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Beneficial Noncompliance and Detrimental Compliance: Expected Paths to Unintended Consequences

Full Paper

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Abstract

This paper explores the possibility that compliance and noncompliance to process specifications, software usage procedures, business rules, and best practices could be beneficial or detrimental. After introducing different types of compliance and noncompliance, it uses a simple 2 x 2 matrix to postulate four types of situations: beneficial compliance, detrimental compliance, beneficial noncompliance, and detrimental noncompliance. It provides examples that illustrate subcategories within all four possibilities, thereby bringing into question the common assumption that compliance is beneficial and noncompliance is detrimental. It presents a model that explains decisions related to intentions toward compliance and noncompliance. It concludes with implications for management and for systems analysis and design. An underlying theme throughout is that beneficial noncompliance and detrimental compliance can be viewed as expected paths to unintended consequences.

Keywords

Compliance, noncompliance, work system, theory of workarounds

Do Business Process Specifications, Best Practices, and Business Rules Always Know Best?

Both software and IT-enabled work systems often are designed, constructed, and implemented based on an implicit assumption that deserves serious questioning. The assumption is that codified process specifications, software usage procedures, and business rules encapsulate the best available knowledge about certain situations. That assumption implies that participants in IT-enabled work systems (Alter, 2013) are expected to comply with those business process specifications, software usage procedures, and business rules.

Contrary to taken-for-granted assumptions that compliance is both expected and beneficial, there are many known examples in which noncompliance proved beneficial or strict compliance proved detrimental. Many examples appear in Alter (2014) and Röder et al. (2014a, 2014b), which focus on the related topic of workarounds. Many other examples appear in the literature on safety and medical informatics. Since such examples are common, it is worthwhile to explore how the design, construction, implementation, and operation of IT-enabled work systems should account for those possibilities, addressing questions such as the following:

- Under what circumstances can work system participants legitimately decide not to comply with specified business processes, software usage procedures, or business rules?
- Under what circumstances should managers view compliance as inappropriate?

- How should methods for system design and construction incorporate the possibility of detrimental compliance and/or beneficial noncompliance?
- How should management and control systems account for detrimental compliance and/or beneficial noncompliance?

These questions fall within the Blue Ocean theme of AMCIS 2015, which invites "creating and exploring new and uncontested areas" … and exploring "unconventional areas that offer new vistas." (AMCIS, 2015). Instead of building on the standard notion that technologies will be used as intended within IT-enabled work systems that will operate as intended, this paper explores unintended drivers that sometimes lead to unintended consequences within the context of IT-enabled work systems.

While the details of these questions in specific situations may be related to how a work system was created and evolved, the questions themselves are not fundamentally about system development or resistance to change. Rather, they are equally applicable regardless of whether the processes were imposed on work system participants or developed through participatory or agile methods and regardless of whether the work system's software was developed internally or obtained from a vendor.

Detrimental compliance and beneficial noncompliance (??) This paper introduces the unconventional concepts of detrimental compliance and beneficial noncompliance. Neither concept exists in the current IS literature, as is demonstrated by Google Scholar searches on those terms that found no hits in April 2015. This paper pursues the unconventional view that the IS discipline and its systems analysis and design subdiscipline need to recognize and account for those phenomena. That recognition goes beyond typical discussions of requirements gathering and IS risk analysis. Typical textbooks about IS in general and systems analysis and design tend to assume that officially sanctioned business processes, software usage procedures, and business rules should be followed. If mentioned at all in systems analysis textbooks, resistance and noncompliance are usually viewed as inappropriate. Similarly, workarounds are often viewed as inappropriate or dangerous (Alter, 2014). Software vendors, especially vendors of complex enterprise software, often claim that their software captures and enforces best practices (e.g., SAP, 2015). The occasionally used concept of "shadow system" implies that something is wrong with information systems that do not comply with an IS department's goal of cataloguing and controlling the computerized information used in an enterprise. Overall, the real world phenomena of detrimental compliance and beneficial noncompliance should not be ignored or treated as irrelevant.

