Workflow-Supported Social Networks: Discovery, Analyses, and System

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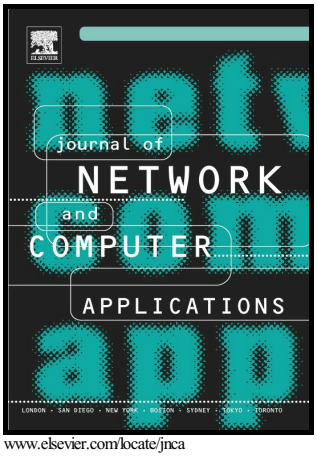

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Workflow-Supported Social Networks: Discovery, Analyses, and System

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Abstract

Technology-supported social networks have been penetrating many aspects of our lives from friendships/blogging sites to working places. The recent BAI (business analytics and business intelligence) systems have also supported the activities of analyzing the social networking issues on employees of companies and their work-sharing relationships, and have used the analyzed issues as a sort of organizational knowledge to deliver quantum improvements in decision-makings and organizational performances. Accordingly this paper focuses on a special type of social networking knowledge called '*workflow-supported social network*' that is formed through the deployments and operations of workflow and BPM (business process management) technologies on a workflow-supported organization. In this paper, we formalize a theoretical framework coping with discovery phase and analysis phase, and conceive a series of formalisms and algorithms for representing, discovering, and analyzing the workflow-supported social network. As a theoretical basis, it uses the conceptual methodology of information control nets that used to formally describe workflow procedures and business processes. The theoretical framework is expansively implemented in the name of a systematic framework that is able to automatically discover a workflow-supported social network from an XPDL-based workflow package, construct SocioMatrices from the discovered workflow-supported social network, analyze the SocioMatrices, and visualize the workload centrality measures of all the actors in the corresponding workflow-supported social network. In order to verify the correctnesses of all the discovery algorithms, analyses equations, and the implemented system, we carried out two operational examples. One is for the theoretical framework, the other is for the systematic framework. We applied the theoretical framework to an information control net model of the typical enterprise hiring workflow procedure, and presented its analyzed results and visualizations. At the same time, by the implemented system we analyzed an XPDL-based workflow package fulfilled by 17 participants, which comprises two imaginary workflow models: Hiring workflow procedure and Presentation workflow procedure consisting of 17 activities and 7 activities, respectively. The analyzed outputs are presented via a series of the captured screen-snapshots produced from the system. Finally, the paper summarizes the implications of the workflow-supported social networking knowledge and how much it is worth in improving decision-makings and organizational performances of workflow-supported organizations and enterprises.

Keywords: workflow, business process, workflow-supported social network, business analytics and business intelligence, organizational knowledge, behavioral structures

1. Introduction

In general, a workflow management system consists of two components—modeling component and enacting component. The modeling component allows a modeler to define, analyze and maintain workflow[1] models by using all of the

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[1] In terms of the terminological usage, the term, workflow, can be interchangeably used with the term, business process. We prefer the former to the