increasing employee acceptance rates as well as reducing negative operational consequences.

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Disclaimer

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