Business process innovation based on stakeholder perceptions

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Abstract: The literature offers a multitude of modeling and assessment techniques to represent differing enterprise stakeholder perspectives and interests in business process innovation. While each technique yields valuable insights into possibilities for innovating business processes, these insights are limited as they are derived from a particular perspective. This paper presents an alternate approach that focuses on multiple stakeholders with differing and potentially conflicting perceptions of the state of current practice and directions for future innovation. The proposed approach can be used to capture, synthesize, and reconcile multiple stakeholder perceptions to yield a comprehensive foundation for business process innovation.

Rather than being constrained by pre-conceived formalisms, this approach begins with subjective perceptions of involved stakeholders. The approach results in an informal as-is model, assessments of its strengths and weaknesses, and recommendations for how to innovate the business process. The approach encompasses four stages: engage process stakeholders; collect process data; explicate process knowledge; and, design process innovations. The argument combines the business process modeling and stakeholder analysis literature; it draws upon a case study of process innovation in a knowledge-intensive enterprise; and, it provides practical lessons for how to organize and support business process innovation based on stakeholder perceptions.

Keywords: Business process innovation, stakeholder analysis, soft systems thinking

1. Introduction

Faced with increased levels of environmental uncertainty caused by globalization and heightened regulatory pressures, firms often must transform existing business processes to remain competitive [37]. Over the last three decades, modeling and assessment of business processes has become more sophisticated as enterprises have pressed for their efficiency and innovation in such trying times [8]. As a result, the literature offers a multitude of techniques that represent different approaches to business process innovation. These techniques typically specify the individual steps and conceptual foundations for modeling a particular business process [1]. Ashuri et al. [3] discuss state-of-the-art techniques as representations of different stakeholder perspectives, e.g., business analysts, workflow designers, project managers, and facility managers. They conclude that enterprise performance depends on the collective efforts of stakeholders involved in managing the enterprise, and that knowing how different stakeholders perceive business processes can help in solving specific problems and innovating existing processes.

Nevertheless, leveraging contemporary modeling techniques to represent business processes is challenging for organizations. The sophistication of these techniques – wrapped in nuances and increasing complexities – causes uncertainty as to what perspective to adopt. While each model type can yield...
valuable insights into possibilities for process innovation, these insights are limited by adopting the perspective of the particular modeling framework. From a practical deployment standpoint, many commercial business process management systems have been unable to meet user needs [1], and their assimilation is confounded as many of them do not explicate specific roles for different stakeholders during the modeling process [44].

In this paper, business processes are seen as the complete, dynamically coordinated set of collaborative and transactional activities that deliver value to customers [42]. This is in line with contemporary definitions of business workflows [36]. and our argument therefore draws broadly on business process and business workflow thinking. Specifically, we present a practical approach to capture, synthesize, and reconcile assessments of business processes as part of innovation initiatives. The approach draws upon multiple stakeholders with differing and conceivably conflicting perceptions of current and future practices. Rather than being constrained by pre-conceived formalisms, this approach is driven by the subjective perceptions of involved stakeholders. The approach results in an informal as-is model of the considered business process, different assessments of its strengths and weaknesses, and recommendations for how to innovate the process [9]. The approach is segmented into four stages: engage process stakeholders; collect process data; explicate process knowledge; and, design process innovations.

The approach we propose combines the business process modeling and the stakeholder analysis perspectives and draws on experiences from a case study in which the approach was applied in a knowledge-intensive service provider, TrendInc. 1 The remainder of the paper is structured as follows. First, we discuss the theoretical background for business process modeling and stakeholder analysis. Next, we present the perception-based approach to business process innovation. We then describe how the approach was developed and applied in the case study context of TrendInc. Finally, we conclude with a discussion of contributions, lessons learned, and implications for practice and research.

2. Theoretical background

If verbs were used instead of nouns to describe organizational phenomena, research emphasis would shift from static structures to dynamic processes [46]. Weick’s insightful position, which he stated more than thirty years ago, is reflective of a time in which organizational researchers were considering alternative ways to analyze business processes. Research continued to evolve over the last three decades and contributed a steady stream of analytical innovations that are useful for developing richer descriptions and deeper understandings of the ways in which humans and machines interact to produce products and services.

In this section, we review the analytical literature on business process and workflow modeling, drawing largely on Ashuri et al.’s [3] overview of extant modeling techniques. Although other surveys of modeling approaches exist, this overview is recent, comprehensive, and, importantly, adopts a stakeholder perspective. Subsequently, we outline the limitations of existing approaches and argue that some of these can be alleviated by actively engaging stakeholders to capture their own unique perceptions.

2.1. Business process modeling

A human organization is a complex socio-technical system consisting of individuals with personal objectives and beliefs that work together to achieve higher-order organizational goals. Individuals

1TrendInc is a fictitious company, but the data and experiences provided are from a real world organization.
working in such a system likely have differing perspectives based on their role in the network [47]. Thus, an IT manager has a different perception of the world than a colleague using IT to manage human resources. Working from a similar analytical position, Ashuri et al. [3] summarize state-of-the-art modeling techniques following distinct types of enterprise stakeholders: (1) process analysts, (2) organizational strategists, (3) workflow designers, (4) workflow managers, (5) facility managers, (6) project managers, (7) human resource managers, and, (8) property analysts.

1. Process analysts develop conceptual models and definitions of business processes to describe how work gets done in organizational settings. Doing so enables them to study processes with a rich understanding of interdependencies, directionalities, inputs, and outputs associated with a business process. Several authors have worked to refine this description of a business process. For instance, Marrs and Mundt [30] describe a business process as a logical, related, sequential, and connected set of activities. In contrast, Caro et al. [7] develop a hierarchical classification schema for differentiating business processes from two lower order processes: material and information processes. Additionally, advances in tools enable analysts to visually represent, evaluate, and proactively manage business processes (see Table 1).

2. Organizational strategists consider the organization at large as it continuously faces tensions that challenge its viability. The modern organization is increasingly distributed and complex as it seeks to develop the capabilities that may allow it to respond to rapidly changing market conditions. Advances in IT increases the velocity of market dynamics and helps develop the organizational flexibility needed to remain competitive in uncertain times. Like process analysts, organization strategists use certain predefined techniques to analyze and design business processes (see Table 1).