Organization. This paper explores the idea of compliance and noncompliance in relation to process specifications, software usage procedures, business rules, and purported best practices. After introducing different types of compliance and noncompliance, it uses a simple 2 x 2 matrix to postulate four types of situations: beneficial compliance, detrimental compliance, beneficial noncompliance, and detrimental noncompliance. Examples illustrate subcategories within all four possibilities, thereby bringing into question the taken-for-granted assumption that compliance is beneficial and noncompliance is detrimental. A model that encompasses the examples explains decisions related to intentions toward compliance and noncompliance. This paper concludes with implications for management and for systems analysis and design. An underlying theme throughout is that beneficial noncompliance and detrimental compliance can be viewed as expected paths to unintended consequences.

Background Concepts Related to Evaluating Whether Compliance or Noncompliance in a Situation is Beneficial or Detrimental

This section presents several basic definitions and distinctions needed for a nuanced perspective on compliance and noncompliance. It does this by answering three questions.

What is the difference between compliance and noncompliance? Compliance to a business process, software usage procedure, or business rule is performing activities in conformance with whatever specification is meant to guide those activities. For our purposes, the concept of compliance or noncompliance applies most directly to clear processes, procedures, or rule specifications that permit little ambiguity about whether compliance or noncompliance occurred. Thus, the concept of compliance applies to a process such as "perform the following nine steps in the following manner" but does not apply to a vague expectation such as "treat customers well."

What degree of compliance is really expected? Consider the possibility that a business process specification might be viewed as either activity rules or activity guidelines. Activity rules call for conformance to specifications. That approach is supported by most analysis and design textbooks and most research on business process management (BPM), e.g., see van der Aalst (2013). (As used here, the term activity rule means a detailed specification of how work should be done. That might or might not be expressed using a business rule engine.) Activity guidelines call for context-dependent interpretations of suggestions about how activities should be performed in the most typical situations. That approach is supported by participatory or sociotechnical design. Table 1 compares these views.

Distinctions in Table 1 are inspired by the sociotechnical concept of minimum critical specification (Cherns, 1987), whose basic idea is that designers should specify only what is absolutely essential about a business process, and that work system participants should view those specifications as suggestions and guidelines, rather than as rules for action. The assumption of minimum critical specification creates an important challenge for systems analysis and design because it asks designers and other stakeholders to be clear about what is genuinely essential and what can be left to the judgment of the people doing the work. In the author's opinion, the concept of minimum critical specification is absent or at best highly peripheral to most of the literature of systems analysis and design for information systems.

	Business processes as activity rules	**Business processes as activity guidelines**
Management expectations	Business processes specify what should happen. Business processes should be followed literally.	Business processes are guidelines for action. Business processes should be interpreted in the context of the situation at hand, including any unexpected exceptions or contingencies.
Nature of designer knowledge	The designer has complete knowledge about what should be done in all situations that will be encountered by an IT-enabled work system.	The designer has partial knowledge of situations that will be encountered, and therefore should support interpretive flexibility related to whatever contingencies will be encountered.
Nature of application software	Application software may express and enforce best practices.	Application software should support activities without constraining them unnecessarily.
Responsibility of work system participants	Work system participants should comply with specified business processes.	Work system participants typically should comply with business process specifications, but occasionally should use judgment to bypass or override a business process that does not fit a particular situation.

Table 1. Business processes as activity rules versus activity guidelines

Which stakeholder viewpoint should evaluate whether an act is beneficial or detrimental? Stakeholder interests and goals often diverge, implying that an act of compliance or noncompliance might be beneficial to some stakeholders and detrimental to others. Here are four types of stakeholders whose goals and interests may diverge:

- work system participants who decide whether or not to comply
- internal or external customers who might be affected by compliance or noncompliance
- local managers responsible for ensuring that work is done efficiently and effectively
- the enterprise, whose business results may be affected by compliance or noncompliance.

Notice that goals and interests of work system participants may diverge from those of other stakeholders, especially those who would benefit from noncompliance. As will be discussed later, there also are situations in which noncompliance is beneficial for an enterprise.

This paper treats interests of the enterprise as the basis of classifying compliance or noncompliance in particular situations as beneficial or detrimental, regardless of whether compliance or noncompliance

might be beneficial or detrimental for the work system participants performing the compliant or noncompliant activities.

Four Combinations of Beneficial and Detrimental Compliance and Noncompliance

While systems and rules are usually designed under the assumption that compliance would be beneficial, there are many situations in which compliance is detrimental and in which noncompliance is beneficial. Table 2 expands on that thought by identifying four combinations related to the beneficial or detrimental effects of compliance or noncompliance. Examples mentioned below demonstrate that specific subcategories within the four major categories occur in practice and should not be ignored or trivialized. Future consideration of compliance and noncompliance is likely to find other subcategories.

