

Correlations Between Investors' Personality Traits and Preferred Sources of Information Regarding Fund Investments

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Abstract: *The COVID-19 pandemic has had a strong effect on the global economy. It has led to market volatility, with the rate of salary increase being lower than the rate of inflation. This scenario has encouraged investors to engage in fund trading to generate excess returns. Before investors make investments, financial institutions subject them to investment risk profile assessments in accordance with relevant regulations so that suitable investment funds can be selected for them. This study examines the correlations between investors' personality traits and preferred sources of information regarding fund investments. We explore the information sources that investors with different personality traits depend on and examine the demographic differences in investors' personality traits and preferred information sources. A questionnaire survey is conducted among individuals with fund investment experience. The results of this survey reveal that investors' personality traits, particularly extraversion and conscientiousness, are correlated with their preferred information source. In addition, investors with different genders, ages, and marital statuses exhibit significantly different personality traits. Significant differences in information sources are found between those with different ages, fund investment experience, and investment risk profiles. The results of this research provide insights for the development of a comprehensive test for investment risk profile assessment. Increases in fund trading volume, customer satisfaction, and operational revenue growth can be achieved using questionnaire items related to behavioral finance to understand the correlations between investors' personality traits and preferred sources of information regarding fund investments.*

Keywords: The Big Five Personality, Finance Advice, word-of-mouth(WOM) Communication, Robo-Advisor

1 Introduction

Between the end of the Global Financial Crisis in September 2008 and the beginning of the COVID-19 pandemic in 2019, governments worldwide, which were facing economic recessions, major financial events, and financial crises, employed loose monetary policies to stabilize the financial system and promote consumption. In response to a persistently high inflationary environment, the initiation of interest rate hike cycles in March 2022 was shifted to a tightened monetary policy to curb inflation. Investors must navigate through the fluctuations in the global financial market, and the market's uncertainty has caused them to be risk-averse. Since the Global Financial Crisis, asset allocation methods that do not rely on anticipated returns, which are known as risk-based approaches, have attracted considerable investor attention. Braga (2016) explores the application of a risk-based approach in asset allocation. The changes in lifestyle following the COVID-19 pandemic have reduced investors' visits to banks and increased trading on online platforms, thereby giving rise to the

development of the robo-advisor (RA) model. Given customers' diverse investment needs and financial goals, banks have initiated various marketing campaigns, which have resulted in exponential growths in fund size. According to statistics from the Securities Investment Trust & Consulting Association of the Republic of China (2023), as of January 2023, the total scale of domestic and foreign funds has reached 11.3 trillion, which is approximately thrice the fund size in September 2008. Thus, fund trading has become a preferred investment tool for investors.

Modern financial theories posit that investment decisions are made "rationally" (Bortoli, Costa, Goulart, & Campara, 2019). However, deviations from this hypothesis are observed in reality. Behavioral finance theories oppose the assumption of rational investors and assert that investors are not entirely rational. Kahneman and Tversky (1979) propose that the evaluation criteria for decision-making vary among individuals on the basis of their reference points, which leads to them having different attitudes toward risks. Subsequent research has

explored how behavioral finance, from the aspects of behavioral biases (e.g., investment behavior, investment strategies, psychological characteristics, personality traits, investor emotions, investor character, overconfidence, source of information, and financial literacy), affects risk perception, investment intentions, and investment performance during investment decision-making processes. On the basis of behavioral finance theories, Gervais and Odean (2001) investigate how behavioral biases lead traders to exhibit overconfident trading behavior. Pimenta, Borsato, and Ribeiro (2012) demonstrate that the decision-making of investors, analysts, and investment professionals is influenced by overconfidence biases and personality traits. Pan and Statman (2012) study the flaws in the financial system exposed by financial crises and discover the lack of risk assessments performed by financial advisors for evaluating and guiding investors, including assessments of investors' risk tolerance and other relevant factors. They incorporate behavioral finance theories related to environmental and psychological factors for further examining the relationships between personality traits, risk tolerance, overconfidence, regret and life satisfaction, and perceived investment performance as well as the correlations between the biases in behavioral finance (Pan & Statman, 2013; Akhtar & Das, 2020; Snell, 2021). Chang, Chen, and Fang (2016); Ahmad, Hassan, Mahmood, and Aslam (2016); Oehler, Wendt, Wedlich, and Horn (2018); Dickason, Ferreira, and Mankuroane (2019); and Baker, Kumar, and Goyal (2021) have revealed that investors' personality traits have significant influence on their investment behavior. Ahmad, Hassan, Mahmood, and Aslam (2016) indicate that investors' personality traits significantly affect their investment behavior. Investment advisors can develop appropriate investment strategies for investors by understanding their personality traits. Other studies have explored whether investors' asset allocation decisions are affected by their personality. Their results imply that personality traits are significantly related to information acquisition and trading behavior (Tauni, Fang, & Iqbal, 2016; Tauni, Rao, Fang, Mirza, Memon, & Jebran, 2017). Furthermore, investors might have investment performance below expectations, thereby resulting in irrational investment behavior and financial consumer disputes (Chitra & Ramya Sreedevi 2011). Research has indicated that investors' personality traits influence investment decision-making and have a stronger effect on such decision-making than do demographic factors. Chen, Ho, and Liu (2019) indicate that investors' personality traits affect their short- and long-term investment performances. In addition, the literature implies that personality traits have significant effects on long-term investments (Thanki, Goyal, & Junare, 2020). Overall, the aforementioned discussion suggests that the investment behavior of pursuing excess returns in fund trading is interrelated with demographic variables, personality traits, information acquisition, and risk attitudes.