3. Workflow designers are responsible for assessing the conditions and constraints affecting the coordination of interdependent work activities. Moreover, they are often responsible for automating processes by leveraging IT to control transitions between activities. To create and sustain competitive advantage, workflow designers search for new ways of connecting and coordinating individual work activities that improve output. Workflow designers use many different techniques to assist them in designing quality workflows (see Table 1).

4. Workflow managers are responsible for architecting the social structures and IT systems that assist in coordinating individuals’ interdependent actions. Therefore, whereas workflow designers focus on the non-human automation of processes by developing advanced technologies, workflow managers are interested in designing the entire socio-technical system. That is, they concern themselves with both human and technological components and seek to integrate human activities along with predefined automated tasks. To accomplish their role, workflow managers use a variety of techniques to represent, assess, design, and manage workflows (see Table 1).

5. Project managers must coordinate and manage unstructured work processes. In contrast to repetitive operational processes that have predetermined outcomes, project oriented processes are likely to have highly uncertain outcomes because they usually produce novel products or services. However, current project management tools are so keenly focused on process automation that they neglect human-centered properties that facilitate human-to-human interaction. Nevertheless, as with other stakeholders, project managers leverage tools to assist them in their jobs. One such tool is the Project Management Body of Knowledge Guide (PMBOK) [39], which is a well-defined cookbook of processes applicable in a project management context.

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2 We have modified a few of the names to reflect organizational stakeholders.

3 Refer to Ashuri et al. [3] for a more complete description of the tools and methodologies that all eight stakeholders may use to represent, assess, and manage enterprise business processes.
Table 1
Different approaches to modeling adapted from Ashuri et al. [3]

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Representative Articles</th>
<th>Techniques Used</th>
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</thead>
<tbody>
<tr>
<td>Process Analysts</td>
<td>(Wu, Yushun et al. 2001)</td>
<td>– Integrated Definition Methodology (IDEFO)</td>
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<td></td>
<td>(Marrs and Mundt 2001)</td>
<td>– Event Driven Process Chain (EPC)</td>
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<td></td>
<td>(Caro, Guevara et al. 2003)</td>
<td>– Cause-and-Effect (C&amp;E) Diagram</td>
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<td></td>
<td>(Georgakopoulos, Hornick et al. 1995)</td>
<td>– IFIP – Information System Methodology</td>
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<td></td>
<td></td>
<td>– Generalized Reference Architecture Integration (GRAI)</td>
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<td></td>
<td></td>
<td>– Generalized Enterprise Reference Architecture and Methodology (GERAM)</td>
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<td>Organizational Strategists</td>
<td></td>
<td>– Material Requirements Planning (MRP)</td>
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<td>– Advanced Planning and Scheduling (APS)</td>
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<td>– Manufacturing Resource Planning (MRPII)</td>
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<td>– Enterprise Resource Planning (ERP) Systems</td>
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<td></td>
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<td>– Computer Integrated Manufacturing (CIM) Open System Architecture (CIMOSA)</td>
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<tr>
<td>Workflow Designers</td>
<td>(Caro, Guevara et al. 2003)</td>
<td>– Gantt Charts</td>
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<td></td>
<td>(Stohr and Zhao 2001)</td>
<td>– Queuing Network Models</td>
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<td></td>
<td>(Diez 2004)</td>
<td>– Colored Petri Nets</td>
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<td></td>
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<td>– Event-Condition-Action (ECA) Rules</td>
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<td>– Statecharts</td>
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<td></td>
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<td>– Activity Diagrams in Unified Modeling Language (UML)</td>
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<td></td>
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<td>– Data Flow Diagrams (DFDs)</td>
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<tr>
<td>Workflow Managers</td>
<td>(Stohr and Zhao 2001)</td>
<td>– Workflow Management Systems (WfMS)</td>
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<td></td>
<td>(Caro, Guevara et al. 2003)</td>
<td>– Workflow Management Coalition (WfMC)</td>
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<td></td>
<td>(Georgakopoulos, Hornick et al. 1995)</td>
<td>– Knowledge Management Tools</td>
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<td></td>
<td>(Dvir and Berson 2001)</td>
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<tr>
<td>Facility Managers</td>
<td>(IFMA 2005)</td>
<td>– International Facilities Management Association (IFMA)</td>
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<td></td>
<td></td>
<td>– Computer Aided Facility Management (CAFM) Systems</td>
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<td></td>
<td>– Building Technical Performance Toolkit (GSA toolkit)</td>
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<tr>
<td>Property Analysts</td>
<td>(McGregor 2000)</td>
<td>– Corporate Real Estate Software</td>
</tr>
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6. Human resource managers focus on contextual properties of an organization that relate to coordinating, developing, and managing human capital. Examples of these properties include culture, rules, policies, and incentive structures that influence human behavior within a given organization. To develop human centric organizations, managers must be knowledgeable about people that make up the groups they lead and can use specialized IT systems to inform them about individuals within their organization. Such human resource management (HRM) systems may be part of an overall enterprise information system that include ERP (enterprise resource planning), CRM (customer
relationship management), and SCM (supply chain management).

7. Facility managers play an inherently multidisciplinary role in business processes. Besides dealing with the physical properties of a constructed environment, facility managers ensure operations run smoothly by integrating people, processes, and technologies. Thus, facility managers are true coordinators, orchestrating the many components that make up complex processes for the purposes of sourcing, transforming, and delivering products and services to business customers.

8. Property analysts spend time collecting and analyzing information related to an organization’s property valuation and decide “when to sell/buy properties, how to finance properties, how to manage the portfolio of enterprise properties, site selection and space location, buy vs. lease – that have substantial impacts on the other aspects of the enterprise” [3]. To reduce operation costs while simultaneously enhancing an organization’s responsiveness, property analysts can use corporate real estate software to assist in managing their portfolio of properties (see Table 1).

2.2. Limitations and opportunities

The formal models devised and used to investigate and innovate business processes reflect in some ways a double-edged sword. In one sense, when adopted by investigators they act as analytical lenses, bringing clarity to a complicated world. Such sensitizing devices steer attention in a particular area and assist in the interpretation of data collected during assessment. Moreover, models act as boundary spanning objects [6] that help people involved in innovation establish shared meanings of processes. Nevertheless, such models inherently exclude areas of potential interest [20]. In fact, organizational researchers note that adoption of any single modeling technique makes it impossible to capture the complexity of organizational realities [35], such as business processes in their natural setting.

