Understanding senior management’s behavior in promoting the strategic role of IT in process reengineering: use of the theory of reasoned action

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Abstract
Information technology has been considered as both a strategic catalyst and enabler of business process reengineering (BPR). An area of major concern has been the difficulty to convince senior management’s reluctant behavior toward promoting the strategic role of IT in process reengineering. There has been relatively little research on this topic. Furthermore, one common approach might be merely to study senior management’s behavior as a whole. What appears to be missing is an examination of the possible underlying reasons for senior management’s behavior. The theory of reasoned action (TRA) may provide a basis for analyzing the behavior. In particular, it can be used to assess the effects of interventions designed to change behavior. Basically, this framework has three steps: (1) examining original behavior, (2) developing remedial actions for negative behavior, and (3) assessing the changed behavior. Furthermore, this framework is examined by an empirical study to understand its application in practice.

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1. Introduction

Business process reengineering (BPR) has become a new corporate issue and is ranked as one of the most important issues for CIOs since the early 1990s [5,36]. It concerns the fundamental rethinking and radical redesign of business processes to obtain dramatic and sustainable improvements in time, cost, human resources, etc. More and more firms have decided to adopt process reengineering as the primary vehicle for their organizational transformation. Under this context, information technology (IT) should be viewed as more than an automating or mechanizing force, it can fundamentally reshape the way business is done. It is considered as both a strategic catalyst and enabler of process reengineering [6,15,19]. In particular, when Internet-based e-business becomes pervasive in business organizations, this consideration will become extremely important. Thus, the use of IT to rethink business processes from a high-level or strategic direction is significant to the future success of process redesign.

Despite the importance of the strategic impact of IT in process reengineering as above cited, an area of much concern has been the difficulty associated with convincing senior management of the innovative use of IT in process reengineering. Even if senior
management has a positive attitude toward process reengineering, they are likely to remain ambiguous about the actual role of IT in process reengineering. Recent studies found that senior management were unaware of those concepts and merely emphasized the role of automating or supporting existing process[34]. For instance, management have typically asked, “how can we use new IT to enhance, streamline, or improve what we are already doing?” Whereas they should ask, “how can we use new IT to allow us to do things that we are not already doing?” The misuse of IT can block reengineering by reinforcing old ways of thinking and old behavior patterns. This causes senior management to be reluctant to promote the strategic role of IT in process reengineering. This is the major concern of the study.

Thus, if IS researchers are to be able to influence or change such decisions, they will need to have a firm understanding of why such resistance exists. What appears to be missing is an examination of the possible underlying reasons for senior management’s unwillingness toward the behavior. Such a research approach can help IS researchers identify the basis for the resistance toward the behavior, and then design effective ways to overcome it. One approach might be merely to study senior management’s attitude toward the behavior in hopes of understanding their future behavior. Many researchers in MIS, psychology, and other disciplines have studied attitude, attitude change, and satisfaction. A richer study of behavior, behavioral intention, and other behavior determinants, however, would provide a more complete assessment of senior management’s position toward the behavior.

Furthermore, it is imperative that researchers approach this problem systematically and base their efforts on a solid theoretical foundation. The theory of reasoned action (TRA) may provide this foundation [13]. It examines attitudinal and normative influences on behavior, which might explain the reasons for senior management’s reluctance toward the behavior. In particular, it can be used to assess the effects of interventions designed to change behavior. Therefore, this study proposed a three-step framework using the TRA as an analysis technique: (1) studying original behavior; (2) proposing remedial actions for negative behavior; (3) verifying the changed behavior. This framework is then examined in an empirical study.

2. Literature review

2.1. IT and process reengineering

A business process is “a set of logically related tasks performed to achieve a defined business outcome”. Typically, maximum performance gains are achieved by the reengineering of a process when related tasks are performed by personnel from several different functional units [8]. Business processes existed and evolved long before the advent of modern computers. Interestingly, major changes in business processes have not occurred as a result of computerization, as the majority of computer systems in organizations merely automate or support existing business processes. While the importance of IT in process redesign may have received attention only recently, its effect on fostering process thinking has been in the making for many years. For example, Ford might have simply computerized its vendor payment process. By doing so, Ford’s executives estimated that they would have been able to do away with 20% of the 500 jobs in the accounts payable unit. Rather than, they eliminated 80% of those jobs by reengineering the business process with the use of IT [33].