The financial service industry complies with legal regulations by conducting suitability assessments to review investors' risk profiles. Investment attribute assessment

questionnaires are provided to financial consumers to assist them in understanding their investment needs and to confirm whether their investment is in alignment with their risk tolerance. However, under market volatility, investors consider multiple aspects and adopt increased risks during the decision-making process, thereby leading to frequent consumer disputes. Competent authorities are becoming more stringent in overseeing financial service providers offering financial products and services. Brooks and Williams (2021) examine investors' risk tolerance for financial products and discover that personality traits have a stronger influence on investors' risk tolerance than do emotions. Investors' personalities significantly influence their investment trading behavior. Therefore, the present study investigates the importance of investors' personality traits and explores (1) whether investment trading behavior varies with the level of dependence on information sources, (2) whether this dependence level varies with demographic variables, and (3) whether this dependence level is related to personality traits. Consequently, the research objectives of the present study are as follows:

- (1) To examine the correlations between investors' personality traits and their preferred sources of information related to fund investments
- (2) To analyze demographic differences in investors' personality traits
- (3) To analyze demographic differences in investors' preferred sources of information regarding fund investments

2. Literature Review

2.1 Personality Traits

Early studies on personality psychology primarily focus on psychological and pathological aspects. Allport and Odbert (1936) perform term interpretation and factor analysis to classify personality traits. Goldberg (1981) proposes the Big Five personality traits to describe an individual's personality. In the 1990s, the Big Five Inventory (BFI) was established on the basis of the cognitive, emotional, and behavioral aspects of the Big Five personality traits by using various descriptions and classifications (John, Hampson, & Goldberg, 1991; John, Donahue, & Kentle, 1991; McAdams, 1992; Coast & McCrae, 1992; Goldberg, 1992; McCrae & Costa, 2005; John, Naumann, & Soto, 2008). Researchers have adopted different personality classification methods to explore correlations and have employed diverse factor analysis methods to create different personality scales.

In the present study, we explore the widely used BFI-44 scale established by John et al. (1991). The five major personality traits, namely extraversion, agreeableness, conscientiousness, neuroticism, and openness, are used to develop internally consistent statements related to personality traits. The concise content of the items of the aforementioned scale indicates the scale's effectiveness (Li, Xu, Chen, & Fan, 2015). We examine demographic differences in responses to the

items of BFI-44 (the considered demographic variables include nationality, language, age, and gender) and confirm the reliability of BFI-44 through regression analysis. Soto and John (2017) summarize the five major personality traits as follows: (1) extraversion: being outgoing, talkative, energetic, sociable, and confident and enjoying talking the lead; (2) agreeableness: being compassionate, respectful, tolerant, trusting, and considerate; (3) conscientiousness: being organized, planned, methodical, responsible, and persistent; (4) neuroticism: being negative, anxious, and emotional, having mood swings, and facing difficulty controlling emotions; (5) openness: being independent and open-minded and having diverse interests, creativity, an interest in arts, and a love for literature and music. Subsequent BFI-based research has focused on languages other than English. For example, Fossati, Borroni, Marchione, and Maffei (2011) evaluate the BFI in Italian to study adults and adolescents. Kučera, Haviger, and Havigerová (2022) investigate the relationships between language categories used in the BFI and personality traits and describe these relationships in Czech, thereby demonstrating the importance of language in textual content. Mudayat, Jaladin, and Khalid (2022) confirm the Malay translation of the BFI, which shows internal consistency, reliability, satisfactory reliability, and validity. This finding validates that the BFI can be suitably translated into different languages.