	Beneficial	**Detrimental**
Compliance	Beneficial compliance • wholehearted compliance • halfhearted compliance	Detrimental compliance • working-to-rule • malicious compliance • self-serving compliance • thoughtless compliance
Noncompliance	Beneficial noncompliance • working around unrealistic processes • working around unduly restrictive controls • working around inadequate hardware/software • working around malfunctions and temporary obstacles • prioritizing higher goals over process specifications • cheating slightly to accomplish higher priorities	Detrimental noncompliance • accidental noncompliance • well-meaning but harmful noncompliance • fraudulent or malicious noncompliance

Table 2. Four combinations of beneficial and detrimental compliance and noncompliance

Different Types of Compliance and Noncompliance

This section organizes examples under each category and subcategory in Table 2. Many of these examples and many other relevant examples appear in Alter (2014), an explanation of a theory of workarounds, some of which involve issues related to compliance and noncompliance.

Beneficial Compliance

Most management systems and most systems analysis and design operate under a taken-for-granted assumption that compliance is beneficial. After all, why would those specifications, procedures, and rules exist if they weren't meant to be beneficial?

Whole-hearted compliance. Work system participants intend to comply fully with process specifications based on personal commitments and beliefs that the specifications are beneficial, appropriate, and fully worthy of compliance. This will not be discussed further because it such a typical assumption.

Half-hearted compliance. Work system participants believe that process specifications and/or work conditions may not be beneficial, appropriate, and fully worthy of compliance, and therefore intend to comply only enough to create the appearance of compliance. For example, a study involving use of Siebel CRM showed first line managers helping sales people allocate sales credit to make everyone look good each quarter. (Vieira da Cunha and Carugati, 2009). In effect, the entire group was complying with a mandate to use Siebel CRM, but not with its spirit.

Beneficial Noncompliance

Many workarounds and adaptations support the goals of the enterprise even though it is often assumed that deviations from processes, procedures, and business rules are inappropriate.

Working around unrealistic processes. In some situations, official processes fit poorly with realities that work system participants encounter. An example is the way official processes for medical recordkeeping are sometimes bypassed by paper or verbal medical orders related to newly admitted patients, especially when physicians are busy with other patients (Niazhami et al., 2011). Many other examples occur when perceived inflexibility of ERP systems lead users to deviate from supposed best practices. An example is the use of a statistical code field to capture information about credit card payments. Although not intended for credit card information, the statistical code field was re-purposed to work around an assumed system deficiency (Boudreau and Robey, 2005).

Working around unduly restrictive controls. Work system participants faced with unduly restrictive controls sometimes find it difficult to achieve their objectives for the enterprise. For example, a child welfare service facing mandated seven day turnaround requirements invented a process category called Review Initial Assessment to hide the need to continue work on complex cases. (Wastell et al., 2010). In a very different example, an international hotel chain's Internet bandwidth policy for internal employees limited email attachments to 2 or 4 MB and blocked social networking capabilities, making it difficult for hotel managers and marketing specialists to communicate with customers. To achieve their objectives despite the restrictions, hotel personnel surreptitiously used mobile devices to tap into much more powerful networks that were supposed to be reserved for guests. (Davison and Ou, 2013)

Working around inadequate hardware/software. Many workarounds occur because available software and/or hardware lack specific functions or capabilities that are needed in order to perform specific work steps or to record specific data. For example, an enterprise software system's inability to issue zero-dollar purchase orders resulted in a workaround of a minimum five-dollar cost whenever a vendor offered something for free. (Strong and Volkoff, 2010). In a social work example, social workers bypassed a client information system whose organization in modules was an obstacle to getting work done. "To avoid multiphase navigation between modules and too many clicks, the social workers embedded information in the case report instead of using appropriate modules or documents. For instance, a social worker chose to collect contact information of the families on the top of case reports instead of using a family module meant for this type of information." (Huuskonen and Vakkari, 2012).

Working around malfunctions and temporary obstacles. In some cases, beneficial noncompliance addresses transient anomalies or mishaps. For example, a study of bar code systems used to assure that the right medication was administered to the right patient found 15 types of process workarounds, such as "affixing patient identification barcodes to computer carts, scanners, doorjambs, or nurses' belt rings." (Koppel et al., 2008).