Thus, reengineering, unlike automation, is about innovation and it also requires recognition of the new, unfamiliar capabilities of IT for rethinking business process instead of its familiar ones [37]. It therefore serves as one of the major facilitators for reengineering and the expected results will not actually be accomplished without its consideration [16]. Many organizations are beginning to recognize the importance of IT-strategy integration in process reengineering. The conventional wisdom in its usage has always been to determine business requirements of a function, process, or other business entity, and then develop the system. However, an awareness of its capabilities can and should influence process design. Its role should be considered in the early stages of redesign. Thus, IT-intensive processes are often simply automated and its strategic potential is often ignored [17,38]. Moreover, organizations often do not provide a supportive context for individuals to introduce or be innovative with IT.

2.2. Theory of reasoned action

Fishbein and Ajzen developed their TRA about an individual’s behavior (B) as a positive function of
his/her behavioral intention (BI) to perform the behavior. Furthermore, an individual’s behavioral intention is seen as a linear function of two psychological variables: (1) a person’s attitude (A) toward performing the behavior, and (2) a person’s subjective norm (SN) regarding the behavior. Attitude and subjective norm are also assigned weights ($w_1$, $w_2$) to indicate their relative importance. These can change from situation to situation and from person to person and are typically estimated through linear regression. The relations are [14]:

$$ B \approx BI \approx w_1(A) + w_2(SN) \quad (1) $$

However, this equation provides little to explain the behavior. Thus, more fundamental explanation is provided by examining the underlying components. An attitude toward performing a behavior is approximated by sum of a product of the strength of behavioral belief ($BB_i$) that the behavior will lead to salient consequence $i$, and corresponding evaluation ($E_i$) of salient consequence $i$, over all of the salient consequences. In general, a person who believes that the performance of a given behavior will lead to positive outcomes will possess a favorable attitude toward the behavior:

$$ A \approx \sum_{i=1}^{N} (BB_i \times E_i), 
\quad i = 1, 2, \ldots, N \text{ (salient consequences)} \quad (2) $$

The subjective norm is determined by the sum of the product of a person’s normative belief ($NB_j$) and the person’s motivation to comply ($MC_j$). In other words, an executive’s perceived social pressure to perform a behavior is a function of how much he/she thinks that social referents, such as the board of directors, stockholders, employees, etc., would approve, and how much he/she generally wants to comply with their wishes:

$$ SN \approx \sum_{j=1}^{M} (NB_j \times MC_j), 
\quad j = 1, 2, \ldots, M \text{ (salient referents)} \quad (3) $$

2.3. Theory of reasoned action in MIS research

TRA has wide acceptance in related behavioral science disciplines, and has been examined empirically in a variety of situations. Examples include consumer behavior, woman’s choices of occupational orientations, family planning behaviors, and American voting practices [2]. Many MIS studies have dealt directly with attitudes toward computers, both in measuring them and attempting to change them. Early examples can be found from Lucas [26,27], Schewe [31], Morrison [28], Joshi [24], and Winter et al. [39]. Among these, perhaps the most extensively attitudinal studies were conducted by Lucas in the 1970s. He found that high levels of use in an IS could result from favorable user attitudes toward them as well as information service staff. He also indicated that system usage could be predicted from attitudes about the computer’s potential and attitudes toward IS staff. Recent attempts at developing more valid and reliable instrumentation to assess attitudes and satisfaction include: Ives et al. [22], Bailey and Pearson [3], Baroudi et al. [4], Iivari [21], and Doll and Torkzadeh [11,12].

These efforts have provided valuable insight in examining user attitudes concerning IS, IS staff, etc. However, it is quite clear that simply examining global attitudes toward computers is not sufficient to understand a person’s behavior. One study has discussed the use of this theory to understand senior management’s reluctance to adopt strategic IS (SIS) [29]. It literally described the fundamentals underlying attitude and subjective norm for negative IS and subjective norm for positive behavior, and then suggested possible ways to change senior management’s behavior. This theory also was expanded to include situational involvement and intrinsic involvement in information system use [20]. An examination for user acceptance of expert systems was also presented [25]. They found that intentions to use the system are influenced by social norms encouraging system use and by perceived usefulness of the system and its impacts on valued skills. This theory has been the subject of a meta-analysis of past research involving nearly 100 studies with recommendations for modifications and future research [32].