Lifestyle differences and limited assessment time have resulted in an increased demand for simplified psychological measurement tools, which has led to the development of shortened psychological questionnaires to reduce the assessment time. Soto and John (2017) improve the original BFI proposed by John et al. (1991) to create BFI-2. Subsequently, Soto and John (2017) develop a 30-item short form and 15-item extra-short form of BFI-2 (BFI-2-S and BFI-2-XS, respectively); they incorporate synonyms, definitions, and descriptive adjectives into these inventories while retaining concise adjectives to enhance consistency in the interpretation of adjective meanings (Goldberg & Kilkowski, 1985). Rammstedt, Danner, Soto, and John (2018) validate the German translation of BFI-2-S and BFI-2-XS. Their validation confirms the relevance of these scales to crucial life outcomes such as life satisfaction and intelligence. The prediction results obtained using the aforementioned two scales are accurate and practically useful. In addition, Yoshino, Shimotsukasa, Oshio, Hashimoto, Ueno, Mieda, Migiwa, Sato, Kawamoto, Soto, and John (2022) verify the Japanese version of BFI-2 as an effective tool for personality assessment. A later study translates BFI-44 into Chinese, validates its model fit by using sample data, and selects 15 items to establish a shortened Chinese version of this scale, namely BFI-15 (Li & Chung, 2020). Tucaković and Nedeljković (2023) analyze the items in BFI-44 to develop a shorter scale, namely BFI-20. BIF-20 exhibits high reliability and validity, which confirms that it can be used to measure psychological qualities effectively.

Literature regarding the development of the BFI and its connection to investment behavior reveals that investors' personality traits influence their investment behavior and

decisions. Chang, Chen, and Fang (2016) discover that those who exhibit personality traits such as extraversion, optimism, and friendliness tend to be confident fund investors. The research considers investor personality to be a key explanatory factor of investment behavior. Oehler, Wendt, Wedlich, and Horn (2018) study the effects of investors' personality traits, particularly extraversion and neuroticism, on their investment decision-making. The results of the aforementioned study indicate that individuals with higher levels of extraversion tend to pay higher prices for financial assets, whereas those with higher neuroticism hold fewer risky assets in their investment portfolios. With respect to investment experience, Chen, Ho, and Liu (2019) state that investors with personality traits such as conscientiousness, agreeableness, extraversion, and openness tend to display better long-term investment performance than do those without these traits. In terms of the associations between personality traits and investment decision-making, Dickason, Ferreira, and Mankuroane (2019) suggest that investors with high extraversion tend to exhibit optimism during decision-making. By contrast, investors with high neuroticism are less likely to have positive life satisfaction and are prone to making pessimistic investment decisions. Thanki, Goyal, and Junare (2020) discover that personality traits such as agreeableness, conscientiousness, and openness significantly influence long-term investment intentions. Moreover, openness can affect the long-term investment intentions of male investors. Baker, Kuma, and Goyal (2021) identify that neuroticism, extraversion, and conscientiousness have significant correlations with behavioral biases in investment decision-making; however, openness and agreeableness do not exhibit correlations with these biases. Research also demonstrates that investors' personality traits are often related to their investment behavior and decision-making. Accordingly, financial institutions can conduct studies to understand investors' personalities and psychology to assist wealth managers in adjusting their products and services and in providing products that suit customer needs and enhance customer satisfaction.

2.2 Information Sources

Consumers obtain information for purchase decisions from various channels (Claxton, Fry, & Portis, 1974). Research has explored the importance of information sources in relation to investment characteristics. Pompian (2012) emphasizes the importance of selecting a correct information source to avoid being influenced by individual investment behavior. Selecting the correct source of investment information is crucial. Investors' choice of information source affects their investment decision-making (Paul & Garodia, 2012). Awais, Laber, Rasheed, and Khursheed (2016) categorize sources of investment information into magazines, media, the Internet, friends, family, professional financial service providers, and others to identify the information revealed by different economic indicators. Their findings indicate that investment experience influences risk tolerance and investment decision-making.