Prioritizing higher goals over process specifications. A Sunday wedding planned months in advance was almost disrupted by a waiting period designed to minimize spur-of-the-moment weddings. The couple went to city hall to apply for a marriage license on Wednesday, expecting to receive it on Friday, but was told that the office would be closed on Friday for a local holiday. Wedding guests had come across the country for the long-planned event. The clerk conferred briefly with the city manager and returned with the marriage license because the purpose of the waiting period rule had been accomplished.

Cheating slightly to accomplish higher priorities. A physician knew that a patient's insurance would not cover a blood test that seemed significant. The doctor's order for the test purposefully included an inaccurate diagnosis code that would permit insurance payment for the blood test, which provided useful information. The patient benefited, but the insurance company paid for a test that would have been disallowed under the patient's insurance policy. The physician's noncompliance prioritized the patient's needs over the insurance company's business rules.

Detrimental Compliance

Perhaps surprisingly, there are many situations in which total compliance to business process specifications and work rules is detrimental for the enterprise place, for customers, and sometimes for the person who complies.

Working-to-rule. Processes and rules sometimes are over-specified to the point that people cannot work productively if they follow every rule. Unions sometimes exploit that phenomenon through an industrial action called "working-to-rule", whereby union members perform only tasks mentioned explicitly in their contract. An example of working-to-rule occurred in several work-to-rule campaigns in Ontario, Canada. "Typical duties withdrawn include[d] running extracurricular activities, meeting with parents, or attending administrative meetings" (Johnson, 2011). In that case, the teachers satisfied their contract but did not fulfill their normal responsibilities.

Malicious compliance. This form of passive-aggressive behavior involves undermining an individual or enterprise's objectives by complying with directives. Assume that increasing equipment breakdowns lead to more detailed procedures and monitoring. Fewer errors may occur, but the burden of procedures and supervision may be perceived as mistrust and regimentation. In a form of malicious compliance, workers who know that the procedures are incomplete or inaccurate may follow the procedures to the letter as a safe path for avoiding disciplinary action (Carroll, 1998). In another example, nuclear control room operators were annoyed at being criticized for deviating from standard but inadequate procedures in a test simulation. They decided to follow the procedures scrupulously, knowing that the procedures would lead to strange results. They "crashed the simulator and were penalized for 'malicious procedural compliance'." (Flach et al. 2004).

Self-serving compliance. This occurs when an individual follows rules in a way that generates undue personal benefit. For example, an organization's travel reimbursement system may permit use of official government per diem amounts instead of actual expenses. Self-serving compliance occurs when an employee requests reimbursement of the per diem account when fully aware that the actual expenses were less.

Thoughtless compliance. This involves blindly following instructions that are inappropriate for the current situation. An example is following driving instructions from a GPS that has no information about traffic jams, road construction, or other conditions. A 2012 list of the top 10 "worst GPS disasters and Sat Nav mistakes" from a GPS industry web site included following GPS directions onto a railway line, crashing into a lake, driving into the ocean, driving a chemical tanker onto an unsafe country road, and driving 98 miles off course (GPS Bites, 2012).

Detrimental Noncompliance

Accidental noncompliance. There are many everyday examples in which a work system participant tries to comply, but makes mistakes or encounters conditions or contingencies that result in unintended noncompliance. For example, a chef trying to follow a recipe may use an incorrect ingredient accidentally.

Well-meaning but harmful noncompliance. The work system participant wants to produce beneficial results for the enterprise and/or customers of the work system, but bypasses or modifies aspects of the process under the belief that strict compliance will not produce desired results in the current situation. This may have the intended benefits for the enterprise or may have detrimental consequences.

The industrial safety literature contains many examples in which production workers face production goals that are inconsistent with safety goals. Research about safety practices in a long-established company found that "daily trade-offs often resulted in operators not putting on their safety gear because this would 'waste' some minutes in the production process." (Huber et al., 2008). Higher production occurs, but sometimes at the cost of unnecessary accidents. The medical informatics literature contains many similar observations in which noncompliance tries to achieve increase efficiency or achieve medical goals but sometimes harms patients or generates incorrect information.

Fraudulent or malicious noncompliance. Work system participants intentionally pursue fraudulent or malevolent noncompliance that could harm the enterprise and/or customers. An example is rogue trader Nick Leeson's unauthorized trades, which bypassed control systems at Barings Bank and led to its collapse.

