



International Conference on Education and Educational Psychology (ICEEPSY 2012)

## The Review of Knowledge Management in Financial Industry Chirayu Hantrakul<sup>a</sup>, Jarinya Thaloey<sup>b</sup>, Pradit Songsangyos<sup>c,\*</sup>

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### Abstract

In the digital era, the staffs are working together using knowledge as a central factor, especially in the financial sector. Several research studies have been reported that a wiki-based financial investment knowledge management service can capture both textual comment and financial analysis models, comparing with other wiki services which allow the sharing of textual comments only. The tool can provide opportunities for knowledge representation and knowledge sharing for other corporates and investors. This financial knowledge also can be consumed by external web services. Further studies will be done to cover in key areas of knowledge management in other industrial sectors.

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Selection and peer-review under responsibility of Dr. Zafer Bekirogullari of Cognitive – Counselling, Research & Conference Services C-cracs.

*Keywords:* Knowledge Management; Knowledge-based System; Knowledge Management in Financial Industry; Financial Knowledge Management. Financial Management.

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### 1. Introduction

In the digital era, it is widely observed that the society we live in has been gradually turning into a “knowledge society”.-The staffs are working together using knowledge as a central factor in the knowledge society, especially in the financial sector. There are not many researches that study on knowledge management implementation in financial industry (Gong & Wu, 2009).

Knowledge is professional intellect, such as know-what, know-how, know-why, and self-motivated creativity, or experience, concepts, values, beliefs and ways of working that can be shared and communicated. Knowledge can be categorized into Tacit knowledge which is embedded in the minds of person and gained from his or her experiences; and Explicit knowledge which transform the Tacit knowledge into the form of reports, books, CD-ROMs, Databases, etc. Explicit knowledge which we can see is like the iceberg that is float above the sea is only 20 percent. While Tacit knowledge which we can not see is like the iceberg that is sink into the sea is about 80 percent (Wipawin, 2003).

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In a survey of economists 2007, CEOs have stated that the most important investment in realizing corporate strategy goals is Knowledge management. However, most knowledge management projects do not deliver what they have promised at the beginning (Gai & Dang, 2010). Knowledge Management Systems (KMSs) consist of four knowledge processes: creation, storage/retrieval, transfer, and application. Technologies play an important role in Knowledge Management. The IT infrastructure provides a seamless "pipeline" for the flow of explicit and tacit knowledge through the knowledge conversion processes. Thus, technologies enable capturing knowledge; defining, storing, categorizing, indexing and linking digital objects corresponding to knowledge units; searching for and subscribing to relevant content; and presenting content with sufficient flexibility to render it meaningful and applicable across multiple contexts of use (An & Wang, 2010).

The benefits of knowledge management for information technology support can include:

- Decrease in support costs associated with staff “ramp-up” time
- Decrease in costs due to less re-work and duplication of research activity
- Increase customer satisfaction by shortening the time of the incident (Gilbert, et al., 2007).

## 2. Knowledge Management in Financial Industry

There are four incentive factors to encourage the knowledgeable employees in financial industry, as Han, J. and Kamber, M. stated, are promotion in vocation, freedom in working, vocational achievements and wealth in order.

The principles of incentive mechanism are as follows:

1) Short-term and long-term incentive: The staffs in financial industry are knowledgeable and they focus on long-term promotion in vocation. So the administration and supervision authorities should not only give short-term incentive to the employees, such as wage, stocks and options, but also provide the staffs with long-term developing plan of vocations, such as promotion in vocation, all kinds of training.

2) Material and spiritual incentive: The knowledgeable staffs need not only material incentive, but also spiritual incentive. It is important for financial enterprises to give the employees both wealthy and spiritual encouragement. If one enterprise just gives material incentive, the incentive will not last long, while spiritual encouragement will give long play, for spiritual incentive can satisfy higher level needs of staffs. Nowadays, many financial companies are trying to encourage the staffs by providing them with stock options and returns, according to the intellectual property rights one owns (Gong & Wu, 2009).

(Feng & Xiao, 2009) applied data mining techniques, the system is able to generate graphical presentation for future interpretation. As data are stored from all the daily input of sales department, thus data mining techniques will produce meaningful output and is the framework is further extended to comprehend the data mining and knowledge base engine. There are various data mining techniques which can be applied yet Weighted Moving Average might be adopted for also used in forecasting future sales performance and future financial analysis time series forecasting.