In the investment market, the most common external information sources are professional financial advisors, who analyze and recommend suitable investment targets, and the investment experience and opinions of friends, family, and colleagues, which is referred to as word-of-mouth (WOM) communication. Bone (1995) defines WOM communication as informal communication between all individuals except for sales personnel. Research indicates that WOM communication influences short- and long-term judgments of products. Allsop, Bassett, and Hoskins (2007) assess the perspectives and methods for analyzing WOM communication, regarding it as an influential channel for informally conveying ideas and information in the market. Gennaioli, Shleife, and Vishny (2015) view financial advice as a service that relies on trust in financial professionals and suggest that it can reduce investors' perceptions of specific investment risks. Tauni, Fang, and Iqbal (2016) investigate how investors' personalities influence the information that they seek for asset allocation decisions. Tauni, Fang, and Iqbal (2017) reveal that investors' information sources, such as financial advisors and WOM communication, are correlated with their personality traits. Tauni, Rao, Fang, Mirza, Memon, and Jebran (2017) discover that the adoption of professional financial advice as a source of information increases the trading frequency of investors who exhibit neuroticism and openness but reduces that of investors who exhibit conscientiousness and extraversion. In addition, information obtained through WOM communication increases the trading frequency of investors who exhibit extraversion and agreeableness but reduces that of investors who exhibit openness and neuroticism.

Akhtar and Hunjra (2011) find that an open personality and information sources influence investors' short-term investment decision-making. This finding implies that individuals with higher education levels have higher short-term investment intentions. Chaudhry and Alansari (2013) investigate the types of information sources that are crucial for supporting investment decision-making. Their results suggest that investment professionals depend on electronic and other data sources for investment information. According to Tauni, Xing, and Iqbal (2016), individuals who use professional media to obtain investment information and exhibit conscientiousness tend to trade more frequently. Diouf, Hebb, and Hadji (2016) indicate that the Internet is the most commonly used information source among investors.

Khan, Tan, and Chong (2017) explore how investors acquire and employ different information sources in investment decision-making. Their results indicate that investors are more dependent on information from professional financial advisors and WOM communication with friends and family than on investment fundamentals and technical indicators. The information sources preferred by investors are correlated with their risk tolerance and the type of financial assets that they hold. Vohra and Kaur (2017) state that recommendations from family and personal investment experience are essential information sources for female investors. Significant differences exist in the preferred sources of investment information between female

stock investors and nonstock investors, and the information that they receive affects their investment decisions. The preferred information sources significantly influence the trading frequency of investors. Compared with male investors, female investors have lower confidence and higher risk aversion; thus, female investors are more inclined to accept advice from professionals (Looney & Asli, 2007).

The financial services industry is driven by technological innovation, and the combination of artificial intelligence (AI) and financial technology has resulted in the development of innovative services such as RAs. RAs were first developed after the 2008 Global Financial Crisis, when investors lost trust in conventional banks. Seng (2020) mentions that RAs provide automated algorithm-based portfolio management services. They analyze investor-provided risk information and personal data and offer automated investment services, such as investment advice, portfolio management, and profit reinvestment services, to enable the creation of an asset portfolio that aligns with the investor's risk preferences. Chen (2021) indicates that RAs can collect and analyze various types of financial information and big data, and they can apply mathematical thinking and financial theories. Through algorithms, AI, and other automated tools, RAs provide online financial consultation and investment management services to the investors and assist them in selecting investment targets that suit their preferences.

2.3 Investment Risk Profile

Banks that sell financial products conduct investment risk profile assessments (i.e., Know Your Customer assessments) according to relevant regulations for fully understanding customer information and evaluating customers' risk tolerance before providing suitable investment products or advice, thereby avoiding improper promotion and sales practices. Typically, banks categorize investors' investment risk profiles into three levels, namely conservative, moderate, and aggressive, on the basis of risk tolerance evaluations (Chia & Lin, 2018). Pan and Statman (2012) discuss the limitations of typical risk tolerance assessment questionnaires and recommend incorporating behavioral-finance-related items into such questionnaires to avoid biases and explore the correlations.

3. Methodology

3.1 Research Questions

On the basis of the objectives of this study, the following research questions are explored:

- (1) Do correlations exist between investors' personality traits and their preferred sources of information regarding fund investments?
- (2) Do demographic differences exist in investors' personality traits?

(3) Do demographic differences exist in investors' preferred sources of information regarding fund investments?

3.2 Variable Definitions and Measurement

According to the research objectives, the demographic variables considered in this study are gender, age, marital status, education level, annual disposable investment amount, investment experience, and investment risk profile. Individuals with experience in fund investments are recruited as participants to enhance the validity of the adopted questionnaire. We explore the factors influencing the personality traits and preferred information sources of fund investors by conducting an online survey. The operational definitions for the examined personality traits and information sources are explained in the following text.

