Problems Associated with Older Adults’ Adoption of Robo Advisors: An Empirical Study

Shangjun Wang

Follow this and additional works at: https://aisel.aisnet.org/confirm2020

This material is brought to you by the International Conference on Information Resources Management (CONF-IRM) at AIS Electronic Library (AISeL). It has been accepted for inclusion in CONF-IRM 2020 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
Problems Associated with Older Adults’ Adoption of Robo Advisors: An Empirical Study

Shangjun Wang
Florida International University
swang067@fiu.edu

Abstract
In the recent years, Robo Advisor, a digital platform that provides automated, algorithm-driven financial planning services, has increasingly received attention from users of different demographics. Many users have taken advantage of its features to automate their saving and investing activities. However, users in an older age group, specifically, those aged fifty or above, have been seen with low adoption of the robo-advisory services. This empirical study is designed to explore the problems associated with older adults’ adoption of robo advisors. Specifically, this study intends to examine whether mental health of aging adults affects their intention to use robo advisors. In addition, I hypothesize that perceived usefulness may mediate the effect of mental health on behavioral intention towards using robo advisors, such that it serves to explain why various levels of mental health would result in differences in intention to use (i.e. approach or avoid robo advisors). To explore solutions for non-adoption, I identify three external variables (i.e. social influences, accessibility, and learning support) that could possibly moderate the main effects of mental health hypothesized in the study, so that when either of these variables is present and strengthened, it will enhance likelihood of using robo advisors.

Keywords: Robo Advisor, Technology Adoption, Mental Health, Older Adult, Financial Service.
Problems Associated with Older Adults’ Adoption of Robo Advisors: An Empirical Study

1. Introduction
Robo advisor is an artificial intelligence software that automates and assists management of investment (Belanche et al., 2019). In contrast to traditional human advisory services, robo advisory services reduce fees and provide 24/7 access to finance (Park et al., 2016). Comparing to traditional financial services, several functionalities that make robo advisors uniquely attractive to users are: lower minimum balance to maintain the account, automation of money managing and investing activities, trading fractional shares of securities (low barrier of entry), and sometimes automatically minimizing tax on selling or transferring of investment. The top robo advisory services on the market today are registered investment advisors, therefore, are subject to fiduciary standards. In other words, robo advisors must act in the best interest of their users.

While robo advisors are continuously attracting attention from users with various demographic and socioeconomic backgrounds, not much is known about factors that lead to the adoption and the use of robo advisors. Specifically, studies that dig into how robo advisors are adopted and used among older users do not exist. According to a report released by the Center for Disease Control and Prevention (CDC, 2008), three mental health issues are becoming prevalent among older adults: anxiety, cognitive decline, and depression, and they are influencing older adults’ behaviors and decisions in their daily life. In addition, a big challenge faced by older adults today is a financial one, that is, the challenge in personal finance and retirement planning (Stanford Center on Longevity, 2018; Loibl, 2017; Sixsmith et al., 2014). A book recently published in the University of Pennsylvania Wharton School Pension Research Council series (Agnew & Mitchell, 2019), found that older adults’ mental health issues affect their abilities to cope with financial stress. A robo advisor, due to its financial expertise and automation, appears to be a viable solution to assist older adults in dealing with this kind of stress. However, the process of getting comfortable with new technology is a steep learning curve for older adults. This is especially true for those who have mental health problems. Therefore, it is possible that having mental problems could result in negative attitudes of older adults towards using robo advisors.

Furthermore, although older adults with mental health problems may refrain from using robo advisors, the reason why is unknown. One possible explanation is that low mental health level contributes to negative beliefs that robo advisors are actually not useful. Prior studies have found that, the perceived usefulness of the technology is one important factor to determine whether older adults would adopt a technology (Zhou et al., 2014; Braun, 2013; Dear et al., 2013). In addition, other external factors that can be considered in affecting older adults’ adoption of robo advisors are: social influences, accessibility, and learning support. Social influences mean that elders change their behaviors according to the standards of the society they live in. It has been suggested that older adults will use a new technology just to “keep up with society” (Kuerbis et al., 2017). Therefore, it is interesting to look into whether social influences could make older adults more likely to use robo advisors when they may be unable to see the usefulness of this type of technology due to having lower mental health. Moreover, accessibility simply means that robo advisors are easy to use to the elderly (Czaja, 2006). They should be able to navigate the interface and interact with features without a hassle; learning support is an environment in which necessary help is provided to users so
that they can adequately use the technology to complete tasks. It is possible accessibility and learning support can potentially alter the effect of mental health conditions of elders on their perceived usefulness of robo advisors. For instance, when mental health is low, they may still be able to see the usefulness, and therefore become inclined to use the application, if greater accessibility is integrated in the app and help is given.