The technology acceptance technology (TAM) [9] introduced the idea that behavioral intention to use the system is directly determined by the person’s attitude about using the system and perceived usefulness of it. Attitude and perceived usefulness are also affected by perceived ease of use. Venkatesh and Davis [35], Dishaw and Strong [10], etc. have reported its use in their studies. Davis et al. examined this model
empirically to predict and explain user acceptance of computer technology on the basis of the subjects of 107 students, specifically, word processing software. Using electronic and voice mail, Adams et al. [1] replicated this study to survey attitudes toward these two messaging technologies. Furthermore, Jackson et al. [23] developed a more comprehensive model to aid in understanding the effects of factors that lead to behavioral intention to use an IS. This model, called TAME, adds user involvement constructs and incorporates several theoretically supported psychological factors, including situation involvement, intrinsic involvement, argument for change, and prior use.

3. Theoretical framework

An area of major concern has been the difficulty to convince senior management’s reluctance toward the behavior. There has been relatively little literature in discussing this topic. Here, the TRA was used extensively to assess the effects of interventions designed to influence the behavior of senior manager. Accordingly, the theoretical framework comprises three steps, as indicated in Fig. 1.

- The first is to examine senior management’s original behavior.
- The second is to propose proper remedial actions for negative behavior. The strategy for implementation is a multi-pronged attack on all the executive’s salient consequences (attitudes) and referents (subjective norms) having a negative impact on behavior.
- The third is to assess the changed behavior.

To conclude the effects of treatments, verification is required to determine whether or not the difference between before and after behaviors is statistically significant.

Proposition 1. The difference between behaviors before and after treatments is not statistically significant.

According to the theory, it would first be necessary to determine what senior management believed to be the effect of the behavior. Salient consequences are the few, perhaps five to ten outcomes that come to senior management’s mind regarding his or her behavior, e.g. assurance of success in process engineering, great simplification of business process, vast IT investment, etc. The strengths of behavioral beliefs (how likely senior management thinks each consequence will occur if the strategic concept is implemented) and evaluations (how good or bad senior management feels about each consequence) associated with these consequences are the immediate determinants of senior management’s attitude. Salient referents possibly include CEO, CEO of a competing organization, chief financial officer, chief information officer (CIO), etc. It is also necessary to consider some referent groups who may be the salient ones to senior management, e.g. the company’s board of directors and strategic planning group or steering committee, or customers and employees. The strengths of normative beliefs and motivations associated with these salient referents (individuals or groups) are the immediate determinants of senior management’s subjective norm.

4. Design of the research procedure

This empirical study was conducted using a survey to collect data.

4.1. Instrumentation

The measurement involves a six-part questionnaire. The first part consists of basic information. The other parts are related to behavioral information and are developed using semantic differential techniques.
4.1.1. Basic information

This collects information about the industry, annual revenue, number of employees, and the respondent characteristics, including education, age, reengineering experience, and position.

4.1.2. Behavior belief, evaluation, normative belief, and motivation to comply

Ajzen and Fishbein provided not only a theoretical model relating behavior to attitudes and subjective norms, but also a process to develop the measurement.

(1) Define the behavior of interest.
(2) Elicit perceived consequences of the behavior and social referents relevant to the behavior.
(3) Choose the most often cited consequences and referents.
(4) Create measures of behavioral beliefs, evaluations, normative beliefs, and motivations.
(5) Create measures of attitude, subjective norm, and intention, based on the definition of the behavior of interest.

The consequences and referents for senior management’s behavior can be identified through a literature review, interview, and survey. A literature review and interview with reengineering consultants was conducted to collect perceived influences and relevant referents. The initial list for the perceived consequences contains 15 items and the initial list for relevant referents comprises 12 items. Furthermore, a representative sample of 30 firms (16 manufacturing, 9 service, and 5 financial and banking) with their executives were surveyed to identify salient consequences and referents. The final lists were summarized into 10 items for consequences and 8 items for referents.