Studies on the BFI vary in terms of language, personality classification, citation ratios, and other factors. To enhance respondents' willingness to participate in the present study, we adopt the concise and efficient version of the BFI developed by John, Donahue, and Kentle (1991). This version, namely BFI-44, comprises 44 items, which can be answered within a total of 5 min and assess the following personality traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness. To ensure language consistency and enhance comprehensibility and reliability, we refer to the research of Li and Chung (2020), who translate BFI-44 into Chinese, to develop operational definitions and questionnaire items regarding the examined personality traits. The items of BFI-15 are evaluated using a 5-point Likert scale ranging from 1 to 5. The responses corresponding to scores of 1–5 are “not at all accurate,” “slightly accurate,” “moderately accurate,” “very accurate,” and “extremely accurate,” respectively. A higher average score indicates a stronger inclination toward a specific personality trait.

The operational definition for information sources is developed on the basis of relevant previous studies (e.g., Allsop, Bassett, & Hoskins, 2007; Khursheed, 2016; Tauni, Rao, Fang, Mirza, Memon, & Jebran, 2017) and the objectives of the present study; questionnaires items for information sources are then formulated on the basis of the developed definition. The items for information sources are answered using a 5-point rating scale ranging from 1 to 5, with scores of 1–5 corresponding to “strongly disagree,” “disagree,” “slightly disagree,” “agree,” and “strongly agree,” respectively. A higher average score indicates a stronger inclination to rely on a particular information source during investment decision-making.

3.3 Research Instruments

Approval is obtained from Li and Chung (2020) before utilizing the Chinese version of BFI-15, which is designed for Taiwanese investors. This scale comprises 15 items that are concise and easily understandable, with three items each being

used to evaluate extraversion, agreeableness, conscientiousness, neuroticism, and openness.

The information source questionnaire is developed on the basis of previous relevant research (i.e., Allsop, Bassett, & Hoskins, 2007; Khursheed, 2016; Tauni, Rao, Fang, Mirza, Memon, & Jebran, 2017) and the objectives of the present study. This questionnaire consists of seven items related to different information sources, namely financial advisors; WOM communication from friends and family; TV commercials; online communities; books, newspapers, and magazines; personal investment experience; and RAs. A higher average score on the aforementioned questionnaire indicates a greater reliance on a specific information source in investment decision-making. We also select seven demographic variables—namely gender, age, marital status, education level, annual disposable investment amount, fund investment experience, and fund investment risk profile—to analyze the correlations between investors' demographic variables, personality traits, and preferred information sources.

3.4 Research Procedure

This study targets wealth management clients. We contact internal personnel of fund and investment advisory companies by phone, obtain their consent, and then distribute the Google Forms link of the adopted questionnaire to the fund investment clients of different banks through social media groups managed by financial advisors. Excessive questionnaire items often result in a low response rate and a high rate of invalid questionnaires. Therefore, the number of items in the adopted questionnaire is kept below 30. In addition, to increase the effective response rate, the questionnaire is designed to provide respondents a reminder for unanswered items, and the questionnaire cannot be completed without answering all items. The survey is kept open for 7 weeks, during which 218 valid responses are retrieved. After the survey is closed, the SPSS statistical software is used to perform data analysis.

4. Data Analysis

4.1 Descriptive Statistics

Frequency distribution and percentage statistics are used to describe the distribution of the samples and variables. As shown in Tables 1 and 2, female participants account for 70.6% of the total valid responses. In addition, 33% and 31.7% of the sample are 41–50 and 51–64 years old, respectively. Married individuals comprise 65.6% of the sample. Regarding education level, the majority of the respondents (57.8%) have a college or higher degree. A total of 56% of the participants have an annual disposable investment amount of below NT\$250,000. Furthermore, 35.8% and 59.7% of the sample have more than 15 and more than 10 years of fund investment experience, respectively. Over 70.6% of the sample have an aggressive fund investment risk profile. Among information sources, self-experience exhibits the highest score, followed by financial advisors,

whereas TV commercials exhibit the lowest score, followed by online communities. In terms of personality traits, conscientiousness exhibits the highest score.

Table 1 Demographic characteristics of the research sample

Demographic variable	Group	Number	Percentage (%)
Gender	1.Male	64	29.4
	2.Female	154	70.6
Age	1. 30 years and below	24	11.0
	2. 31–40 years	42	19.3
	3. 41–50 years	72	33.0
	4. 51–64 years	69	31.7
	5. 65 years and above	11	5.0
Marital status	1. Unmarried	72	33.0
	2. Married	143	65.6
	3. Others	3	1.4
Education level	1. Graduate school or above	85	39.0
	2. Junior college or university	126	57.8
	3. Senior or vocational high school	7	3.2
Annual disposable investment amount	1. Less than NT\$120,000	64	29.4
	2. 120,000~250,0000	58	26.6
	3. 250,000~300,000	32	14.7
	4. 300,000~500,000	25	11.5
	5. More than NT\$500,000	39	17.9
Fund investment experience	1. Less than 5 years	45	20.6
	2. 5 years or more but less than 10 years	43	19.7
	3. 10 years or more but less than 15 years	52	23.9
	4. 15 years or more	78	35.8
Fund investment risk profile	1. Conservative	11	5
	2. Moderate	50	22.9
	3. Aggressive	154	70.6
	4. Uncertain	3	1.4