From this vantage point, state-of-the-art business process and workflow modeling techniques have specific limitations. First, while each type of technique discussed above provides valuable support for process innovation, the insights are constrained, and potentially misleading, by application of a singular perspective. Second, it is difficult to choose the most appropriate modeling technique and capture the important range of perspectives when business processes become increasingly complex and modeling options continue to expand. Third, commercial workflow management systems have been unable to meet user needs [1], possibly because they have not explicited roles and perceptions of different stakeholders during the assessment [44]. We, therefore, need to complement model-based approaches with techniques that capture processes in their real-life context.

The rationale for adopting perception-based and participatory assessment approaches to support business process innovation is further grounded in symbolic interactionism. According to Harrison and Shirom [20] “Symbolic interaction assumes that the interpretations that people make of other people’s behavior, organizational arrangements, and external conditions shape their own behavior and ultimately influence the behavior of others as well.” From this perspective, business processes are the result of cognitive and communicative interactions among individuals as they interpret, make sense of, and coordinate actions in the context in which they operate. Thus, business process assessments can be leveraged by actively drawing upon multiple stakeholders with differing and conceivably conflicting perceptions of current and future practices. In the following section, we review the stakeholder analysis literature to inform how to capture, synthesize, and reconcile stakeholder perceptions related to business process innovation.
2.3. Stakeholder analysis

Stakeholder analysis challenges the dominant economic model of the firm by providing new ways to explain the relationship between an organization and its environment [41]. According to Freeman [16], “A stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization’s objectives.” Stakeholder analysis is an attempt to systematically identify and account for the interests of, and the impacts on, the many distinct parties affected by an organization [18]. As another approach to strategic planning, stakeholder analysis is guided by a paradigm that suggests the successful diagnosis of key constituent expectations is a fundamental aspect of successful organizations [31]. Moreover, according to Harrison and Shirom [20] stakeholder analysis is, “a technique originally developed to facilitate consideration of the politics of strategic decision making, providing a procedure that is useful for assessing the political forces impinging on any type of intervention or planned change.”

In terms of its advantages, stakeholder analysis is valuable in complex organizational settings because of its proclivity to combine and integrate perspectives from multiple disciplines. Accordingly, as referenced in Simmons and Lovegrove [41], “Today stakeholder theory is found in disciplines as diverse as economics, ethics, marketing and systems science, and has entered mainstream political debate via references to ‘the stakeholder society’ and ‘the Third Way’” [38].

To conduct a stakeholder analysis, Mallott [29] offers the following three step process: (1) Identify and specify the stakeholders and their interests, domain, and specificity; (2) Identify and describe the relationships between the stakeholders and the firm, and among the stakeholders; and (3) Incorporate the concepts of action and time, and construct both stakeholder and successive stakeholder maps. An essential characteristic of a stakeholder analysis is that it is performed as a group activity [40], and a successful analysis occurs after interacting individuals effectively capture, collate, and synthesize data that are collected during the group activity [16].

Stakeholder perspectives can be identified and expressed based on the purposes, processes, and outcomes of organizational systems [41]. This provides for a fruitful opportunity to combine stakeholder analysis with systems thinking. Soft Systems Methodology (SSM) is an approach that can be used to investigate complex organizational phenomena by combining systems thinking and stakeholder engagement [9]. It is a qualitative, interpretive method that has been used extensively to investigate problems in information systems [4, 12, 28], management science [23, 25, 27], urban planning [24], and artificial intelligence [45]. According to Frederiksen and Mathiassen [15], SSM offers four generic activities to support the analysis:

- **Appreciate situation.** This activity develops a general overview and appreciation for the problematic situation under investigation. It focuses on the contextual peculiarities and the beliefs and perceptions of the stakeholders involved. The intent is to develop a rich understanding of structures and processes in the situation, of problem owners and their specific perceptions, and of misfits or conflicts between different elements of the situation [9, 10].

- **Capture viewpoints.** This activity explicates and models selected perceptions of individual stakeholders by applying soft systems thinking [9]. These perceptions are explicated and captured as viewpoints, or in SSM terminology as soft systems, i.e., organized sets of human activities that are perceived to be meaningful and relevant in relation to the innovation context under consideration. Each viewpoint is defined as a root definition, i.e., a brief text, of the involved Customer, Actors, Transformation, Weltanschauung (i.e., perspective), Owner, and Environment (the CATWOE of
SSM) [9]. Each viewpoint is subsequently modeled as a set of human activities with inputs, transformation, and outputs. We use the term viewpoint for explicated models of stakeholder perceptions of human activities relevant to the innovation context; one way to model such viewpoints is adopting soft systems thinking [9,10], but there are other approaches available, e.g. [2].

– Debate with stakeholders. This activity engages key stakeholders in a structured debate. The participants systematically compare the captured viewpoint (i.e., a root definition and related model) developed in step two above with current practices. A starting point is to compare the data that are generated through the “appreciate situation” activity with each captured and modeled viewpoint [9, 10].

– Identify improvements. The purpose of the final activity is to leverage the analysis that has occurred through the first three steps to surface potential areas of improvement [9,10]. These areas should be validated in the context of existing practices to ensure their feasibility and potential to address identified problems [9].

In summary, SSM is an integrated approach to effect change by enabling individuals to inquire into and learn about the meaning behind their actions. Individuals learn about themselves while learning about others in a guided, staged process. By providing a structure to the inquiry process, SSM assists individuals to elucidate, compare, and contrast worldviews. A systematic method of comparison helps individuals develop a deeper understanding of their own beliefs, while simultaneously helping them develop a greater understanding of other perspectives. It focuses not just on individual stakeholder perceptions, but, importantly, on differences between stakeholder perceptions. By making the structures that influence behaviors transparent through a continual process of sensing and learning, SSM is designed to enhance the capacity of organizational members to effect meaningful change.