The list for the salient social referents includes:

(1) company’s board of directors;
(2) company’s employee;
(3) stockholders;
(4) chief executive officer of a competing company;
(5) non-IS senior officers;
(6) company’s customers;
(7) members of reengineering team, including leader, consultants, process analysts, etc.;
(8) chief information officer (CIO).

Accordingly, the questionnaire items for behavioral belief and evaluation parts were based on the ten salient consequences with ten items. The questionnaire items for normative belief and motivation parts were developed in terms of the eight salient referents and seven items were included. Except for motivation to comply, which is scored from 1 (not at all) to 7 (very much), all of the others were scored from −3 to +3. The following illustrate an item for each.

Promoting IT’s strategic role in process reengineering will lead to assurance of its success:

disagree —— —— —— —— —— —— agree.

Leading to assurance of the success of process reengineering would be

bad —— —— —— —— —— —— good.

4.1.3. Behavior

This involves a direct measure of the behavior, whose purpose is to estimate the relative weights as indicated in Eq. (1). It contains five semantic differential scales for improved reliability and validity. Three scales of the measure are illustrated as below.

I intend to, through deliberate actions, promote IT’s strategic role in process reengineering:

unlikely —— —— —— —— —— likely.

negative —— —— —— —— —— positive.

bad —— —— —— —— —— good.

4.2. Pretest

To measure reliability and validity, a pretest was conducted using a representative sample of thirty companies. Generally speaking, a measure is reliable to the degree that it supplies consistent results, and reliability is measured by the coefficient Cronbach’s $\alpha$ [7]. In this study, validity is of two types, content and construct. The content validity of a measure is the
extent to which it provides adequate coverage of the topic under study. The construct validity attempts to identify the underlying construct(s) being measured and determines how well the test represents them. A principal factor analysis was used for the analysis of construct validity.

4.2.1. Reliability and validity

The summary for the reliability of the four-part questionnaire is shown in Table 1. According to Price and Mueller [30], a standard coefficient $a$ of 0.6 or higher is generally viewed as the acceptance level for using a measure. The questionnaire was developed through a literature review, practitioner interview, and executive survey. Thus, content validity for the questionnaire should be relatively acceptable. Construct validity for the questionnaire was analyzed by principal factor analysis; the results are summarized in Table 1. The rule of Eigenvalue greater than one was used as the criterion for extracting the factors [18]. This also presents quite acceptable results.

4.3. Sample organizations and respondents

Basically, reengineering involves extensive organizational transformation and massive IT investment. Thus, it is assumed that larger firms are more likely to have this kind of experience. Process reengineering was defined to the respondents as between a modest change to an existing process to a complete overhaul of a key process. The first survey is to understand the executive’s original behavior. It was conducted from a sample that includes 600 manufacturing firms, 300 service firms, and 100 financial and banking firms selected from the 1999 listing of Commonwealth 1000 manufacturing firms, 500 service firms, and 100 financial and banking firms.

Before the 1000 surveys were sent out, phone calls were made to ask the prospective respondent’s willingness to participate. Furthermore, in order to improve survey returns, there were follow-ups by phone calls or letters 3 weeks after surveys had been sent out. The second survey is to analyze the effects of remedial actions designed to change the executive’s behavior. It was conducted for respondents identified as having negative behavior from the previous survey. The remedial material was first mailed to the executives, and then they were asked to read it and re-answered the original questionnaire. The follow-up procedures were also applied to improve survey returns in the second survey.

5. Analysis and findings

5.1. Demographic characteristics

For the first survey, with 11 incomplete responses deleted, this resulted in a sample of 105 respondents for a 10.5% response rate. The responding sample consisted of 64 manufacturing firms (61.0%), 30 service firms (28.6%), and 11 financial and banking firms (10.4%). As a result, the sector distribution for the responding sample was approximately the same as that of the sample frame. A test for non-response bias in the data collection process was carried out. This test used two responding subsamples: early and late respondents. These were correlated on their annual revenue and reengineering experience. The results from $\chi^2$-test at the 0.01 level indicated that there were no significant differences for either. Thus, non-response bias did not exist and the responding sample was thus considered as a representative of the sample frame.