N=218

Table 2 Descriptive statistics for the examined personality traits and information sources

	Minimum value	Maximum value	Mean	Standard deviation
Financial advisors	1	5	3.74	1.07
Word-of-mouth communication	1	5	3.28	1.12
TV commercials	1	5	2.72	1.18
Online communities	1	5	2.75	1.20
Books and newspapers	1	5	3.43	1.07
Self-experience	1	5	4.13	0.84
Robo-advisors	1	5	2.98	1.20
Extraversion	1	5	3.44	1.00
Agreeableness	1	5	3.56	0.96
Conscientiousness	1	5	4.18	0.68
Neuroticism	1	5	3.17	0.93
Openness	1	5	3.15	1.60

4.2 Correlation Analysis

Pearson's product-moment correlation coefficient is used to examine the relationships between personality traits and information sources, and the results are presented in Table 3. Higher extraversion is positively correlated with dependence on financial advisors and WOM communication, with the correlation coefficients being 0.171 and 0.206, respectively. Conscientiousness is also positively correlated with dependence on financial advisors and WOM communication, with the correlation coefficients being 0.290 and 0.134, respectively. In general, investors with more extraverted and conscientious traits tend to rely more on financial advisors and WOM communication than on TV commercials, online communities, books and newspapers, self-experience, and RAs during decision-making.

4.3 Analysis of Variance

Table 4 presents the results of an analysis of variance (ANOVA) for the examined demographic variables and personality traits. Significant differences in personality traits are detected between those with different genders, ages, and marital statuses. First, male participants exhibit significantly higher agreeableness than do female participants, whereas female participants display significantly higher neuroticism. Second, participants aged below 30 years show significantly higher openness than do those aged 65 years and above. Finally, married individuals display significantly higher extraversion and conscientiousness than do unmarried individuals. However, no significant differences in personality traits are discovered between education levels.

Table 5 presents the results of an ANOVA for demographic variables and information sources. Significant differences in information sources are found between those with different ages, fund investment experience, and investment risk profiles. First, participants aged 41–50 and 51–65 years exhibit higher dependence on financial advisors and TV commercials than do those aged below 30 years. Second, participants with less than 5 years of investment experience have significantly lower dependence on financial advisors than do those with 5–10 years of experience. In addition, participants with less than 5 years of investment experience have significantly lower dependence on TV commercials than do those with 10–15 and >15 years of experience. Finally, participants with an aggressive investment risk profile display significantly higher dependence on TV commercials and online communities than do those with a moderate investment risk profile. Participants

with an aggressive investment risk profile also show higher dependence on books and newspapers as well as personal investment experience than do those with a conservative risk profile. In addition, participants with a moderate profile exhibit significantly higher dependence on personal investment experience than do those with a conservative risk profile. However, no significant differences in information sources are noted between participants with different genders, marital statuses, education levels, and annual disposable investment amounts.

5. Results

The findings of this study with respect to the three research questions are described in the following text.

5.1 Correlations Between Investors' Personality Traits and Their Preferred Information Sources

In general, the results of this study indicate that extraversion and conscientiousness are significantly correlated with financial advisors and WOM communication. These findings are consistent with the arguments of Tauni, Fang, and Iqbal (2017), which suggests the existence of correlations between personality traits and dependence on financial advisors and WOM communication in transactional decision-making. However, in this study, agreeableness, neuroticism, and openness do not show significant correlations with dependence on financial advisors and WOM communication. These findings differ from certain arguments of related studies implying that investors' acquisition of decision-making information is influenced by their personality traits (Akhtar & Hunjra, 2011; Tauni, Fang, & Iqbal, 2016; Khan, Tan, & Chong, 2017; Tauni, Fang, & Iqbal, 2017; Tauni, Rao, Fang, Mirza, Memon, & Jebran, 2017). Khan, Tan, and Chong (2017) discover that investors rely more on financial advisors and WOM communication than on economic indicators and fundamentals. Tauni, Rao, Fang, Mirza, Memon, and Jebran (2017) state that investors who exhibit extraversion and conscientiousness are less dependent on professional financial advisors, and those who display extraversion and agreeableness are more reliant on WOM communication. Tauni, Xing, and Iqbal (2016) mention that conscientious individuals tend to trade more frequently when they use professional media to obtain investment information. This finding does not align with the finding of the present study that conscientious investors are more dependent on financial advisors and WOM communication than on other information sources.