3. Perception-based business process innovation

The success of process analyses depends largely on how existing problems are identified, components for analyses are chosen, findings are identified, and recommendations are presented [19]. Our approach to perception-based business process innovation recognizes these success criteria by leveraging insights from stakeholder analysis in general and SSM in particular. The approach is segmented into four core stages: (1) engage process stakeholders, (2) collect process data, (3) explicate process knowledge, and, (4) design process innovations. Collectively, these stages form an iterative cycle of capturing, synthesizing, and reconciling stakeholder perceptions to support business process innovation (see Fig. 1).

3.1. Engage process stakeholders

This first stage inquires into the issues and interests related to the process under investigation. Drawing on stakeholder analysis and SSM, this stage focuses on collecting existing process documentation and
identifying stakeholder interests, process boundaries, and innovation objectives [29]. To do so, the innovation team meets with process stakeholders, such as sponsors, managers, practitioners, workflow and facility managers, or human resource managers, to go through existing process documents and to discuss the reasons and background for the engagement. It is important at this stage the innovation team keeps project boundaries open while resisting the tendency to develop premature assumptions about what the problem is, thereby leaving out alternative viewpoints and explanations [9].

Engaging process stakeholders can be a contentious process, as stakeholders begin to negotiate their positions, needs, and desires based on self-interest. In addition, due to political considerations, some stakeholders might be reluctant to share perceptions and relevant documentation with other stakeholders and the innovation team. Nevertheless, the purpose of this stage is to obtain buy-in from multiple stakeholders and to establish a general overview and appreciation for why the process needs to be innovated. Thus, the first stage is most successful when it is conducted using one or more face-to-face workshops to capture the situational richness, develop trust, and negotiate collaboration practices to be used.

The innovation team collects archival data about organizational goals, operational procedures, training programs, technology support, and strategic initiatives that are of relevance to the process under consideration. Organizational goals are particularly important to the innovation process, because, in contrast to what many investigators think, not all stakeholders involved in a business process simply accept goals set by top management; instead they often have their distinct goal sets that may be in conflict [9]. In fact, a key purpose of this stage is to negotiate the innovation agenda among involved stakeholders with consequential plans for stakeholder involvement, data collection, and presentation of recommendations. While these issues are largely contextual and must reflect stakeholder interests, it is important that collaboration and data collection plans ensure that requisite data can be captured to enable credible assessments and recommendations.

In summary, the above description underscores that prefabricated analytical models are not the basis to develop perception-based assessments and recommendations. Instead, the thoughts, beliefs, and positions of individual stakeholders are at the center of attention. Furthermore, a key aspect of perception-based innovation is the dynamic interaction between individuals that are part of the process being assessed and those that are conducting the assessment. The approach is participatory in nature and occurs through interaction between assessors and those being assessed [9]. Hence, the purpose of the first stage is to create an appropriate structure and context that effectively engages stakeholders to surface multiple perceptions of the process.

### 3.2. Collect process data

During the second stage, semi-structured interviews are conducted with key stakeholders. Though semi-structured interviews represent only one component of the overall data collection strategy (e.g., other sources can be observational or archival data), they are an especially important approach for collecting process data. Process data largely answers what, why, and who questions that pertain to particular events or activities [26]. By anchoring the collection of process data on stakeholder perceptions rather than preconceived business process models, a multitude of different perspectives is represented.

Identification of key stakeholders is especially important to enable the innovation team to balance the number of interviews and time resources allocated to them, while still capturing requisite data. Failing to do so can result in an exhausting and arbitrary stream of data collection activities. Hence, the challenge is to determine an appropriate group of stakeholders that can provide sufficiently deep insight into the process under assessment.
As human cognition often perceives dynamic phenomena by developing a series of snapshots, capturing the true dynamism inherent in a process is challenging. By mistakenly taking snapshots to represent processes, there is a risk of tinkering with the wrong things, destroying natural controls that already exist, and essentially turning the organization into a jumbled mess of confusion [47]. Hence, a differentiating aspect of perception-based innovation is the focus on the multi-dimensional nature of interaction between activities and stakeholders, as opposed to models driven by pre-conceived formalisms. Individual perceptions are not viewed as components of a coherent business process, but rather as pieces of a complicated social context that is in constant flux. Consequently, each interview is recorded and integrated into one shared data repository for subsequent interpretation.

To make this stage effective and efficient, it is important to develop a well-defined data collection protocol. Failure to coordinate efforts increases the analytical complexity, it leads to increased uncertainty about outcomes, and it makes it difficult to utilize innovation resources effectively. We propose the use of semi-structured interviews to capture the requisite stakeholder perceptions. A semi-structured interview guide should contain a list of data sources, interviewees, interview logistics, recording procedures, and provide generic interview guides upon which interactions with stakeholders can be built. Because the purpose is to capture the unique perceptions of individual stakeholders, interview guides should be sufficiently adaptable to individual and contextual peculiarities. At the same time, interview guides should be built upon generic principles that ensure data is collected to reflect end-to-end business process management.

3.3. Explicate process knowledge

As a shared road map for making sense of the complex process data, the innovation team builds a business process model with key activities, interactions among and between the activities, and outcomes for the as-is process. This explicit model serves as a baseline and frame of reference against which multiple assessments and recommendations are developed. The cornerstone of this activity is to systematically identify important observations based on the available data and subsequently to aggregate the data into distinct complementary or competing viewpoints [15].

Of course, the identification of important observations is a subjective exercise. This exercise should be guided by the issues and interests identified in the first stage of the innovation approach, where the purpose is articulated. Consequently, the purpose acts as the validation mechanism against which observations are vetted and viewpoints are formulated by the innovation team during the third stage. Without such a filtering mechanism, the innovation team will likely be overwhelmed with the task of making sense of a large quantum of data.

