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Ontology focused crowdsourcing management

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Abstract

Companies should be aware of the market situation and have a connection to customers, possible customers, and other individuals around a company. Crowdsourcing is the act of going inside or outside of the company's normal organizational set-up to an undefined crowd, and it can be utilized in several ways to produce value for a company. Ontologies provide a better understanding of different concepts and can be utilized for managing a company's activities in a holistic way. This paper introduces ontology-focused crowdsourcing management. Crowdsourcing of a company is constructed via several concepts which are crucial for succeeding in crowdsourcing activities. Current crowdsourcing ontology studies are lacking in holistic crowdsourcing views. This paper fills the research gap, providing a holistic view of crowdsourcing and its management.

Keywords: Crowdsourcing; Industrial management; Ontology

1. Introduction

Crowdsourcing provides several opportunities for a company. Crowdsourcing as a phenomenon is complex, connecting several fields of management. Generally, crowdsourcing is the act of going inside or outside of the company's normal organizational set-up to an undefined crowd [1, 2, 3]. However, crowdsourcing requires an ontological understanding for generating new models for companies to develop their activities. The last decade of research on ontology alignment brought a wide variety of automatic methods and techniques to discover correspondences between ontologies [4]. Ontologies enable the understanding of real world concepts and provide possibilities for developing information technology (IT) systems focused on ontologies [5]. Crowdsourcing includes a human element which, therefore, is challenging for ontological modeling.

Crowdsourcing, as all other activities of a company, requires management. Kantola claims that all decisions should be based on real, holistic knowledge, instead of educated guesses, intuitive feeling, or limited information representing only some aspects of the objects managed [6]. Crowdsourcing activities should be managed for increasing profitability a result of crowdsourced activity. Ontologies provide the opportunity for understanding the crowdsourcing phenomenon and its priority for a company.

The current crowdsourcing literature discusses ontologies by concisely providing important intensive knowledge about crowdsourcing [4, 7, 8]. However, more knowledge is required for understanding crowdsourcing ontologies in a holistic context. This paper fills the research gap and presents an ontology-based approach for crowdsourcing management and aims for a more holistic understanding about crowdsourcing and its utilization as a company's activity.

This paper is organized as follows. The theoretical framework of the study is highlighted in section two. Section three discusses the methodological choices of the study. The fourth section sheds light on ontology-based crowdsourcing management, before the paper concludes.

2. Theoretical framework

This section sheds light on the relevant literature for the study. First, crowdsourcing literature is highlighted. The second section discusses ontologies and their importance. Finally, management of ontologies is highlighted in this section.

2.1. Crowdsourcing

Crowdsourcing provides, for instance knowledge about markets, for a company. However, crowdsourcing is still a relatively new concept for businesses and science. Howe introduced the concept of crowdsourcing in *Wired* magazine in 2006 and defined it "the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call" [3, 9]. Howe's crowdsourcing definition can be kept as an original definition of crowdsourcing. Crowdsourcing can apply to both a company's internal or external activity, and the size of the crowd can vary based on the task type and scope [10, 11]. Crowdsourcing happens mostly online, but not exclusively so [12]. Online platforms can be used for task setting, but the actual crowdsourced work can be implemented offline. Therefore, crowdsourcing can occur offline as well as online.

Crowdsourcing can be utilized widely, but a company's innovation activities especially can employ crowdsourcing. Crowdsourcing can be utilized, for instance, for quality verification, collecting ideas, testing products and services, funding an innovation, finding customer clusters, and co-operations [10]. Thus, crowdsourcing can be employed not only in innovation activities, but in other activities as well. Crowdsourcing includes three main categories, which are knowledge, resource, and funding focused. Crowdsourcing types are, for instance, crowd wisdom, crowd creation, microtasking, macrotasking, and crowdfunding [13]. Nevertheless, all crowdsourcing types include utilization of an undefined crowd and might include tangible or intangible compensation. Tangible compensations can be, for example, pay or a product, and intangible compensations could be recognition or status [14]. Selection of compensation depends on the crowdsourced task type, scope, and demanded results of the crowdsourced activity. Compensation can influence the quality of the results of an crowdsourced task.

2.2. Ontologies

Ontologies concern the nature of reality and raise questions about human assumptions about the way the world operates and the commitment to particular views [15]. Moreover, an ontology is an explicit specification of a conceptualization which is an abstract, simplified view of the world that we wish to represent for some purpose [16]. Ontologies provide perceptions and understanding of terms, concepts, and their relationships, and can provide a lot of information or just a small amount information depending on the ontology and its concepts.