Table 3 Correlations between personality traits and information sources

	Financial advisors	Word-of-mouth communication	TV commercials	Online communities	Books and newspapers	Self-experience	Robo-advisors
Extraversion	.171*	.206**	.108	.122	.063	.112	-.075
Agreeableness	.009	.069	.035	.095	.018	.057	-.005
Conscientiousness	.290**	.134*	.085	.073	.112	.096	.047
Neuroticism	.039	.018	-.040	-.026	.003	-.079	.043
Openness	.009	.095	.052	.072	-.034	-.020	.036

N=218

**Statistically significant at the 0.01 level (two-tailed).

*Statistically significant at the 0.05 level (two-tailed).

Table 4 Results of an ANOVA for the examined demographic variables and personality traits

Demographic variable	Personality trait	Groups with differences (mean)		Significance value)	(p
Gender	Agreeableness	Male (3.79)	Female (3.46)	.021*	
	Neuroticism	Male (2.94)	Female (3.26)	.020*	
Age	Openness	Below 30 years (3.58)	65 years and above (2.39)	.042*	
Marital status	Extraversion	Unmarried (3.18)	Married (3.58)	.020*	
	Conscientiousness	Unmarried (3.99)	Married (4.29)	.008**	

N=218

**Statistically significant at the 0.01 level (two-tailed).

*Statistically significant at the 0.05 level (two-tailed).

Table 5 Results of an ANOVA for the examined demographic variables and information sources

Demographic variable	Information source	Groups with differences (mean)			Significance (p value)	
Age	Financial advisors	Below 30 years	3.04	41–50 years	3.83	.039*
	TV commercials	Below 30 years	2.13	51–65 years	2.99	.010**
Fund investment experience	Financial advisors	Less than 5 years	3.29	5–10 years	4.05	.010**
	TV commercials	Less than 5 years	2.13	10–15 years	2.90	.013*
		Less than 5 years	2.13	More than 15 years	2.94	.003**
	Self-experience	Less than 5 years	3.84	More than 15 years	4.29	.037*
Investment risk profile	TV Commercials	Moderate	2.22	Aggressive	2.96	.001**
	Online communities	Moderate	2.14	Aggressive	2.99	.000**

Books and newspapers	Conservative	2.64	Aggressive	3.57	.043*
Personal investment experience	Conservative	3.09	Moderate	3.92	.020*
	Conservative	3.09	Aggressive	4.29	.000**

N=218

**Statistically significant at the 0.01 level (two-tailed).

*Statistically significant at the 0.05 level (two-tailed).

This finding does not align with the finding of the present study that conscientious investors are more dependent on financial advisors and WOM communication than on other information sources. Our finding indicates that investors are cautious about the accuracy of online information and are inclined to rely on communications and interactions to acquire investment information. Furthermore, we find that personality traits have no significant correlations with dependence on RAs, which contradicts the results of previous relevant research (Seng, 2020; Chen, 2021). This finding suggests that investors employ RAs as automated tools to select suitable investment targets when they lose trust in banks. We infer that when investors use RAs, they do not need to rely on other information sources for investment decision-making.

5.2 Demographic Differences in Personality Traits

The findings of this study indicate that significant differences in personality traits exist between investors with different genders, ages, and marital statuses. First, male investors exhibit significantly higher agreeableness than do female investors, whereas female investors display significantly higher neuroticism. Second, investors aged below 30 years show significantly higher openness than do those aged 65 years and above. Finally, married investors are significantly more extraverted and conscientious than are unmarried investors. However, no significant differences in personality traits exist between investors with different education levels. The aforementioned results are slightly inconsistent with those of related studies. Akhtar and Hunjra (2011) discover that a high education level and an open personality can affect investment decision-making. Chang, Chen, and Fang (2016) indicate that personality traits such as extraversion and agreeableness significantly influence personal investment experience. In addition, Oehler, Wendt, Wedlich, and Horn (2018) mention that investors with higher extraversion tend to invest more in financial assets. Chen, Ho, and Liu (2019) reveal that investors who exhibit conscientiousness, agreeableness, extraversion, and openness tend to have sufficient investment experience to make more accurate investment decisions. Similarly, Thanki, Goyal, and Junare (2020) state that openness affects the investment intention of male investors.

