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FINANCIAL ECONOMICS | RESEARCH ARTICLE

A conceptual model of the influence of South African investor well-being on risk tolerance

R. W. Masenyanya¹ and Z. Dickason-Koekemoer^{1*}

Abstract: Financial institutions have the responsibility to measure an investor's risk tolerance to determine his or her risk profile. Once an investor's risk profile is determined, financial institutions are able to more accurately identify which financial products are suitable for the investor. Several factors can affect one's level of risk tolerance such as investor well-being. The aim of this study is to construct a structural equation model which depicts the influence of South African investor well-being risk tolerance. Secondary data analysis was used to conduct a quantitative research study. Structural equation modelling techniques were applied during the analysis of the data. The main findings suggest the following: (i) risk tolerance has a positive and statistically significant relationship with investor well-being; (ii) financial well-being has a positive and statistically significant relationship with satisfaction with life; and (iii) financial well-being, physical activity, gender, and income respectively have positive and statistically significant relationships with risk tolerance. Satisfaction with life was not found to have a statistically significant impact on risk tolerance.

Subjects: Economics; Finance; Business, Management and Accounting;

Keywords: risk tolerance; investor well-being; structural equation model; South Africa

JEL Classification: E2; G17; I31

ABOUT THE AUTHORS

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PUBLIC INTEREST STATEMENT

Financial institutions have the responsibility to measure an investor's risk tolerance to establish his or her risk profile. Once an investor's risk profile is determined, financial institutions are able to advise the investor in which financial investments to make. However, several factors have an effect on an investor's overall risk tolerance level. In general, financial institutions measure an investor's risk tolerance by analysing the investor's answers to questions pertaining to the investor's demographics and personality. This study has recognised that an investor's level of well-being (i.e. financial well-being, satisfaction with life, and physical activity) also have an influence on their risk tolerance. This finding may result in an investor being categorised into a different risk profile group and suggestions regarding which investments to invest in may be altered. Therefore, financial institutions may use this study to more accurately measure an investor's risk tolerance.

1. Introduction

Financial institutions develop, assess, and evaluate strategies that guide them in making effective decisions regarding an investor's risk profile (Nobre & Grable, 2015). Institution-specific questions are used to develop a questionnaire which measures an investor's risk tolerance level. Risk tolerance is defined as an investor's willingness to accept a maximum amount of uncertainty when making a financial decision (Grable, 2000). Once an investor's risk tolerance is determined, financial institutions are able to guide an investor into defining investment objectives that are suited to his or her risk profile (Vanguard, 2018). It is important to take into consideration the various factors that influence an investor's overall level of risk tolerance.

Over the decades, these factors have helped researchers to better understand how one's risk tolerance is formed. Factors such as demographics, personality, and behavioural finance have in previous literature been proven to influence risk tolerance (Dickason & Ferreira, 2018; Grable, 1997). The focus of this study is to assess the influence that investor well-being has on risk tolerance. In this context, investor well-being refers to an investor's financial well-being, life satisfaction, and physical activity.

The term "well-being" was selected based on the following reasoning: life satisfaction forms part of subjective well-being. Subjective well-being refers to an umbrella term used to describe the level of an individual's life evaluations based on four domains, namely (i) life satisfaction; (ii) work satisfaction; (iii) positive emotions and moods; as well as negative emotions and moods (Diener & Biswas-Diener, 2002; Diener & Ryan, 2009). On the other hand, physical activity links back to one's physical well-being. As such, the umbrella term "investor well-being" is used to refer to an investor's overall financial well-being, life satisfaction, and physical activity.

The first element of investor well-being, namely financial well-being, is perceived as a subjective concept that refers to positive feelings which emanate from an investor's analysis of his or her financial situation (Prawitz et al., 2006). Alternatively, financial well-being can also be described as a function of both physical and emotional factors of an individual's financial position as well as the individual's feeling of satisfaction with his or her financial status (Taft et al., 2013). Table 1 provides a summary of definitions of concepts related to financial well-being.