As a first step, each member of the innovation team reviews the entire data that were captured and, after reflection, identify important observations about the business process, e.g., “Researchers seldom receive feedback from customers who access their work”. These observations are added to the data repository along with the identification of the team member making them and any associated direct quotes. Typically, hundreds of observations are likely to be recorded. Next, the focus shifts to searching for and capturing viewpoints that act as concepts by which identified observations can be categorized, e.g., ‘Creation and sharing of knowledge’ or ‘Management and sharing of resources’ or ‘Supply and demand synchronization.’ This categorization schema is an especially useful analytical method for making sense of otherwise complex process data. Moreover, the development of the categories is itself an iterative process. Each interviewer initially develops his or her own categories, and they are then brought together and harmonized. Typically, three to seven viewpoints are captured at this stage.
Viewpoints can be informed by theory that is relevant to the process, as they can assist in developing explanations of observed patterns of behavior. Additionally, they should enable individual members of the innovation team to begin thinking about prescriptive recommendations for improving the process. The analysis follows a systematic and iterative process: for each interview, important observations are identified and documented; each observation is interpreted as a general process weakness or strength; and, the observation is related to one or more candidate viewpoints. Hence, a successful stakeholder analysis not only captures and collates data; more importantly, it synthesizes data collected during the group activity [16] into interpretations of weaknesses and strengths related to a small set of context-specific viewpoints.

Capturing multiple viewpoints to guide the analysis of data and explicate process knowledge may seem counterintuitive, as it can increase complexity rather than reduce it. However, using multiple viewpoints is particularly useful for two reasons. First, innovation teams can develop richer representations of processes by aggregating data into complementary viewpoints that emerge from different theories that relate to the process being investigated. Second, multiple viewpoints can be useful to unlock assumptions of investigators [21], as explication of the identifiable differences can trigger critical reflection. Thus, complementary theoretical perspectives and multiplicity of viewpoints can be used during this third stage of assessment to assist in development and validation of findings.

3.4. Design process innovations

Once the as-is model is explicated and distinct viewpoints of the process are captured, the final stage is focused on how to innovate the process. The fourth stage should be seen as a structured ideation that facilitates critical thinking, debating options, and idealistic inquiry which is the pursuit of the way things “ought” to be rather than the way they are [11]. This results in many ideas for process innovation, of which only a few will ultimately be selected for recommendation. Ideation processes are highly iterative and time intensive, so the fourth stage of the innovation approach should not be rushed. In fact, in planning the entire innovation approach, the fourth and final stage will likely be the most time intensive.

Individual participants can generate and test ideas for innovation by sharing and contrasting possible recommendations. Thus, members of the innovation team should continually consider their findings and perceptions and attempt to explicate them as specific recommendations for innovation. This dialogue is one in which possible innovations are identified, critiqued, juxtaposed, blended, adapted, pulled apart, and put back together by the innovation team. An ongoing exploration of possible recommendations between team members is crucial, both for further validating the findings, and for providing a strong foundation upon which process innovations can be designed.

Identification of relevant recommendations can also be organized as a team activity that systematically draws upon the captured viewpoints and the team’s appreciation of the as-is business process. Following SSM, the team can systematically compare each captured viewpoint to the real world [9] by asking:

- What is the underlying measure of performance?
- Which activities are currently supporting this viewpoint?
- How well do these activities meet the underlying measure of performance?
- How can these activities be innovated to increase performances?

Such a systematic analysis helps identify key problem areas and possible leverage points across the process. These areas can often be traced from ineffective outcomes that most directly influence the capability to meet future objectives [20]. The leverage points that are identified represent important areas where future interventions can be most advantageously applied.
Combining ideas from individual team members with the results from systematic group activities, the innovation team arrives at a comprehensive set of possible recommendations. At this point, the team should make decisions of which recommendations to put forward and they should provide evidence to justify each decision. In doing so, the team should revisit the innovation agenda that was agreed upon during the first stage to make sure expectations and goals are met. Also, they should consider the following [2]:

- What is the expected positive impact of each recommendation on the business process?
- What is the cost and potential negative impact of each recommendation?
- What are the reasons for not selecting alternative recommendations?
- How do the recommendations compare with ideal solutions to the process issues at hand?
- How well do different recommendations interact and support each other?

Thus, the purpose of the final stage is to leverage the analysis that has occurred through the first three steps and to synthesize the findings into a select set of focused recommendations for innovating the process [9]. The recommendations should then be discussed in a final session with the assessment sponsors and key stakeholders. Two levels of material are provided in this session: (i) a presentation of the assessment project, the as-is business process model, the key findings from each captured viewpoint, and the recommendations for innovating the process; and (ii) a report that summarizes findings and provides comprehensive documentation of the entire assessment exercise.

4. Business process innovation at TrendInc

The case study site, TrendInc, is a knowledge-intensive services provider that has been doing best-practice research for its clients since the 1970s. It provides a portfolio of knowledge-based services, including information about trends, advice, and consulting, to C-level executives across industries within its acknowledged domain of expertise. TrendInc employs several thousand people across 50 countries and delivers services to a majority of Global 2000 firms. Since going public, the company has been aggressive in acquisitions, averaging nearly two acquisitions per year. While these acquisitions expanded the company’s ability to deliver a broader variety of services to its clients, they also contributed to processes becoming less streamlined and more compartmentalized. Additionally, services were delivered through a variety of channels and many of TrendInc’s services were delivered in uncoordinated and inconsistent ways.

After riding a wave of success for more than twenty years, in the early part of the 21st century TrendInc began receiving negative industry feedback, uncharacteristic of its storied past. The company’s prior success was built on its unparalleled knowledge of the industry. It positioned itself between the companies that were creating innovative products and customer organizations that were the target market for such novel inventions. In doing so, TrendInc analysts were able to act as informants to organizations investing in new and innovative deployments, and spent much of their time directly interacting with representatives of client firms. Similarly, because TrendInc analysts spent significant time with customer firms who were seeking best practices by which to enhance their competitive positions, they were able to provide needed insight to representatives of vendor organizations that provided goods and services to the sector being researched by TrendInc.

Nevertheless, as the industry in which TrendInc competed became increasingly mature, the company was forced to reflect on the viability of their existing business model. Through analyses, they determined that three core forces were affecting their ability to sustain a competitive advantage. First, customers were
becoming savvier concerning the innovative goods and services developed by vendors, and, consequently, they were seeking guidance beyond what was previously determined satisfactory. Second, new entrants into TrendInc’s industry were adopting niche strategies and tailoring services to particular business contexts. Therefore, individuals working for TrendInc had to transition from being general experts to becoming more focused experts for the purposes of solving business problems in unique contexts. Third, and perhaps most disruptive, adoption failures of the past were forcing potential customers to think more critically about the strategic usefulness of TrendInc’s knowledge-based services. In short, TrendInc found itself fighting to sustain its competitive position.