5.3 Demographic Differences in Preferred Information Sources

We find significant differences in information sources between investors with different ages, fund investment experience, and investment risk profiles, which is consistent with the arguments presented in the literature and suggests that information sources affect individuals' decision-making (Allsop, Bassett, & Hoskins, 2007; Pompian, 2012; Paul & Garodia, 2012; Tauni, Xing, & Iqbal, 2016; Tauni, Fang, & Iqbal, 2017). The findings of the present study reveal that investors aged 41 years and above rely on information sources such as financial advisors and TV commercials. In addition, investors with more than 5 years of investment experience are significantly less dependent on financial advisors, TV commercials, and self-experience than are those with less than 5 years of investment experience. This finding aligns with that of Awais, Laber, Rasheed, and Khursheed (2016), who find that investment experience influences risk tolerance and investment decision-making. Other studies have implied that investors with investment experience are capable of making accurate investment decisions on the basis of various information sources (Gennaioli, Shleife, & Vishny, 2015; Awais, Laber, Rasheed, & Khursheed, 2016; Chen, Ho, & Liu, 2019; Thanki, Goyal, & Junare, 2020). However, we find no significant differences in information sources between investors with different genders, marital statuses, education levels, and annual disposable investment amounts, which is inconsistent with the findings of previous relevant studies. Looney and Asli (2007) demonstrate that female investors are more willing to accept advice from professionals than are male investors. Vohra and Kaur (2017) suggest that female investors depend more on family advice and personal investment experience than on other information sources. With regard to investment risk profiles, the results of the present study indicate that investors with an aggressive risk profile are more dependent on TV commercials, online communities, books and newspapers, and personal investment experience than on other information sources, whereas investors with a moderate risk profile are more reliant on personal investment experience than on other information sources. In addition, Gennaioli, Shleife, and Vishny (2015) discover that dependence on financial advice may decrease investors' perception of certain investment risks. Khan, Tan, and Chong (2017) explore how investors acquire and use various types of information from different sources during investment decision-making. Their results indicate that investors tend to rely on financial advisors and WOM communication for investment decision-making

and consider their risk tolerance and the type of financial assets that they hold.

We detect no significant correlations between demographic variables and the use of RAs. A possible reason for this result is that RA-based decision-making relies on AI, and big data analysis eliminates the needs for individuals to collect information. The findings of the present study are inconsistent with those in the literature. Chaudhry and Alansari (2013) state that professionals depend on electronic and other data to obtain investment information. In addition, Diouf, Hebb, and Hadji (2016) suggest that the Internet is the most commonly used information source among investors. However, our results indicate that investors with different demographic characteristics mostly do not rely on online information when making investment-related decisions.

6. Conclusion and Recommendations

The results of this study reveal the existence of correlations between personality traits and preferred information sources in fund transactions. Investors who exhibit extraversion and conscientiousness prefer information sources such as financial advisors and WOM communication when making investment decisions. After experiencing financial crises and market volatility, investors have become less reliant on commercials, online information, and RAs. Instead, they place more emphasis on communication and interaction.

According to the results of the two ANOVAs conducted in this study, an investor's education level is not significantly correlated with their personality traits and information sources. Currently, most investors have a college degree or above and thus do not exhibit significant differences in their preferred information sources. In addition, the ANOVA results indicate that male investors tend to show more agreeableness than do

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female investors, whereas female investors display higher neuroticism. Investors aged below 30 years exhibit significantly higher openness than do those aged 65 years and above, which indicates that young investors tend to have independent and innovative thinking and diverse interests and that their investment decisions are not solely based on professional financial advice, WOM communication, and advertising media. Investors who are married, aged 41–65 years, have an investment experience of more than 10 years, and exhibit an aggressive risk profile rely on not only financial advisors and TV commercials but also personal investment experience, books and newspapers, and advertising networks to enhance their financial expertise and ensure the credibility of the information acquired by them.

With advances in financial technology, investors can acquire abundant and diverse investment information. Investors who exhibit extraversion and conscientiousness prioritize information sources such as financial advisors, WOM communication, advertising networks, and personal investment experience when making investment decisions. We recommend financial institutions to develop a comprehensive questionnaire including items related to behavioral finance for assessing investors' investment risk profiles. By understanding investors' personality traits and preferred information sources, cultivating professional financial advisors, promoting client referrals, and adopting suitable marketing strategies, financial institutions can improve the effectiveness of their advertising media and fund marketing activities, thereby enhancing the functionality of their investment risk profile assessment. This approach may lead to enhanced customer satisfaction, reduced financial consumer disputes, and ultimately increased operational revenues.

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