Life satisfaction is the second element of investor well-being and is defined as the global evaluation of an investor's quality of life given his or her selected criteria (Diener et al., 1985). Life satisfaction can also refer to an individual's satisfaction with his or her life regardless of whether he or she is living what is considered a good life (Veenhoven, 2014). The notion of life satisfaction is often interchangeable used with happiness and subjective well-being. To clarify, happiness is the meaningful and pleasant sensation of life for an extended period of time and is determined by the satisfaction of one's innate needs (De Coning, 2016). Alternatively, subjective well-being refers to one's cognitive and affective analysis of his or her life (Diener, 2012); however as previously mentioned, subjective well-being consists of the component of life satisfaction.

Lastly, physical activity as an element focuses on any action which includes bodily movement and results in physiological attributes such as higher energy expenditure, better physical health, and improved cognitive wellness (Gabriel et al., 2012; Skaal, 2015). There are five domains of physical activity focused on in this study, namely (Al-Hazzaa, 2006; Booth, 2000; Hallal et al., 2012; Malema, 2018):

- **occupational**—any human action wherein energy is expended in a work environment;
- **transport**—moving from place-to-place through individual-powered transport such as walking and cycling;
- **household**—physical activity that is restricted to various actions in and around the house;

Table 1. Concepts related to financial well-being

Concept	Definition	Source
Financial well-being	<i>Objective:</i> The effective management of an individual's economic life. Also referred to as economic well-being.	Rath et al. (2010)
	<i>Subjective:</i> An individual's happiness or general satisfaction with his/her financial situation. Also referred to as financial satisfaction.	Joo (2008)
	<i>Combination:</i> An individual's sense of his/her financial situation is formulated in terms of objective and perceived attributes. These attributes are criticised against standards of comparison to develop evaluated attributes of that financial situation.	Cox et al. (2009), Porter (1990)
Financial wellness	A multidimensional concept that involves financial satisfaction, as well as the objective status of financial situation, financial attitudes and financial behaviour. Also known as a measure of financial health.	Joo (2008), Norvilitis and MacLean (2010), Spann (2014)
Financial satisfaction	A sub-aspect of life satisfaction and focusses on an individual's contentment with, or freedom from worry regarding his/her financial situation. Corresponds with the subjective side of financial well-being.	Joo and Grable (2004), Xiao et al. (2009)
Financial distress	A situation of physical or mental strain which includes stress relating to financial matters. Financial distress is a consequence of a lack of financial well-being. Also referred to as financial worry or economic distress.	Jansen van Vuren (2015), Prawitz et al. (2006)
Debt stress	An individual's worry about his/her amount of debt. Specifically, the individual's viewpoint of stress created by personal debt and worry about his/her ability to settle debt.	Drentea (2000)

- **gardening**—any human action wherein energy is expended in the garden or yard; and
- **leisure-time**—any physical activity participated in away or free from family and work obligations such as sport.

It is significant to briefly summarise the existing literature on risk tolerance and investor well-being. Financial well-being was found to have an influence on risk tolerance in both a direct and indirect manner (Grable & Joo, 2004). Diener (2012) found that individuals with higher life satisfaction levels tend to have job security, good financial management, and increased financial stability. These individuals tend to be more willing to take on higher levels of financial risk when investing (Bechtold, 2004; Diener, 2012). Alternatively, Meyer and Dunga (2014) as well as (Dickason & Ferreira, 2019) found that low-income individuals tend to take on lower levels of financial risk, which indirectly and in most cases, results in low life satisfaction.

It is implied that an investor is more likely to experience high life satisfaction when he or she experiences financial well-being resulting from well-performing investments (Dickason & Ferreira, 2019; Diener, 2000). Since the investment process can be a highly stressful and it is recommended for an investor to engage in regular physical activity to better manage stress and maintain a healthy cognitive function (Dhurup, 2012; Thangavhuelelo, 2013). An improved cognitive function may help an investor to better evaluate their investments and make financial decisions suitable to their risk profile (Salmon, 2001; Skaal, 2015). The previous statement is rather controversial and challenging to prove through research. Nonetheless, physical activity was established to have an influence on life satisfaction. Baştuğ and Duman (2010) found that individuals who participate in physical activity tend to have a greater level of life satisfaction compared to those who were physically inactive.

There is a dearth of literature that have specifically investigated the influence of investor well-being on risk tolerance. The study aims to make a practical contribution by presenting a structural equation model that depicts the specific influences investor well-being has on risk tolerance. This study is conducted from a South African context.