5.2. Empirical analysis

5.2.1. Senior management’s original behavior

The analysis of executive’s original behavior was divided into two parts. First, the original executive’s behavioral scores were computed. Second, the underlying determinants of the executives having negative behaviors were discussed. However, the relative weights must be estimated before the behavioral scores can be derived. They were estimated via multiple regression analyses based on data collected from

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Eigenvalue</th>
<th>Percentage of variance accounted for</th>
<th>Cronbach’s $a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral belief</td>
<td>4.3</td>
<td>80.2</td>
<td>0.86</td>
</tr>
<tr>
<td>Evaluation</td>
<td>3.4</td>
<td>73.2</td>
<td>0.80</td>
</tr>
<tr>
<td>Normative belief</td>
<td>4.0</td>
<td>79.0</td>
<td>0.88</td>
</tr>
<tr>
<td>Motivation</td>
<td>3.2</td>
<td>71.3</td>
<td>0.77</td>
</tr>
<tr>
<td>Behavior</td>
<td>3.0</td>
<td>70.1</td>
<td>0.71</td>
</tr>
</tbody>
</table>
the questionnaire. Their weights for attitude and subjective norm were 0.43 and 0.32, respectively. An implication for the difference is that attitude is more influential to behavioral change. This provides us prior knowledge to decide more effective remedial actions when resources are limited. After that, an executive’s behavioral scores could be derived from his or her attitude and subjective norm components. There were 75 executives (71.4%) with negative behaviors. This indicated that most executives, even with reengineering experience, were unwilling to promote this role and still considered it only a tool for automating existing processes. The next process started by examining the salient consequences and referents for the 75 executives with negative behaviors.

First, the mean value was computed for the impact of each salient consequence on attitude for the 75 executives. In turn, the attitude and subjective norm were determined. Furthermore, the overall mean value was also estimated for the impact of each salient consequence on attitude over the 105 executives from the first survey. After that, a test for difference between means was verified using z-statistics (for the sample size of 30). The results for the salient consequences were summarized in Table 2, where salient consequences 3, 4, 5, 8, 9, and 10 were statistically significant, and represented more influential impact on negative attitude and thus on negative behavior. The sizes of their effects on negative behavior in descending order were salient consequence 4, 3, 9, 10, 8, and 5. This implies that more effective attacks on negative attitude should focus on providing substantial evidences or clear illustrations of the salient consequences (1, 6, and 7 had positive mean values and were not considered to be the objects for remedial actions).

For salient consequence 4, because most executives were not aware of the importance of IT’s strategic role in process reengineering, they have never found that reengineering was able to affect much reduction in workforce. This salient consequence produced a negative impact on attitude because behavioral belief was scored as negative, evaluation was scored as positive, and thus their product should be on a negative direction. For salient consequences 3 and 5, the same reasons could be argued. They could be classified as the same class, namely, positive consequences. For salient consequence 9, since the executives recognized that reengineering, especially with the support of IT, was synonymous with radical change, they might have believed that there was a strong connection between resistance to change and process reengineering. The same reasons could be discussed for salient consequences 10 and 8. In contrast, salient consequences 9, 10, and 8 were categorized as another class, namely, negative consequences.

By the same token, the mean value was computed for the impact of each salient referent on subjective norm over the 75 executives and as was the overall mean value over the 105 executives. The results for the salient referents were summarized in Table 3, where salient referents 1, 2, 3, and 8 were statistically significant, and had greater impact on negative subjective norm and subsequently, on negative behavior. Their sizes in descending order were salient referents 1, 2, 8, and 3. Salient referents 4, 5, and 7 presented positive mean values and were not considered to be the subjects for treatments.

