Dynamic Evolution of Knowledge Modules Contexts Oriented to Business Process

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ABSTRACT

The phenomenon of knowledge modularity exists in the executing process of enterprise business, and the performance of business execution depends on the ability of knowledge modules. Therefore, it is of great theoretical value to study the evolution of knowledge modules and their integrated contexts. In order to help enterprises to optimize their configuration of knowledge contexts, a method of dynamic knowledge context modeling was proposed in the article. The dynamic evolution process of the knowledge modules context from the perspective of context was discussed, and the dynamic evolution characteristics of the context based on business problems was studied. Also the contextual evolution model was established, which could effectively improve the cooperative efficiency of knowledge resources and enhance the performance of enterprise business process execution.

KEYWORDS
Business Process, Dynamic Evolution, Knowledge Context, Knowledge Modules

1. INTRODUCTION

In the era of knowledge economy, knowledge already replaced traditional resources, being the fundamental part of business development. The trend of knowledge-based business and knowledge-based marketization has become increasingly evident. At the same time, the complexity of business problem in the enterprise is increasingly prominent, and knowledge-based cooperation and alliance will become an important paradigm for solving business problems. Therefore, knowledge management has been of the increasing importance in business progress. Enterprises made full use of knowledge management to enhance their core competitiveness. The study found that, in the process of solving business problems, knowledge resources show high-density agglomeration in a small range (Zhan et al., 2018). This paper refers to this type of agglomerate knowledge as knowledge modules, this process of agglomeration as knowledge modularity. The thought of modular is widely used in product design and production. Broken down products into multiple parts, each part is independent in the business process of other parts so as to be convenient for enterprise to use. The concept of the knowledge module is similar to this, in which knowledge is aggregated into modules based on knowledge resources as

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carrier for different services. Because the performance of business execution directly depends on the ability of solving knowledge modules, researches on knowledge modules and related context can provide support for enterprises, improve the collaborative efficiency of knowledge resources, and strengthen capabilities of business solution.

So far, scholars at home and abroad have conducted many researches on knowledge modules or modularity. Scholars applied knowledge modules to the research and development of product, integrated product knowledge based on product knowledge module ontology, and proposed a method of product knowledge module ontology to integrate (Zhang et al., 2011). The modular principle was applied to knowledge innovation and employee management to improve the innovation ability of enterprises (Rui & Chen, 2004; Bouncken et al., 2015). Others measure product architecture based on context, modules and modularity (Gu & Ji, 2017). Modularity was also used for organization in order to propose an innovation incentive strategy and enhance organizational innovation advantages (Miozzo & Grimshaw, 2005; Pil & Cohen, 2006). Jiang Wei used a method of organizational modularity and technical modularity to establish a cross-border R&D network (Wei et al., 2014). As shown above, most of the related researches focus on the application of knowledge modules and modularity, with limited perspectives of research field. There is little consideration for the application environment of knowledge modules. Therefore, the context should be imported into the study of knowledge modules. It is helpful for enterprise to clarify its contextual knowledge and apply knowledge modules suitably.

The knowledge context was defined as everything related to the process, including all parts of the environment such as goals, constraints, costs, and so on (Richter, 2009). The definition of knowledge context was also interpreted from two aspects. The narrow context refers to the environmental information that knowledge involves. The broad knowledge context contains various aspects such as related personnel behavior, material background, company strategy, historical information and so on in the knowledge activity, even tends to extend to all things, behaviors and concepts that influence or explain the knowledge activity (Xu & Zhu, 2009). The knowledge context, which including external environmental factors (substances, business, society, etc.) and internal factors (subjective knowledge, experience, psychology, etc.), is the background and environment of knowledge and knowledge activities such as knowledge generation, migration, and application (Pan et al., 2011). Research of current situation includes two research paths: phenomena analysis and context analysis, and mainly through means of empirical research, qualitative research and quantitative research. In addition, current situation has different applicability to different disciplines (Tao et al., 2016). Context technology was used to awareness context and perceive context (Loke, 2006). Other scholars analyze the impact that context evolution has on the context-based data tailoring process (Quintarelli et al., 2015), or analyze the context evolution in conceptual spaces (Tawfik, 2009).

The knowledge context is attached to the knowledge modules and dynamically evolves as the changeable progress of knowledge resources, showing corresponding dynamic characteristics. In order to reveal the mechanism of contextual evolution, this paper conducted an in-depth study of the knowledge modules with context, analyzed the evolutionary process of contexts. This progress contains four parts: contextual innovation, contextual inheritance, contextual transfer and contextual extinction. Contextual evolution processes such as contextual innovation, contextual transfer, and contextual extinction are similar to knowledge activities such as knowledge innovation, knowledge transfer and knowledge extinction. Furthermore, this paper analyzes the characteristics of dynamic evolution of contexts and establishes evolution model, which can provide theoretical support for enterprises to configure knowledge modules and contexts so as to be helpful to enhance the core competitiveness of enterprises, and to provide new ideas and perspectives for enterprise knowledge management innovation.
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