2. Literature review

When it comes to financial planning, the significance of risk profiling is undeniable. It is through accurate risk profiling that an investor's financial decisions are more likely to fit their financial needs (Carr, 2014). As such, the probability of the investor experiencing a successful result is increased considerably (Nobre & Grable, 2015). In common, risk tolerance is viewed as a vital risk aspect in shaping an investor's financial planning and investment recommendations (Grable, 2018). Therefore, it is important to understand the ideology of risk tolerance before risk profiling and providing financial advice to investors.

There is a vast majority of existing literature available on the topic of risk tolerance which has been discussed in several disciplines including social and economic sciences. The four main concerns covered in literature pertaining to risk tolerance include: (i) explaining an investor's decision making and behaviour towards financial risk (Brighetti et al., 2010; Grable et al., 2009); (ii) measuring risk tolerance (Yook & Everett, 2003); (iii) explaining and predicting investor behaviour when making investment decisions (Dickason & Ferreira, 2018); and (iv) establishing which factors explain an investor's risk tolerance level (Mabalane, 2015). This study falls with the abovementioned second and fourth main streams of research in risk tolerance.

On the other hand, the literature surrounding financial well-being suggests that one of the most common determinants of financial well-being is the level of debt, specifically credit card debt (Davtyan, 2010). Researchers have confirmed that higher levels of credit card debt are associated with greater financial and psychological stress (Grable & Joo, 2006; Lea et al., 1995), which in turn, is likely to affect individuals' self-assessment of financial health in a negative way (Mae, 2009). Likewise, Campara et al. (2017) found that low-income individuals who are concerned about and felt uncomfortable with their amount of debt experienced lower levels of financial well-being.

Financial well-being studies applied in South Africa are inclined to focus on employee cost. The results from a study conducted by Vosloo (2014) indicate that employees with higher financial well-being contribute to improving the performance of the entity. Moreover, the outcomes specify that the link between remuneration satisfaction and financial well-being was strong among employees with higher financial efficacy. Equally, Jansen van Vuren (2015) found that personal financial well-being has a direct impact on both productivity and absenteeism in the workplace. Ultimately, previous research on financial well-being indicates that the interplay between circumstances and responses informs an individual's perception of financial well-being (Hayhoe & Wilhelm, 1998; Malone et al., 2010; Shim et al., 2009b).

In terms of satisfaction with life, prior studies have found that many factors affect an individual's level of satisfaction with life (Baştuğ & Duman, 2010; Bateman, 2014; Dickason & Ferreira, 2019). Such factors include one's financial well-being, health status, psychological well-being, as well as the consequences of an individual's level of risk tolerance in certain life domains. In South Africa, Swart (2011) found that life satisfaction had a strong, direct and positive effect on job satisfaction. The results from a study implemented by Mafini (2015) suggests that the most imperative socio-economic factor in forecasting life satisfaction is employment status. Moreover, the study provided a comparison of inclinations in life satisfaction amongst township inhabitants who are an essential cohort of society in South Africa.

The last element of investor well-being is physical activity. In a South African study, Van Oort (2014) found that physical activity not only results in physical benefits but also improves psychological health and provides benefits regarding one's well-being. These health benefits are attained only through consistent involvement in physical activity (Warms, 2006). It is advised that individuals participate in 30 minutes of moderate-intensity physical activity on most days of the week. As such, individuals will achieve health benefits such as increased mental and physical health (Berlin et al., 2006). The lack or absence of physical activity can have damaging effects on an individuals' general health and well-being (Brosse et al., 2002; Dunn et al., 2001).

There is confirmation that being physically active is robustly related to mental health and that poor mental health is partially accredited to being physically inactive (Fox, 1999; Thangavhuelelo, 2013). Biddle and Asare (2011) found that physical activity diminishes depression as well as anxiety, progresses self-esteem and increases cognitive functioning. It is vital to also review the literature that specifies that there might be a relationship between each of investor's well-being elements and risk tolerance. There may be a correlation amongst the elements of investor well-being, which, in turn, may have an effect on risk tolerance.