Decisions about Compliance or Noncompliance

The various types of detrimental compliance and beneficial noncompliance occur when individuals and groups are confronted with situations that call for something other than doing the work in the standard way. In well-managed organizations, those situations are exceptions. The typical case in such an organization involves doing work in the expected way because the processes and rules seem to fit real world situations that are encountered and because some combination of the reward system and monitoring system encourage working in the expected manner. This section looks at what happens when possible mismatches between tasks at hand, standard procedures, reward systems, and monitoring systems call for considering whether or not to comply.

Decisions about compliance or noncompliance are personal or group decisions related to specific situations that are encountered in work settings. The general nature of those decisions and the main factors that contribute to those decisions follow the essence of a theory of workarounds (Alter 2014, p. 1056), a revised version of which is shown in Figure 1. The revision replaces consideration of workarounds with a similar process of considering compliance or noncompliance. Reuse of the general logic of workarounds seems justified because many of the same factors are considered in basically the same order when someone considers different forms of compliance and/or the possibility of noncompliance.

The theory of workarounds that inspired Figure 1 is based on a broad definition of workaround (Alter, 2014, p. 1044) that encompasses much more than workarounds of technical malfunctions. The definition views workarounds as adaptations that may occur in any part of a work system, where a work system is "a system in which human participants and/or machines perform work using information, technology, and other resources to produce products/services for internal or external customers."

Figure 1 identifies steps in considering compliance or noncompliance along with common factors that affect that decision and its execution. Figure 1 is more general than the theory of workarounds because it says that both compliance and noncompliance (not just workarounds) should be viewed as choices in many situations. Italicized terms on the left side of Figure 1 identify generic steps in deciding whether or not comply with a process specification, software usage procedure or business rule in a specific situation. The boxes and arrows indicate factors that are typically relevant at each step. The sequence reflects a rationalist view in which work system participants make those compliance or noncompliance decisions by considering relevant factors and deciding what to do about them. Consistent with the explanation of the theory of workarounds and Alter (2014), Figure 1 combines ideas from the theory of planned behavior (Ajzen, 1991), improvisation and bricolage (Orlikowski, 1996; Baker and Nelson (2005)), and agency theory (Eisenhardt, 1989).

The steps in Figure 1 can be summarized as follows:

Structure based on intentions, goals, interests. Everyday work occurs within work system architecture, policies, and business rules that derive from the initial intentions, goals, and interests of management and designers, but that may have evolved subsequently.

Perceived need for compliance or noncompliance in the current situation. This is affected by a combination of factors including the work system's architecture, policies, and business rules; work system performance goals; situational constraints, obstacles, and anomalies; and participant goals related to the work system.

Identification of possible approaches for compliance or noncompliance in the current situation. Factors that affect the perceived costs, benefits, and risks of any particular approach to compliance or noncompliance in a particular situation include: work system architecture, policies, and business rules; situational constraints, obstacles and anomalies; the perceived need for compliance or noncompliance (from the viewpoint of the person or group deciding whether to comply); the monitoring system that will determine whether compliance or noncompliance is likely to be detected; ethical considerations; and the availability of knowledge that is needed to achieve the desired form of compliance or noncompliance.

Determination of whether and how to comply or to pursue noncompliance. Work system participants decide what to do and hope that desired outcomes will occur.