The lack of coordination, resulting from poor integration of acquisitions, affected the efficiency and flexibility of TrendInc and, potentially, the perceived quality of its delivered services. Also during this turbulent period, the company experienced a series of leadership shakeups with numerous C-level executives turning over in the years prior to this study. As a result, there was little strategic direction or cohesion among employees. Positions and titles throughout the organization were meaningless because of the changes, and many of the business processes were ad hoc. In an effort to improve their competitive position, TrendInc sought outside assistance in an uncharacteristic fashion. Rather than engaging a traditional consultancy firm, they called on two teams of academics from leading universities in their respective fields. The purpose was to innovate TrendInc’s research process. By using two teams of university researchers, TrendInc purposefully sought analytical variance within the innovation process to provide deep insight into its knowledge-intensive practices. The remainder of this section describes the experiences of one of these teams of university researchers.

4.1. Engage process stakeholders

To facilitate data collection, we initially held three stakeholder workshops with the project sponsors and key personnel in TrendInc’s organization. In these workshops, we spent five days in face-to-face meetings with key stakeholders on exploring issues at TrendInc. These meetings allowed us to build trust and communicate our competencies by describing our research agendas and explicating our guiding paradigms. At this stage, we kept our minds open and did not focus on any particular perspectives or explanations. Our research team consisted of three senior faculty members and two research assistants at a large, urban university in the southeastern United States. The three faculty members represented an eclectic mix of backgrounds and research expertise, yet they held a common interest of leveraging IT effectively for business processes innovation.

In terms of archival data, we collected reports about the organization, documentation on processes, training guides, technology infrastructure descriptions, and formal communication statements related to corporate strategy. Other data related to marketing documentation, organization charts, product information, team structures, and sales history and forecasts. Following these initial discussions, we negotiated an innovation agenda by defining the approach that we would use in upcoming field observations and interviews. This approach included in-depth discussions with stakeholders that we believed were particularly important to understand TrendInc’s core business processes including analysts, managers, and support staff as well as several customers. In collaboration with the project sponsor, we outlined an approach to collect process data, which included a semi-structured interview protocol and specific questions that were tailored to extract individual stakeholder perspectives about the business process.

4.2. Collect process data

To initiate the second stage, we were invited to attend a gathering of TrendInc’s employees at an annual off-premise company meeting. At this meeting, we observed presentations by top management to
understand how they framed where the company had been, where it was currently, and their strategy for moving forward. We also had the opportunity to observe workshops between analysts on issues related to their research practices. Finally, it was at this meeting we conducted interviews with personnel in roles previously identified as important for the business process in question. Specifically, we collected data through 25 face-to-face semi-structured employee interviews including subsequent conference call interviews with other employee and customers who were not in attendance at the company meeting.

The interviews spanned employees from different organizational levels and multiple business segments and included roles listed in Table 2. The list of interviewees was negotiated with the project sponsors based on our emphasis on diverse representation of roles, levels in the management hierarchy, and business segments. Each interview lasted approximately one hour in a confidential setting with at least one researcher conducting the interview and one researcher or research assistant taking detailed notes (audio recordings were not allowed by TrendInc). Our semi-structured interviews focused on eliciting role-based perceptions of these individuals about the organization, “as-is” and “should be” processes, time management concerns, social relations, career management, and change management. Additional questions were added to later interviews based upon trends that emerged from the earlier interviews.

During our analyses, we focused on stakeholder perceptions of processes and elicited them from multiple sources, including individual informants, company process manuals, and training guides. The innovation team held several and frequent debriefing sessions and documented observations about the informant from the interviews. After all interviews were completed, we collated data from the multiple sources in a repository. Each researcher had access to this archive as the focus shifted to explicating process knowledge.

### 4.3. Explicate process knowledge

Our data collection resulted in hundreds of pages of rich contextual data from which we were able to identify over 150 key observations from which we developed and validated multiple viewpoints. After the workshops and interviews were completed, each researcher reviewed the integrated data sources to identify additional key observations to help explicate process knowledge. Table 3 shows how observations were compiled into a database that identified observations related to the process, the researcher who observed this, the source of the observation, and which viewpoint(s) could be used to understand and validate the observation.

Through our perception-based business process innovation, we determined that TrendInc’s research process was immature with significant variation, with disconnects between steps, and no mechanism to systematically raise and resolve issues that the process participants became aware of. Additionally, we determined that the key assets in the business process were the analysts and the knowledge-based services they produced. Yet, interestingly, the key issues were the relationships between people, process,
and products. Moreover, it became readily apparent that the existing documentation of the process was incorrect; it failed to reflect practice, drive measurement, and support ongoing improvement. More disturbingly was the evidence that no process culture existed. Consequently, the company’s ongoing innovation initiatives remained ad-hoc and were insufficiently coordinated as they did not align people, products, measurement, and technology. After developing an initial perception based model of the as-is research process, we captured specific viewpoints to support the innovation effort. These viewpoints focused on four particular areas of the research process at TrendInc: (1) Interacting with customers, (2) Measuring performance, (3) Resource planning and allocation, and, (4) Managing knowledge.

**Interacting with customers.** TrendInc’s metrics focused on output volume, not on productivity, quality, and impact. Through our assessment, we determined that metrics were primarily numeric targets for analysts and measured adherence to production schedules, rather than being related to customer satisfaction. External metrics were not systematically collected. Additionally, key sub-processes were not measured in terms of time investment or quality (e.g., reviewing) as assessments of research output were based on peer reputation.

**Measuring performance.** Based on the interview data, it became apparent that the metrics used to measure performance did not represent the value of the distinct types of analysts within TrendInc. There were perceived inequities between disparate analyst groups, because the metrics were ill-suited to surface unique analyst contributions. Additionally, the performance measures did a poor job in assessing individual contributions when multiple analysts worked on a single output. Thus, the measurement system focused neither on value created nor on promoting collective action or collective interest.