2.1. Financial well-being and risk tolerance

Financial well-being is linked, both directly and indirectly, to risk tolerance (Grable & Joo, 2004). Different levels of risk tolerance may result in varying financial decisions and outcomes. Consequently, the differences may lead to dissimilar levels of financial well-being experienced (Gutter & Copur, 2011).

Brown et al. (2005) found that financial well-being is important to both personal health and overall well-being. Likewise, Shim et al. (2009a) discovered that participants who demonstrated risky financial behaviours (i.e. delinquency in paying bills, borrowing against credit cards, taking out payday loans, etc.) tended to have negative perceptions concerning financial well-being and physical health. Vera-Toscano et al. (2006) established a positive relationship between health and satisfaction with one's financial situation.

2.2. Satisfaction with life and risk tolerance

Individuals with higher life satisfaction levels tend to be those with job security, high monthly income, increased financial stability and good financial management (Bechtold, 2004; Diener, 2012). These individuals are inclined to be more willing to tolerate higher levels of risk during the process of financial decision making. On the other hand, poor individuals lack enough resources to permit them to have an income that could influence their lives in a significant manner (Meyer & Dunga, 2014). As such, poor individuals are likely to take on lower amounts of financial risk and experience low levels of life satisfaction (Dickason & Ferreira, 2019; Meyer & Dunga, 2014).

An investor's investment goals are determined not only by his/her risk tolerance but also through the incorporation of other factors such as financial well-being, current lifestyle and his/her desired level of life satisfaction (Marx et al., 2013). Diener (2000) mentions that an investor's life satisfaction tends to increase when he/she experiences positive emotions regarding good investment decisions.

In a South African study, Dickason and Ferreira (2019) found that the more investors are unsatisfied with their lives, the less they will be motivated to take on high-risk investments. In other words, low satisfaction with life is associated with low-risk tolerance levels. Moreover, Dickason and Ferreira (2019) mention that an investor's investment decisions may potentially be influenced if there are deviations between the investor's current level of life satisfaction and his/her desired level of life satisfaction.

2.3. Physical activity and risk tolerance

Chaddock et al. (2012) conducted a research review on the influence of physical activity and fitness on cognition and brain health. The results indicated that an active lifestyle and greater levels of aerobic fitness are positively linked with greater cognitive abilities, brain structure and brain function (Salmon, 2001; Skaal, 2015). Better brain function can help investors to think more rationally throughout the process of deciding what products to invest in and how to deal with their losses when the markets are volatile and negatively affecting their investments.

The process of investment can be highly stressful and overwhelming for many individuals. Aldana et al. (1996) and Thangavhuelelo (2013) found that regular engagement in physical activity can be an effective approach in helping individuals cope with high-stress levels and anxiety.

Similarly, Dhurup (2012) found a positive correlation between physical activity and stress management. As such, frequent physical activity can help investors manage the stress and anxiety that is associated with the process of investment.

Ultimately, Baird et al. (2010) suggest that a change in an investor's level of physical well-being, financial well-being and subjective well-being may affect the investor's life satisfaction judgements over time. Diener et al. (1985) point out that there is a strong correlation between one's physical well-being, health and life satisfaction. Baştuğ and Duman (2010) conducted a study wherein they assessed individuals' level of life satisfaction based on the individuals' level of physical activity. It was found that there is a significant variance between the life satisfaction levels of individuals who participated in physical activity and individuals who were physically inactive (Baştuğ & Duman, 2010). Individuals who engage in physical activity tend to have a greater level of life satisfaction, whereas individuals' who were physically inactive usually experienced low levels of life satisfaction.

3. Methodology

The sections within the methodology provide insight into the research methods that were applied in the execution of this study.

3.1. Research approach

This study applied a secondary data analysis (SDA) in its methodology. An SDA refers to the procedure of reanalysing previously collected and analysed data in which a researcher had no direct control or involvement in (Walliman, 2006). SDAs are beneficial since they provide opportunities for (i) existing data to be investigated from a different perspective; (ii) partially investigated elements to be fully examined; (iii) new empirical objectives to be explored; and (iv) can be utilised as a source when comparing to newly collected data (Ritchie et al., 2013).