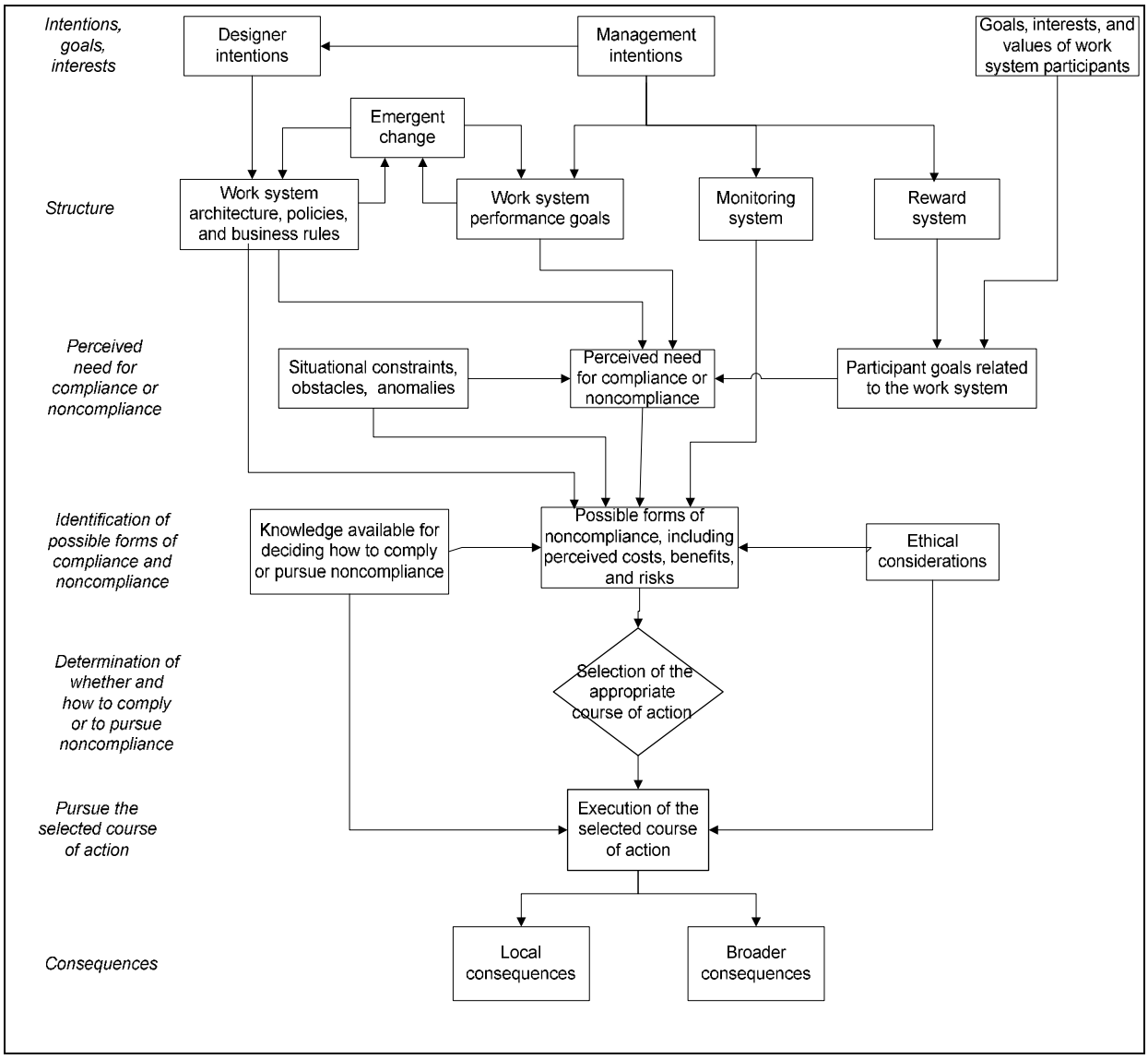

Figure 1. Decisions about compliance and noncompliance: Steps and considerations in deciding whether and how to pursue some form of compliance or noncompliance in a particular situation

Implications for the Design, Construction, Implementation, and Management of IT-Enabled Work Systems

The concepts of beneficial noncompliance and detrimental compliance have many implications for the design, construction, implementation, and management of IT enabled work systems. Some of these implications are about the content of systems. Others are about requirements determination and how to perform operational management. This section looks at implications under headings that are related to factors in Figure 1.

System design. Work systems should not be over-specified. The sociotechnical concept of minimum critical specification (Cherns, 1987 says that designers should specify only what is absolutely essential about a business process and should leave other details to the discretion of work system participants. The

rationale and details of processes and activities should be clear to work system participants. Over-specified, unnecessarily cumbersome business processes are an invitation to workarounds that may be beneficial or detrimental. Instead of inviting workarounds, business processes should be designed to encourage work system participants to perform certain crucial steps in a particular way that is genuinely necessary and to have latitude about how to perform other steps.

Recognition of special cases and contingencies. Whenever a business process is created or disseminated, it is important to identify exceptions, special cases, alternative paths, and other legitimate reasons for not following the general prescription in specific situations.

Decision rights. Issues related to beneficial noncompliance and detrimental compliance lead to questions about who has the right to decide exactly what to do any particular situation.