The board of directors were not in the position to understand the impact of IT’s strategic role in process reengineering. It might be believed that the executive’s belief for the board of directors thinking them toward the behavior should be in a negative direction, and thus normative belief was scored as negative. Furthermore, his/her motivation to comply with the board of

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Table 2
Results for the salient consequences

<table>
<thead>
<tr>
<th>S. no.</th>
<th>Salient consequences</th>
<th>Mean</th>
<th>S.D.</th>
<th>z-Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assure the success of process reengineering</td>
<td>1.03</td>
<td>0.41</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Great simplification in business process</td>
<td>−0.95</td>
<td>0.43</td>
<td>0.72</td>
</tr>
<tr>
<td>3</td>
<td>Increase efficiency by at least 50%</td>
<td>−2.34</td>
<td>0.71</td>
<td>−11.51*</td>
</tr>
<tr>
<td>4</td>
<td>Gain more than 50% reduction in workforce</td>
<td>−2.54</td>
<td>0.85</td>
<td>−11.00*</td>
</tr>
<tr>
<td>5</td>
<td>Provide competitive advantage relative to other firms</td>
<td>−1.76</td>
<td>0.51</td>
<td>−7.18*</td>
</tr>
<tr>
<td>6</td>
<td>Understand innovative use of IT capacity</td>
<td>0.67</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Enhance collaborative effort</td>
<td>0.35</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Vast IT investment</td>
<td>−1.95</td>
<td>0.74</td>
<td>−7.63*</td>
</tr>
<tr>
<td>9</td>
<td>Resistance to change</td>
<td>−2.02</td>
<td>0.55</td>
<td>−9.43*</td>
</tr>
<tr>
<td>10</td>
<td>More time for training</td>
<td>−1.98</td>
<td>0.56</td>
<td>−8.96*</td>
</tr>
</tbody>
</table>

* P < 0.01.
Table 3
Results for the salient referents

<table>
<thead>
<tr>
<th>S. no.</th>
<th>Salient referents</th>
<th>Mean</th>
<th>S.D.</th>
<th>z-Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Company’s board of directors</td>
<td>−2.12</td>
<td>0.62</td>
<td>−9.65*</td>
</tr>
<tr>
<td>2</td>
<td>Company’s employees</td>
<td>−1.95</td>
<td>0.66</td>
<td>−8.05*</td>
</tr>
<tr>
<td>3</td>
<td>Stockholders</td>
<td>−1.26</td>
<td>0.75</td>
<td>−4.12*</td>
</tr>
<tr>
<td>4</td>
<td>Chief executive officers of a competing company</td>
<td>1.61</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Non-IS senior officers</td>
<td>1.17</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Company’s customers</td>
<td>−0.87</td>
<td>0.46</td>
<td>1.48</td>
</tr>
<tr>
<td>7</td>
<td>Members of reengineering team including leader, consultants, process analysts, etc.</td>
<td>1.89</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Chief information officers (CIO)</td>
<td>−1.54</td>
<td>0.56</td>
<td>−5.31*</td>
</tr>
</tbody>
</table>

* P < 0.01.

directors would be very agreeable under common knowledge, and motivation to comply was therefore scored as positive. As a result, their product should be on a negative direction. For company’s employees and stockholders, the similar reasons could be derived. They could be classified as the same class, namely, unfavorable referents. The CIO is aware of the importance of IT’s strategic role in process reengineering, and the executive may have positive belief for the CIO thinking him/her toward the behavior. Moreover, his/her motivation to comply with the CIO might incline to be disagreeable since he/she is the supervisor of the CIO and has had different experiences. Contrary to the class of unfavorable referents, the CIO was classified as “favorable referents”.

5.2.2. Proper remedial actions

For the attitude component, substantial evidences are presented to strengthen the executive’s beliefs of the positive consequences, i.e. salient consequences 3, 4, and 5, or weaken the executive’s beliefs of the negative consequences, i.e. salient consequences 8, 9, and 10. For the positive consequences, the remedial actions aim at strengthening behavioral belief from the negative to the positive. An example for salient consequence 4 could be the case from Ford in its accounts payable process. The other two positive consequences proceed with a similar pattern. For the negative consequences, the remedial actions aim at weakening behavioral belief from the positive to the negative. For example, the remedial action for salient consequence 8 is an excerpt from a firm’s success in reengineering with little IT investment for a simple database. The other two negative consequences are handled in a similar manner.