In summary, this research study is interested in knowing whether older adults’ mental health conditions can impact perceived usefulness of robo advisors, and therefore influencing them to approach or avoid this type of technology. One purpose of this study is to examine whether perceived usefulness can explain why different levels of mental health can induce older adults’ to adopt or avoid robo advisors. The other purpose is to determine whether the effect of mental health on intention to use robo advisors differs in dependence of social influences, as well as whether higher or lower mental health affects older adults’ beliefs of usefulness to be different in dependence of accessibility of the application and learning support resources available to them. Older adults are particularly of interest to the research because, compared to a younger demographic, older adults have a very different attitude and learning culture in connection with the use of technology (Arning & Ziefle, 2007). The results of this research study will provide insights for financial advisory services, brokerage firms, financial institutions, as well as their technology providers to develop and configure robo advisors that are elder-friendly. Especially, for those with mental health conditions, enabling older adults to overcome the impact of mental problems to utilize new technology and build wealth as they are aging. Meanwhile, the successful introduction of robo advisors to older age groups can bring a competitive advantage for many firms in the finance sector (Park et al., 2016).

2. Theoretical Development and Hypotheses

Studies found that people age 55 years or older experience some type of mental health condition. The most common conditions are anxiety, cognitive decline, and depression (CDC, 2008). Mental health influences older adults’ motivation to engage in technology. For example, one study found that among Medicare beneficiaries 65 years or older, “depression and anxiety were negatively related to internet use” (Kuerbis et al., 2017; Choi & DiNitto, 2013). Cognitive change may potentially impact older adults’ ability to engage with technology. Research have found that cognitive abilities such as visual-spatial ability, memorizing, and problem solving decline with age, making the technology more difficult to use. (Chevalier et al., 2013; Pak et al., 2009; Juvina & Taatgen, 2009). In Kuerbis et al.’s review of related literature (2017), cognitive decline leading to slower learning processes of the older age groups is found in several empirical studies (Chevalier et al., 2013; Hanson, 2011; Czaja et al., 2006). As evidently shown, when mental health problems are present, learning a new technology becomes less straightforward to older adults. As a result, they are more likely to avoid it. Therefore, when concerning robo advisors, it can be argued that:

H1: Mental health levels of older adults have a significantly positive effect on their intention to use robo advisors.

In the context of this study, the mental health level is a variable that represents an older adult’s perceived mental healthiness of themselves. And, mental health is reduced by three common conditions (i.e. anxiety, depression, and cognitive decline). Not to mention, it is possible that when mental problems prevent older adults from properly operating robo advisors, they will unlikely be able to complete the intended task. As a result, they will unlikely view the technology to be useful (Agnew & Mitchell, 2019). It can be further argued that, lower mental health level leads to lower perceived usefulness of robo advisors.
H2: Mental health levels of older adults have a significantly positive effect on perceived usefulness of robo advisors.

Perceived usefulness can also be seen as a fundamental determinant of the adoption of various types of technology (Davis, 1989). Studies also found that, among older users, when benefits of utilization are not clear, they are more likely to choose not to engage in that technology (Chen & Chan 2013; Mitzner et al., 2010; Czaja et al., 2006). This could also be true when older adults evaluate the usefulness of robo advisors.

H3: Perceived usefulness has a significantly positive effect on older adults’ intention to use robo advisors.

Social influences refer to situations in which people change their behaviors to agree with others in society. A number of studies have reported that older adults see using technology as a “basic skill” and a way of “keeping up with society” (Kuerbis et al., 2017; Damodaran et al., 2014; Chen & Chan, 2013). For that reason, it is possible to argue that when social influences are strong, older adults with lower levels of mental health may still be willing to use robo advisors. Consequently, it can be hypothesized that:

H4: Social influences moderate the effect of mental health levels of older adults on their intention to use robo advisors.

Accessibility is the robo advisor’s quality of being able to be used by an older age group. This factor is especially important to older adults during the time of retirement because retirement planning is a very complicated process and can hardly be automated by machine (Agnew & Mitchell, 2019). Therefore, it is critical that robo advisors are designed in keeping with financial needs associated with aging. Accessibility could potentially moderate the effect of perceived mental health on perceived usefulness such that when higher accessibility is integrated in the robo advisor, an older adult with a lower level of mental health may still be able to realize its usefulness (Kuerbis et al., 2017). Therefore, it can be argued that:

H5: Accessibility moderates the effect of mental health levels of older adults on perceived usefulness of robo advisors.