Best practices versus contingencies in specific situations and contexts. Consultants, managers, and software vendors frequently speak of best practices that seemingly would be best anywhere. Quite to the contrary, best practices for large, highly experienced organizations often are not best practices for small startups, and vice versa. Even within an enterprise, methods and rules that typically work well often do not work for every situation that is encountered. The issue of exceptions and special cases is extremely important in analyzing and designing systems. Ideally, work system participants should know what are the typical cases the call for typical methods, and what are the special cases and exceptions that call for something else.

Flawed specifications. Business processes, policies, rules, and regulations may be incorrect in general or may be inadequate in relation to specific contexts. Adherence to flawed specifications often leads to bad results, as when a frequently valid rule may be inappropriate for certain special cases. In effect, flawed specifications often deserve noncompliance.

Appropriate control systems. Based on the ideas of rational decision-making, minimum critical specification, and the possibility that specifications may be flawed, control systems ideally should be able to highlight deviations that really matter and should permit or ignore deviations that don't matter. Developing methods to operationalize this distinction could be an interesting research topic.

Knowledgeable work system participants. The possibility of beneficial noncompliance and detrimental compliance imply that work system participants need to be knowledgeable in a genuine sense that goes beyond knowing what buttons to push. In addition to understanding the rationale for processes and rules, work system participants should understand the limitations of assumptions that went into work systems, policies, and regulations.

Rules of Thumb about Compliance and Noncompliance. The implications above lead to the following rules of thumb, the first several of which would probably seem quite inappropriate to most systems analysis and design researchers, BPM researchers and others who focus on creating precise process specifications:

- Recognize that various forms of compliance and noncompliance may occur.
- Noncompliance is okay if benefits of noncompliance are greater than negative consequences of noncompliance.
- Noncompliance should be transparent. Recognizing both beneficial and detrimental effects of noncompliance is a step toward improvement.
- Managers should be notified when noncompliant behavior occurs, thereby assuring that noncompliance is not hidden and that any relevant learning occurs.
- Managers should be notified of the possibility of detrimental compliance before it occurs. The notification should include the reason why work system participants believe that compliance would be detrimental.

Conflicts with realities of work life. Some of the above rules of thumb might seem impractical for reasons related to power, trust, and desire to maintain appearances.

- **Different perceptions**. Different people might have different perceptions about whether a particular activity or a particular outcome is beneficial or detrimental.

- **Personal power**. Some managers would react harshly if told that their subordinates consciously did not comply with a process, rule or regulation.

- **Maintaining plausible deniability**. Some managers would want to hide the fact that they allowed nonconformance to processes and rules even if they thought that such nonconformance was beneficial. Similarly, many managers would not want it known that their subordinates took conforming actions that they viewed as detrimental.

- **Saving face**. In many cases, honest communications related to beneficial nonconformance or detrimental conformance would lead to embarrassment for managers who design or implemented flawed processes.

Design patterns for compliance and noncompliance. It might be possible to create design patterns for compliance and noncompliance that resemble design patterns in software development. At minimum, such design patterns would include:

- name of the design pattern
- situation where it is generally relevant
- summary of the essence of pattern, i.e. what it really trues to say and the underlying goals and values, rather than the specific details
- a list of exception conditions and generally what to do differently when those exception conditions arise
- if possible, a list of conceivable workarounds that should not be attempted because of their consequences elsewhere

The idea of such design patterns might be developed further in conjunction with ideas for a proposed "workaround design systems" (Alter, 2015) whose goal is to help system designers anticipate likely workarounds and incorporate appropriate responses into the design of systems.

Conclusion

The topics of beneficial nonconformance and detrimental conformance deserve a place in the discourse about unintended drivers and consequences of technology usage in the context of IT-enabled work systems in organizations. Unfortunately those topics are largely ignored, mostly overwhelmed by the taken-for-granted assumption that business process specifications, software usage patterns, and business rules should be followed. This void is unfortunate, because beneficial nonconformance and detrimental conformance create many paths to unintended consequences of technology usage.

Attention to beneficial nonconformance and detrimental conformance is practical, as illustrated by the examples cited here. The previously mentioned concepts and theories underlying the theory of workarounds provide a rich basis for new theoretical developments. Merely compiling a large number examples would likely produce a richer version of the 2 X 2 matrix in Table 2, and could lead to new developments in both operational management and systems analysis and design. Even the nature of systems could explored in a richer way. For example, highlighting beneficial nonconformance and detrimental conformance leads to many questions about whether system designs should describe idealizations or actual practices, how to incorporate minimum critical specification, and how to assure the best tradeoffs between stakeholder interests.

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