Value of Recommendation Systems for Online Investors

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ABSTRACT

Internet allows investors to use friendly tools which help them to make and implement their investment choices in an online environment. Individuals can have access to volumes of information related to alternative financial instruments and craft their strategies according to their needs and preferences. However, in the presence of multiple choices, investors with limited experience and knowledge may need support in making adequate decisions. Recommendations systems have been used in e-commerce in the past to provide customers with advice in purchasing products and services. The purpose of this work is to investigate the potential value of rendering recommendations to investors. The findings indicate that users of recommendations-enriched online investment website expressed higher levels of satisfaction and intention to use.

Keywords: Collaborative Filtering, Jaccard Index, Online Investments, Recommendation Systems, Technology Acceptance

1. INTRODUCTION

The Internet is undoubtedly one of the most revolutionary technologies invented by humans. It has quickly evolved from an almost entirely static collection of hypertext to a rich blend of dynamic services and products that are reachable by millions of users worldwide (Kohrs & Merialdo, 1999). It has been estimated few years ago that more than 7,500 terabytes of information had been made available online since the arrival of the web (Miller et al., 2004).

This growth of accessible information, however inevitably raises the problem of information overload. In particular, in the domain of investments the abundance of information available is overwhelming and may actually hamper effective decision making. In the traditional offline mode, investors could meet face to face with an investment advisor to customize their portfolios according to their attributes and obtain expert advice and recommendations. Online investors in general have very limited access to personalized advice and recommendations, partly due to the fact that recommendations are expected to be customized and tailored according to the investor’s portfolio, risk attitude and goals. This poses a serious challenge to both individuals and online brokerage firms as the investors have to

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make sense out of all the information available on the Internet and must use their investment experience, knowledge and intuition to make the proper investment decisions.

Providing custom advice in the presence of information overload became possible with the introduction of so-called recommendation systems (Balabanovic & Shoham, 1997; Sarwar et al., 2000). Recommendation systems refer to the systems aiming at filtering out the uninteresting items automatically on behalf of the users according to their preferences (Cheung & Tian, 2004). They have been successfully employed at major websites including eBay and Amazon. However, application of these techniques to the investments domain has been somewhat limited. Apart from simple filtering means, little has been offered in the past to accommodate the individual styles of investors in making recommendations. The purpose of this study is to investigate the potential for acceptance of recommendation approaches by the investors.

In order to accomplish this objective we have created an online prototype of a collaborative recommendation system for providing stock trading advice in the online environment. The prototype then has been tested using key variables indicating the subjective perceptions of the offered functionalities by the human subjects.

2. BACKGROUND

Thanks to technology, investors can now sell and buy investment instruments, e.g., stocks online, access real time market information and statistics, and perform online research using methods that were scarcely available a decade ago. The diffusion of technology and automation into businesses worldwide has had profound impacts on markets. However, despite the trend by most firms worldwide to automate their processes, a few markets, including the stock market, still have not taken a full advantage of automation, despite the vast advancements in technology (Peterffy & Battan, 2004). Furthermore, online investment is a major Internet domain which suffers from the information overload problem, due to the availability of a huge quantity of stocks, bonds, futures and other instruments. This appears to be a domain which is in desperate need of information filtering (Tseng, 2004). Online trading firms, such as E-trade and Ameritrade, are among the most successful and vivid financial firms to appear on the Internet within the last decade. The number of online investors grew to 12.5 million over the period from 1995-2000, while it was estimated in 2003 that the number of online investors will grow to 42 million (Barber & Odean, 2001).

2.1. Online Trading

Internet-based transaction technologies have paved the way for innovation in online investments. This is an ongoing increasing trend that has become an important feature of financial markets. Online trading has shown its potential to reduce cost of transactions and facilitate entry for individuals to trade, resulting in increased trading volumes (Oh et al., 2008). Consumers’ investment decisions are amongst the most important ones they make (Raghubir & Das, 2010). They are risky and involve high stakes with the potential lifelong impact on wealth and quality of life (He et al., 2008; Hoffmann & Broekhuizen, 2010).

Despite the evidence that online (Internet-based) trading today accounts for a large proportion of securities trading, and considering the importance and significance of consumer’s investment decisions, we still find that there are very few academic studies conducted (Oh et al., 2008) in online investments and there is lack of research in the adoption of new investment products (Hoffmann & Broekhuizen, 2010).

2.2. Recommendation Systems

Personalization is the wave of the future in both the online and offline environments. A single online configuration for all users is more likely to fail to achieve wide support and satisfaction, since users have different backgrounds and different goals they wish to achieve (Kohrs & Merialdo, 1999). There is a critical need to offer more online personalized financial services and
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