The context of learning is important to older adults who want to learn to use technology. For them, there are primarily three ways of learning regarding utilization of technology: reading a manual, receiving instruction from other people who have the know-how, and “trial and error” (Barnard et al., 2013). In a supportive environment, older adults are able to quickly learn to perform basic tasks (Barnard et al., 2013; Broady et al., 2010; McLeod, 2009). In the adoption of robo advisors, when substantial learning support is provided, elders with mental health conditions may be able to overcome the impact of the mental condition and understand how to use robo advisors properly, resulting in believing “robots” to be useful.

H6: Learning support moderates the effect of mental health levels of older adults on perceived usefulness of robo advisors.

Finally, considering that whether mental health level is high or low may affect perceived usefulness of a robo advisor, which in turn may influence an older adult’s intention to use it. It can be hypothesized that:
H7: The effect of mental health levels of older adults on their intention to use robo advisors is mediated through perceived usefulness.

Figure 1 illustrates the research model:

3. Research Methodology Overview
3.1 Research Design
Based on findings from related research studies, a conceptual research model (Figure 1) is developed to describe relationships hypothesized in the section above. Surveys will be developed and distributed to participants to measure each construct specified in the model. Measuring items will be selected from prior related studies, but will be redefined to fit the current context. This study focuses on the individual older adult as the unit of analysis. 7-point Likert scales will be provided for participants to respond to each question (from “1” – “Strongly Disagree” to “7” – “Strongly Agree”). “Older adult” refers to persons who are 50 or above in age because cognitive changes begin to take place at the age of fifty, interfering with technology engagement (Hanson, 2011). These participants will be assessed for their mental health state, and data will be collected from a balanced mix of mentally healthy individuals and those with some signs of mental conditions (i.e. anxiety, depression, and cognitive decline). For each participant, an average score will be computed to represent their overall mental health level. An additional assessment will be conducted prior to the study, to ensure that participants have similar levels of knowledge and experience about technology. Those who have substantial experiences of using robo advisors will not be selected for this study. The assessment also ensures that participants have similar levels of financial experience and knowledge. An introductory video will be sent to inform participants what a robo advisor is, its basic functions, and how to use it. Each survey will be accompanied with a questionnaire to collect demographic and socioeconomic information about participants.

3.2 Data Collection and Analysis
The survey will be conducted in the United States, and responses will be collected from a sample of 300 adults aged 50 or above. The participation is limited to this age group as they are of interest in this study. To ensure that the sample represents a diverse population and an even split in terms of demographic and socioeconomic variables (i.e. gender, marital status, education, and income), the study will administer data collection online using Qualtrics survey software. Before distributing surveys, to check content validity, faculty at the author’s institution who have expertise in the topic of interest will be invited to evaluate the
appropriateness of language and content of each measuring item. Pilot tests will be conducted with smaller samples and exploratory/confirmatory factor analysis and reliability analysis will be used to ensure construct validity and reliability of measuring items (Straub, 1989). Data analysis will be conducted in SPSS. All hypotheses except H7 will be tested using multiple regression while controlling participants’ gender, marital status, education, and income. The testing of H7 will be conducted by using PROCESS Macro, which facilitates mediation analysis. Preferably, bootstrapping will be used as it is a robust analysis in testing the significance of indirect effects (Hayes, 2018).

4. Contribution
This research intends to validate a research model that can effectively provide explanation to some key issues associated with the technology adoption of an older age demographic. First, the research finds that various mental health conditions may prevent older adults from using robo advisors. Second, the research identifies external variables that may aid in the development of solutions to mitigate older adults’ non-adoptions of robo advisors. Financial planning for older adults need to be thought carefully through as they are a vulnerable group that hardly recovers if significant financial loss occurs due to poor planning strategies. Therefore, their mental process of adopting robo advisors should be understood for development and improvement of financial services technology to minimize risk of financial loss and maximize benefit of planning. Theoretically, this research sheds additional light on the process of technology adoption by focusing on a unique age group and a novel technology for a specific purpose. Practically, financial services firms and their technology providers can consider the insights provided in this study when developing and implementing robo advisory services to better serve the needs of older clients. This will create a win-win situation that both firms and clients can benefit from cutting-edge technology.

References