Prior to the SDA being conducted, the quality of the primary data was determined to ensure that the original source of the data can be trusted. Table 2 provides some of the advantaged and disadvantages related to SDAs that the researchers took into consideration before implementing the research approach.

Table 2. Advantages and disadvantages of SDA

Advantages	Disadvantages
Avoids the process of data collection which results in the researcher saving costs, time and inputs (Neuman, 2003).	The researcher must spend time examining the dataset in order to understand the data (Heaton, 2003). The dataset may be in an unaccustomed format that the researcher needs to adapt to.
Multidisciplinary as the same dataset can be analysed by different disciplines and observed from different perspectives to gain a better understanding of social issues (Strydom & Delpont, 2011).	There may be prejudices in the existing documents based on the dataset (Strydom & Delpont, 2011). The researcher should ensure to understand the dataset and eliminate any prejudices.
The data are verified and the findings of the SDA can be complementary to, or contrasted with other research to confirm or reject previous findings and identify trends (Ritchie & Lewis, 2003; Royse, 2004).	The fact that a different researcher is working with the dataset may mean that the confidentiality and anonymity aspect thereof could possibly be compromised (Strydom & Delpont, 2011).
An SDA allows a researcher to study past events and issues in retrospect (Strydom & Delpont, 2011).	The sampling procedure or sample size of the dataset may result in certain subgroups not to be included for analysis (Heaton, 2003). As such, it is possible that the sample size is not a depiction of the national population.
An SDA is an independent procedure that can be conducted on an exploratory, descriptive and an exploratory level (Alston & Bowles, 2003).	There is a limitation to using the available data as the researcher can only work with what data are available on the dataset (Alston & Bowles, 2003).

The SDA was applied through the following six steps:

3.1.1. Step 1: formulate the problem

It is important for investment companies to consider various elements that may affect their investors' risk tolerances. An investor's risk tolerance influences the manner in which their risk profile is shaped. Regardless, in existing literature, there is no model available that displays how levels of investor well-being influences risk tolerance.

3.1.2. Step 2: formulate the research questions

- *Research question based on primary objective:* Does investor well-being have an effect on their level of risk tolerance?
- *Research questions based on theoretical objectives:* What are the theories and concepts that respectively pertain to risk tolerance? What are the theories and concepts that relate to the respective elements of investor well-being?
- *Research questions based on empirical objectives:* What is the relationship between investor well-being on risk tolerance? Can a structural equation model be constructed to depict the influence of investor well-being on risk tolerance?

3.1.3. Step 3: conduct a pilot study

Firstly, the researchers acquainted themselves with previous literature surrounding risk tolerance. Subsequently, the researchers analysed the existing theory on investor well-being. A gap in the literature was identified: no previous study had assessed the influence that investor well-being has on risk tolerance. There are potential links between the respective elements of investor well-being and risk tolerance that can be investigated. Thereafter, the researchers considered different existing datasets and the most appropriate one was used to address the study's research problem and research questions.

3.1.4. Step 4: reprocess the data

The researchers analysed the data with the help of a statistician. The existing dataset was deemed valid and reliable. The data were critically investigated and reduced to fit the purpose of the secondary analysis for this study. As such, not all of the existing data from the original questionnaire was applicable to this study. Only the information regarding the investors' demographics, investor well-being and risk tolerance were included.

3.1.5. Step 5: analyse and interpret the data

The researchers, risk specialist and statistician determined that the reprocessed dataset objectively responded to the formulated research questions. The results are analysed and interpreted accordingly through a statistical analysis.

3.1.6. Step 6: write a report

This article serves as the report. The article substantiates the transferability and verifiability of the study and contribute to the field of research.

3.2. Sampling

The target population of the study entails investors who hold investment products at a reputable South African investment company. Some of the investments held by investors at the investment company include unit trusts, tax-free savings, online trades, and offshore investments.

For this study non-probability purposeful sampling (snowball sampling) was used to filter those individuals who meet the inclusion criteria of the sample; thus an individual who hold investments at a reputable South African company. The reputable South African investment company distributed an online questionnaire to 4 800 of its investors. Ultimately, the sample size consisted of 1 065 investors and was deemed sufficient for the secondary data analysis of the study. Table 3 provides a summary demographic profile of the respondents who participated in the study.