Weblogs Wikis, and forums were very popular in recent years and has been proposed by a number of authors as a means to facilitate codification strategies, collaborative content creation and communication (Peinl, 2011). WIKMS is a wiki-based financial investment knowledge management service that provides a new direction and insight for exploring service-oriented knowledge management, particularly knowledge sharing in the financial investment domain. The system can automatically capture users contributed knowledge including both textual comments and financial analysis models, and share this knowledge with other corporate and public investors. More specifically, this financial investment knowledge can be consumed by external Web services. When comparing with other existing wiki services which only allow the sharing of textual comments.

For basic analysis of stock performance, the following models have been developed and made available as built-in services of WIKMS:

- Price Earnings Ratio (P/E ratio): Divide the net income by the market value of the company to measure its Profitability
- Price Earning/Growth Ratio: used to measure the growth of the company in terms of PE. Used to measure a well established company
- ROI10: average of 10 years ROI to reduce the noise
- Earnings Per Share (EPS): divide the net income by the number of outstanding number of shares issued. Used to measure the profit earned per share.

For technical analysis of stock performance, the following models have been developed and made available as built-in services of WIKMS:

- Moving Averages: Moving Averages are used to smooth the data in an array to help eliminate noise and identify trends
- Stochastic (STC): The Stochastic Oscillator is used to measure where the closing price should be relative to recent trading range
- Relative strength index (RSI): It shows price strength by comparing upward and downward close-to-close movements
- Directional movement index (DMI): The DX is usually smoothed with a moving average. To interpret the DX, consider a high number to be a strong trend, and a low number to be a weak trend
- On-balance volume (OBV): OBV relate price and volume in the stock market
- Momentum (MTM) and Rate of Change (ROC): The momentum and ROC indicators show that by remaining positive while an up-trend is sustained or negative while a down-trend is sustained
- William overbought/oversold index: It is a measure of overbought and oversold levels which is quite similar to a stochastic oscillator (Quanyong, 2009).

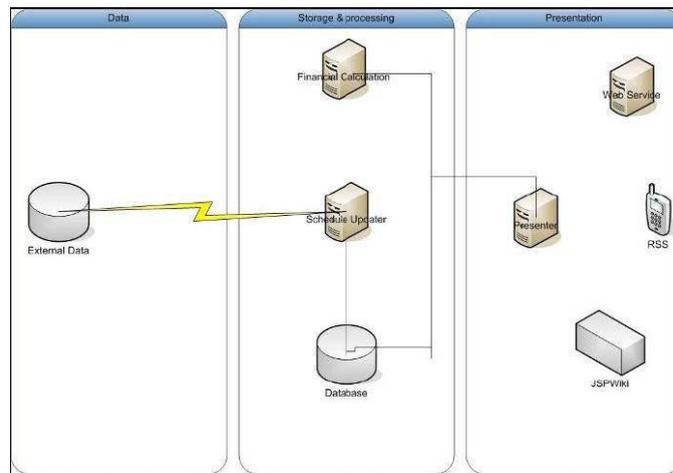


Figure 1. General System Architecture of WIKMS

The basic design of the wiki-based Investment Knowledge Management Service (WIKMS) is illustrated by the structure diagram (Figure 1). The whole system can be divided into 3 sub-systems, namely: Data Collection, Data Storage & Computation, and Presentation. The Data Collection layer is responsible for retrieving data either via external data sources or from the internal database. It also includes scheduled jobs to get bulky external data at late night. The Data Storage and Computation layer is responsible for the archive of important financial data and conducting all the financial analysis and modeling work. The Presentation layer is responsible for delivering computational results to the system users (So, et al., 2008).

### 3. Conclusions and Recommendations

There are four incentive factors to encourage the knowledgeable employees, which are promotion in vocation, freedom in working, vocational achievements and wealth in order. The implication of the wiki-based financial investment knowledge management service is financial analysts or investors can share their investment knowledge, test their analysis models with real data before making investment decisions. WIKMS has built-in services for analysis of stock performance both basic analysis, including P/E ratio; PE; ROI10; and EPS, and technical analysis, including Moving Averages; STC; RSI; DMI; OBV; MTM and ROC; William overbought/oversold index. The study found that, a wiki-based financial investment knowledge management service can capture users' knowledge both textual comment and financial analysis models automatically, when comparing with other wiki services which allow the sharing of textual comments only. Theoretical and practical knowledge can be shared with other corporates and investors. Financial knowledge also can be consumed by external web services.

Further studies will be done to cover key areas of knowledge management in other industrial sectors such as production-industry and logistic-industry. The comparative study of knowledge management initiatives in the same or related industry with different scales will be presented.

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