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Combining HowNet and Extension Strategy Generation Method to Improve Customer Values

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Abstract

This paper proposes to combine HowNet and extension strategy generation method to analyze customer data in order to improve customer values. In view of the problems that enterprises are difficult to analyze customer big data, the paper shows how to combine HowNet structure to enhance extension strategy generation methods. The extension strategy generation system can rebuild its knowledge base structure and eliminate semantic conflicts. This will more effectively treat customer big data and improve customer values. The paper presents the experiment results of the extension strategy generation software which successfully analyze customer data and generate strategies to improve customer values.

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Keywords: HowNet; extension strategy generation method; customer value; big data; software

1. Introduction

The sciences like astronomy and genomics, which first experienced the explosion in the 2000s, coined the term “big data” [1]. Companies churn out a burgeoning volume of transactional data, capturing trillions of bytes of information about their customers, suppliers, and operations [2]. Big data refers to things one can do at a large scale that cannot be done at a smaller one, to extract new insights or create new forms of value, in ways that change markets, organizations, the relationship between citizens and governments, and more [1]. Many pioneering companies are already using big data to create value, and others need to explore how they can do the same if they are to compete [2]. Many organizations have stored data for years and have never attempted to

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analyze it or look for patterns, simply because the business appetite for doing so didn't exist [3]. In the meantime, some companies lack big data analysis tools so that they cannot benefit from big customers data.

Moreover, heterogeneity, scale, timeliness, complexity, and privacy problems with big data impede progress at all phases of the pipeline that can create value from data [4]. The key to making big data initiatives a success lies within making the produced data more digestible and usable in decision making, rather than making it just 'more,' resulting in the creation of an environment wherein information is used to generate real impact[5]. Although there are a number of successful customer data analysis tools, but we cannot just analyze data without trying to improve the situation. In order to build analysis tools for companies to get value from big data, we focus no only on information volume, variety and velocity, but also on strategy to improve customer values.

This paper proposes to combine HowNet structure and extension strategy generation method to analyze customer big data. This will more effectively treat big data so that generate strategy to improve customer values. At the end of this paper, an example of extension strategy generation software with HowNet knowledge base is described to show this effort.

2. HowNet Structure

HowNet is an on-line common-sense knowledge base unveiling inter-conceptual relations and inter-attribute relations of concepts as connoting in lexicons of the Chinese and their English equivalents [6]. The philosophy behind HowNet lays ground on its understanding and interpretation of the objective world. The crux is: all matters (physical and metaphysical) are in constant motion and are ever changing in a given time and space. Things evolve from one state to another as recorded in the corresponding change in their attributes [6]. The units for manipulation and description in HowNet are thing (sub-divided into physical and mental), Part, Attribute, Time, Space, Attribute-value and Event.

Every concept as an entry in HowNet has the following description items for each language:

W_X= word or phrase
G_X= the part of speech
E_X= examples
DEF= concept definition

where X can be C or E, C stands for Chinese and E stands for English.

For example, the concept "teach" is defined as:

NO.=043868
G_C=V
E_C=
W_E=teach
G_E=V
E_E=
DEF=teach, education

HowNet is powerful in describing relations between concepts. It describes not only the relations within the same categories, but also describes cross-category relations. The types of relations described by HowNet are mainly as follows [7]:

a. super-ordinate-subordinate
b. synonym