Table 3. Summary of the demographic profile of respondents

Demographic factor	Description	Frequency (f)	Percentage (%)
Age	50+ years	479	45
Gender	Female	596	56
Race	White	715	67.1
Marital status	Married	577	54.2
Income	R100 001—R200 000	190	17.8
Education	Undergraduate degree	373	35
Place of origin	Gauteng	439	41.2

3.3. Data collection

During the first week of May 2018, the reputable investment company distributed the questionnaire (Appendix 1) to 4 800 of its investors. The responses were collected during the last week of May 2018. Ultimately, the final sample size of the primary data consisted of 1 065 South African investors, which translates to a 22 per cent response rate.

3.4. Measurement

The questionnaire for the primary study consisted of six different sections (Sections A—F). Only Sections A, B, D, and F were utilised for the SDA of this paper. Section A focussed on gathering respondents' background information through demographical questions. Section B aimed at measuring financial well-being by means of the InCharge Financial Distress/Financial Well-being (IFDFW) scale (Prawitz et al., 2006). The IFDFW is an eight-item, self-report instrument which measures a latent construct that is presented as a continuum extending from negative to positive feelings about and reactions to the respondent's financial situation (De Oliveira et al., 2017). The IFDFW scale produced a Cronbach alpha of 0.952.

Additionally, risk tolerance was measured from two perspectives, through namely the Survey of Consumer Finance (SCF) question and Grable and Lytton's 13-item risk tolerance scale (GLRTS). The SCF is a single-item risk tolerance question which measures risk tolerance from a singular perspective (Chen & Finke, 1996). Alternatively, the GLRTS is a 13-item scale which measures risk tolerance from a multidimensional perspective (Grable & Lytton, 1999). The GLRTS (13-items) had a Cronbach alpha of 0.605. The first item was removed from the GLRTS (12-items) which allowed for a slightly better Cronbach of 0.677. The 12-item GLRTS was used as it suited the South African context slightly better.

Section D measured respondents' life satisfaction through the Satisfaction with Life Scale (SWLS). The SWLS consists of five items pertaining to life satisfaction that is presented in a seven-point Likert scale question format (Krueger & Schkade, 2008). However, in the questionnaire, the midpoint choice was removed in order to force respondents to decide whether or they agree or do not agree with each of the SWLS items. The SWLS computed a Cronbach alpha of 0.893.

Lastly, Section F measured respondents' physical activity levels through the long-form International Physical Activity Questionnaire (IPAQ). The long-form IPAQ consists of 31 items and covers five domains of physical activity (Hagströmer et al., 2006), namely: (i) job-related; (ii) transportation; (iii) housework/gardening and caring for family; (iv) recreation, sport and leisure-time physical activity; as well as (v) time spent sitting. The IPAQ produced a Cronbach alpha of 0.765.

3.5. Statistical analysis

The statistical analyses applied to involve descriptive statistics, correlation, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modelling (SEM). The empirical objectives and corresponding statistics are as follows:

- descriptive statistics on investor well-being and risk tolerance;
- correlation between investor well-being and risk tolerance; and
- EFA, CFA, and SEM to model the influence of investor well-being on risk tolerance.

4. Empirical results and discussion

4.1. Descriptive statistics

Table 4 provides descriptive statistics of risk tolerance and investor well-being.

The GLRTS' mean of 2.055 suggests the majority of respondents have an average risk tolerance level. In other words, investors take on average financial risks in return for average returns. The low standard deviation of 0.398 implies a high level of agreement among the respondents regarding their risk tolerance level. The IFDFW scale mean of 4.842 indicates that investors are financially distressed. In terms of life satisfaction, investors experience moderate to high levels of life satisfaction ($M = 3.638$). Additionally, investors participate in physical activity at least two to three days a week ($M = 2.757$).

The skewness values of the scales all lie between -2 and $+2$; which suggests that the data was normally distributed for risk tolerance and investor well-being. Moreover, the kurtosis values for the scales are all negative and less than zero, which implies the data had a platykurtic distribution within each scale.