**Resource planning and allocation.** Uncoordinated planning in TrendInc was negatively affecting efficiency, quality, and flexibility. As a result, analysts were left with little time to do research and faced an intense time management problem. Through our assessment, we discovered that workload allocations for analysts were inconsistent. Moreover, some key activities were factored into resource planning, thereby increasing the stress on analysts and negatively impacting quality. We also determined that analysts were spending time on things they were not good at and were involved in activities that had not been assessed in terms of their usefulness.

**Managing research knowledge.** One of the problems in managing TrendInc analysts was the lack of visibility into activities related to creation of knowledge-based services and analyst capacity allocation. In the words of one manager, “It is the management process that needs to be fixed,” suggesting that other processes (e.g., the creation of knowledge-based services) did not have many problems. His view was that resources should shift as necessary and managers should be able to take action to get things done rather than just allowing them to happen. By actively identifying what needed to be produced by the analysts, managers would be better able to direct and coordinate the efforts of their employees.

As the interviews progressed, our research team identified a collection of line-level analysts (“Superstars”) who produced knowledge-based services with minimal official direction or guidelines. However, these Superstars were given many administrative duties for which they were not rated. There was frustration with the in-place business process that led them to develop, coordinate, and distribute their knowledge by non-sanctioned means.

There were a number of IT systems in place to deal with the variety of knowledge products and services created by TrendInc analysts. Yet, most of these systems were not integrated, leading to duplication of effort, uncoordinated production, and mistimed delivery. In fact, one of the support personnel stated that a recently installed system was “exactly the opposite of what we need.” The system supposedly put in place additional structure for creating the knowledge-based services but instead reduced the efficiency of delivering these services. Each of the Superstars could bypass the business process if he or she did
not like the support personnel being the gatekeeper. In fact, out of the resulting increased chaos, the Superstars could then deliver whatever knowledge-based services they wanted. Bypassing the standard business process was to their benefit. The key to survival for Superstars was leveraging their knowledge and doing so in as many different settings as possible, and not following a process that involved close supervision or monitoring.

### 4.4. Design process innovations

Compiling the various observations and viewpoints into the database allowed us to collectively develop and debate different viewpoints and findings. It was at this point in our perception-based innovation process that the research team’s thoughts turned to designing specific process innovations. In this way, we leveraged and synthesized the assessments from the first three phases to identify specific recommendations for *TrendInc*. In the report and presentation, we highlighted nine recommendations (Table 4) which we believed were critically important. We arrived at these recommendations by drawing upon ideas from individual team members and by systematically comparing each captured viewpoint within the four focus areas to current practices at *TrendInc*. Also, the final decision of which recommendations to put forward was based on a careful justification process in which each recommendation was scrutinized and related to both alternative and complementary options.

All recommendations and our model of the as-is research process were further detailed and elaborated based on the extensive data in our data repository. Table 5 illustrates some of the more specific recommendations within two of the considered areas at *TrendInc*. These insights were presented to the project sponsors along with a detailed report summarizing our innovation approach and our supporting findings.

#### Table 3
Composite observations database (examples)

<table>
<thead>
<tr>
<th>#</th>
<th>Process</th>
<th>Observation</th>
<th>+/−</th>
<th>Interpretation</th>
<th>By</th>
<th>Source</th>
<th>Viewpoint 1</th>
<th>Viewpoint 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>86</td>
<td>External: Consulting</td>
<td>Consulting practice performs benchmark studies for clients that aren’t fed back to analysts</td>
<td>−</td>
<td>Another example of disconnect between research and other parts of the organization: formalize feedback loops</td>
<td>R1</td>
<td>Manager interview #1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>Research: Editing</td>
<td>Perceives conflict between timeliness and quality; analysts are not deadline sensitive</td>
<td>−</td>
<td><em>TrendInc</em> analysts get knowledge product to editing late and then press for the editing process to be completed post-haste; Production and editing personnel not involved until later</td>
<td>R3</td>
<td>Support Staff #2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>116</td>
<td>Research: Editing</td>
<td>Templates used by analysts when they should not be</td>
<td>−</td>
<td>Lack of process definition &amp; institutionalization pertaining to production and editing process</td>
<td>R2</td>
<td>Support Staff #2</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

*Table 3: Composite observations database (examples)*
Table 4
Critical recommendations

1. Develop a true collaborative, end-to-end platform that supports documentation and business processes
2. Innovate a late-binding strategy for tailored client communication
3. Respect the individual analyst
4. Revamp the TrendInc measurement system to provide meaningful focus, feedback, and guidance
5. Change the overall focus of resource planning from scale to impact
6. Create a multi-criteria measurement system that permits employees to individually manage their time against impact
7. Institute a quality assurance program
8. Start managing knowledge based on a hybrid community-repository strategy
9. Commit to a coordinated, long-term improvement program

5. Discussion

We conclude by discussing the key contribution of this study together with its limitations and implications for research and practice.

5.1. The innovation approach

Prior research and practice has contributed a variety of modeling and assessment techniques for business process innovation. Despite their apparent usefulness, these models and their associated techniques and methods inherently limit the discovery of potential problems and opportunities by the formalisms they employ. In this paper, a stakeholder elicitation and analysis method is described by which business process innovation can avoid some of these perceptual limitations. The overall purpose is to develop an approach that captures, synthesizes, and reconciles multiple stakeholder perspectives into a comprehensive business process assessment that supports innovation. Our approach compliments existing practices by proposing a method that integrally balances structured and unstructured techniques and draws upon the subjective interpretations of multiple stakeholders with differing and potentially conflicting perceptions of current or future practices. The proposed innovation approach combines a stakeholder analysis perspective of business processes [41], with a guided, organizational problem-solving approach that engages key stakeholders in debating business practices [9].

Our research is guided by the assumption that business processes are designed, developed, and executed within a complex socio-technical system. As such, individuals working within such a system have differing perceptions of business processes, depending upon their role in the organizational system [47]. Our innovation approach based on stakeholder perceptions draws on this fundamental reality, and it describes a holistic approach for developing a contextually rich description of the business processes being innovated. We argue that to develop a deep understanding of business processes and to subsequently design innovative alternatives to existing practices, an approach that involves multiple stakeholders and their many varied perceptions is both useful and needed.