For the subjective norm component, substantial experiences are provided to strengthen the executive’s belief for the unfavorable referents, i.e. salient referents 1, 2, and 3, or strengthen the executive’s motivation to comply with the favorable referents, i.e. salient referent 6 (CIO). For the unfavorable referents, the remedial actions focus on strengthening normative belief, moving it from a negative score to a positive one. An example for company’s employees is based on a practitioner’s case in which an educational program is provided for employees on the importance of the strategic role before contemplating reengineering project and the subsequent reengineering project works quite successfully. The story enhances the executive’s beliefs for the post-training employees thinking them toward the behavior. For the favorable referents, the remedial actions focus on strengthening motivation to comply, moving it from a negative value to a positive one. For instance, the remedial actions for a CIO are mainly to make different experiences for the executive and the CIO regarding the behavior as similar as possible. That is to show him/her clear industrial cases demonstrating radical improvement of performance.

5.2.3. Senior management’s changed behavior

There were 73 responding executives in the second survey from a sample of 75 executives with negative behaviors in the first survey. This high response rate was because these executives were willing to participate in this study from the very beginning. After change, the mean impact of each salient consequence on attitude was measured again over the 73 responding executives. A test for mean difference between the before and after was conducted to examine the effectiveness of the remedial actions. The mean differences were statistically significant at 0.01 level. This indicated that the remedial actions have made significant changes in all the salient consequences, although there was little difference in their change. By the same process, salient referents 1, 2, and 8 reached statistical significance at 0.01 level, and salient referent 3 did so at 0.05 level. The reasons may be because stockholders are not directly involved with the regular operations of
a company and as a result, may have less of a sense toward the behavior. Thus, significant improvements for all the salient referents were presented.

A test for mean difference between attitude before and after change was made to examine the influence of the salient consequences and referents: the mean attitude after change was estimated over the 73 executives, with the same process applied to subjective norm as well. A mean behavior after change was further computed over the 73 executives. At this point, Proposition 1 could be assessed. A test for mean difference between behavior before and after change was examined. The results were shown in Table 4, where the mean differences all had statistical significance at 0.01 level. Thus, Proposition 1 was rejected, indicating that the remedial actions had a relatively effective influence on behavior.

6. Conclusions and suggestions

As process reengineering continues to be considered as an important way for organizations to achieve competitive advantage, senior management should be cautiously aware of IT’s strategic role to assure its success. However, senior management has been reluctant to promote the strategic role and instead, considered it just an automating tool; i.e. operational. Thus, it is necessary for IS researchers and practitioners to have a clear understanding of why such senior management’s behavior exists. The TRA is an approach to systematically diagnose the possible underlying determinants of the behavior in question and bases them to design effective treatments to change the behavior. Therefore, this study proposed a three-step framework, using the TRA as an analysis technique.

Some results from the empirical study were discussed. There were approximately 71.4% of the executives with the negative behaviors. All the salient consequences after the remedial actions, both positive and negative consequences, have produced substantial improvements for the executive beliefs, and in turn, as did the attitude. Similarly, all the salient referents, both favorable and unfavorable referents, have presented the same effects, and in turn, as did the subjective norm. In sum of the two components, the behavior in question has reached significant improvements. However, as discussed previously, the elicitation of the salient consequences and referents are not unique and some deviations could be possible. Accordingly, the proposed remedial actions for the consequences and referents are therefore different. Thus, it can be expected that the results will be different to some degrees, but it remains robust and stable for a significant improvement on the negative behavior in general.

The implications for practitioners are as noted below. This approach helps to determine the most influential bases of the behavior and bases them to develop effective remedial actions, and then an effective strategy can be implemented by a comprehensive and multi-pronged attack on all the bases, rather than a traditional approach with a single and direct attack on the behavior in general. On a positive note, organizations that follow this approach and effectively develop such an evaluation system could prove to be invaluable sources for these beliefs linking the behavior to consequences and referents. This approach can be refined for some of the specific details, i.e. consequences and referents, and applied extensively to explore the behavior toward other targets. In addition, this approach may also provide a valuable guide to other similar problems, such as behavior in IS usage for organizational members.

Subsequent research could be based on the foundation to elaborate it. First, prior research in exploring behavior focused more on attitudinal component and less on discussion of the subjective norm component for its role in behavioral influence. This study demonstrates useful findings for the effect of subjective norm in behavior. This suggests researchers that both of the components are almost equally effective ways to remedy the behavior. Second, future research can be focused more on uncovering different beliefs for different types of industries and develop more specific remedial actions for different requirements. Third, a
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