Generically, our approach can be seen as a stakeholder problem and opportunity elicitation technique that is applied to the innovation of business processes. The iterative approach consists of four stages. It begins with an initial engagement with process owners and stakeholders. This is followed by a process-guided, multi-person, semi-structured interviewing of stakeholders, to collect process data on strength and weaknesses associated with the process. From this collected data, an extraction of key issues is conducted using multiple-perspective framing and coding. These are then analyzed and aggregated to produce a set of recommendations that include the explication of the as-is process, and recommendations for the design of process innovations that are anchored in stakeholders statements and beliefs. Thus, the approach results in an as-is model of the considered process, an assessment of its strengths and
Table 5
Recommendations in two key areas

**Measuring performance**
- An integrated measurement system that focuses on roles, processes, products, and value must be defined
- Measures emerging from multiple process-related initiatives must be standardized
- Measures need to be established for activities (such as reviewing, research community leadership, mentoring) that impact quality of products and consume significant time
- Customer perceptions of quality need to be systematically collected and integrated
- The optimal balance between efficiency and effectiveness must be addressed

**Resource planning and allocation**
- Coordinate planning approach and team research agenda formulation and adaptation
- Streamline workloads to improve aggregate time utilization; free up time to focus on knowledge creation
- Modify process to enable rapid and rich demand information flow
- Measurement systems and coordination structures need to be modified, and expectations that should guide time management clearly communicated
- Develop a dynamic time allocation model for utilization of time

weaknesses, as well as recommendations for how to innovate the business process that are directly tied to multiple stakeholder perceptions.

The fundamental basis for our stakeholder elicitation and analysis approach is derived from combining the stakeholder analysis literature with the SSM framework – a qualitative and interpretive method for investigating complex organizational phenomena [9]. We applied this approach for process innovation in a knowledge-intensive firm. Through our investigation in this context, we developed key lessons for perception-based business process assessments by: 1) understanding processes based on stakeholder perceptions; 2) leveraging differences in stakeholder perceptions; 3) developing theoretical lenses suited to the specific context; 4) identifying innovations that reconcile existing practices and identified viewpoints; and 5) presenting and debating recommendations for action.

Among the benefits of our proposed approach is that it assists stakeholders in learning about themselves while learning about others. Eliciting, comparing, and contrasting worldviews enable stakeholders to leverage differences in their own perceptions of existing business processes. This approach helps individuals become more aware of their own beliefs, while also developing a more sophisticated understanding of other stakeholder perspectives. Thus, the value of our approach stems from surfacing differences rather than similarities as perceptual asymmetries represent fruitful areas for learning about business processes and for discovering innovative alternatives. Furthermore, through our experience in applying the innovation approach in a real-life setting, it was apparent that stakeholders become more consciously aware of the structures that influence their behavior when they engage in critical reflection required to richly describe their processes.

Another benefit of the proposed approach is that, during the collection of process data, the innovation team was readily able to capture viewpoints based on key observations. In doing so, it was imperative that such viewpoints leveraged theoretical concepts that were suited to the specific context of the business process. The theoretical lenses assisted the innovation team develop richer representations of the business processes by unlocking inherent assumptions of investigators [21]. Furthermore, these lenses helped the innovation team develop explanations of observed patterns of behavior and prescribe recommendations. More broadly, a successful assessment synthesizes data collected during the group activity [16] into interpretations of weaknesses and strengths while being guided by theory suited to the specific business context.

Once the as-is model was discovered and distinct viewpoints of the process were captured, the preceding steps set the stage for developing ideas for innovating the existing process. Using the approach outlined here, this can be done by systematically comparing key findings for each viewpoint to the real world [9].
Innovation team members participated in a structured ideation process that encouraged them to think critically, negotiate alternative explanations and options, and develop idealized solutions for innovating business processes. Doing so enabled them to develop many different ideas for innovating existing processes although only a few ultimately were selected for recommendation. Moreover, all suggestions and recommendations could be traced back through the viewpoints to the initial interview comments that supported a particular recommendation. This was very useful in explaining to senior management the rationale for each recommendation.

The recommendation session conducted with the sponsors of the project provided two levels of information to them. First, a general overview of the project, including the as-is business process model, the key findings from each distinct viewpoint, and the recommendations for innovating the process. Second, the innovation team members provided a report summarizing the findings and results of the assessment. In the spirit of SSM, this final recommendation session was designed to nurture a bi-lateral flow of information in a final effort to engage key stakeholders in debate as to the most valid explanations of existing processes and the most appropriate methods for developing innovative alternatives.

5.2. Limitations and implications

As with any business process analysis technique, the perception-based innovation approach described in this paper has both limitations and implications. The innovation approach was developed during a collaborative research engagement [32] with TrendInc, and thus needs to be replicated across other, diverse situational contexts to ensure its transferability. The innovation approach is highly subjective in nature, and thus puts inherent pressure on the innovation team members to explicate their own interpretive understanding of the business processes being assessed, so that they can engage in a real dialog with all stakeholders involved. In addition to strong communication skills, the approach requires strong analytical skills, combined with an applied understanding of stakeholder analysis and SSM.

The perception-based approach has implications for both practice and research. Though preconceived models are useful for bringing clarity to a complex situation by steering attention, assisting interpretation, and acting as boundary defining heuristic devices, they are inherently restrictive for developing a deep contextual understanding of a particular business context. Thus, individuals interested in innovating existing business processes to create and sustain competitive advantage could benefit from the perception-based approach described in this paper. Through our experience with TrendInc, it is evident that the perception-based innovation approach is a useful method, or method extension, for explicating process knowledge and developing process innovations.

We agree with Ashuri et al.’s [3] conclusion that enterprise performance depends on the collective efforts of many diverse stakeholders involved in managing an extended enterprise. We also agree with their position that knowing how different stakeholders perceive work can assist in solving complex enterprise problems. The perception-based innovation approach described here contributes to Ashuri et al.’s discussion, as it offers a semi-structured approach to assess business processes in complex socio-technical systems.

Future research could apply the perception-based approach in different business contexts, while continuing to explore the situational effects on human behavior and collective action in complex organizational systems. Additionally, research is required to compare and contrast perception-based and “standard” approaches for the elicitation, understanding, and innovation of business processes. The results of such investigations will help us understand the stakeholder learning and buy-in that accompanies each approach and how each approach shapes the adoption of and value from business process innovations.
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