4.2. EFA and CFA of investor well-being and risk tolerance

Factor analyses were implemented to ensure the data was suitable to produce factor loadings that are appropriate to be used in the SEM. Factor analyses were conducted on the GLRTS, IFDFW scale, SWLS, and IPAQ. The suitability of the dataset for factor analyses was assessed through the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity. The Bartlett's test for sphericity is considered significant at $p < 0.05$ (Pallant, 2013). The factor extraction method applied was a PCA with Oblimin with Kaiser normalisation. Factor loadings greater than 0.30 were used as a threshold for the extraction of factors. The KMO and Bartlett's test of sphericity results is presented in Table 5.

The KMO values for the respective scales are all acceptable with their complimentary statistically significant Bartlett's test of sphericity values of $p < 0.000$. The results imply the study's data are

Table 4. Descriptive statistics

Variable	Mean	Std deviation	Skewness	Kurtosis
GLRTS	2.055	0.398	0.278	-0.634
IFDFW	4.842	2.317	0.190	-0.840
SWLS	3.638	1.351	-0.150	-1.098
IPAQ	2.757	1.037	0.400	-0.387

Source: Author compilation.

Table 5. KMO and Bartlett's test of sphericity

KMO and Bartlett's Test		GLRTS	IFDFW	SWLS	IPAQ
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.820	0.946	0.875	0.752
Bartlett's Test of Sphericity	Approx. Chi-Square	1287.976	8613.709	3133.415	2230.204
	df	66	28	10	45
	Sig.	0.000	0.000	0.000	0.000

Source: Author compilation.

suitable for factor analysis to be conducted. It was determined that IFDFW scale, SLWS, and IPAQ have sufficient variances to conduct EFAs. The GLRTS had a variance of 23.830 per cent which is deemed too low; therefore, a CFA was applied. Table 4 provides the pattern matrices for GLRTS and IPAQ as well as the component matrices for IFDFW scale and SLWS.

The GLRTS produced a Cronbach alpha of 0.639 for the *risk tolerance* component which is a suggestion of average reliability. Most of the factors have a factor loading of ≥ 0.08 . The standard regression weights indicated a positive relationship between risk tolerance and the modified GLRTS items. The goodness-of-fit measures for the GLRTS and risk tolerance encompassed: (i) chi-square test statistics divided by the degrees of freedom (CMIN/DF) value of 3.225, which is smaller than 5 and indicates a good fit (Mueller, 1996); (ii) CFI value of 0.902 which suggests an acceptable overall model fit; and (iii) RMSEA value of 0.046 which is smaller than 0.1 and indicates an acceptable fit.

The extracted factor in the financial well-being scale explains 76.333 per cent of the IFDFW scale. The factors for the IFDFW scale were all clustered into one component and produced an excellent Cronbach alpha of 0.952. As such, the IFDFW scale is deemed highly reliable to measure an investor's perception of their *financial well-being*. In terms of satisfaction with life, the extracted factor explains 70.553 per cent of the SWLS' total variance. A high Cronbach alpha of 0.893 was produced which confirms that the SLWS is a reliable tool for measuring how an investor views his or her overall *satisfaction with life*.

Lastly, IPAQ's items clustered into two components according to the Kaiser criteria. The criteria determined that items with Eigenvalues greater than one should be extracted. There are seven items clustered into the *general physical activity* component and three items clustered into the *recreational physical activity* component. Specifically, items clustered into the *general physical activity* component focus on measuring physical activity engaged in (i) at work, (ii) through transportation, and (iii) housework, house maintenance, and caring for the family. Items clustered in the *recreation physical activity* component solely measure recreation, sport, and leisure-time physical activity. The two extracted factors have a cumulative variance of 49.4 per cent. A Cronbach alpha of 0.774 was produced for *general physical activity* component; whereas, a Cronbach alpha of 0.627 was calculated for the *recreational physical activity* component. As such, both components have relatively acceptable reliability to measure physical activity.

4.3. Correlation between investor well-being and risk tolerance

A correlation analysis was utilised to examine the relationships between risk tolerance and each individual element of investor well-being, namely financial well-being, satisfaction with life, and physical activity. Table 6 provides the correlation between investor well-being and risk tolerance.

Investors' financial well-being, satisfaction with life, and physical activity respectively have positive and statistically significant ($p < 0.01$) relationships with risk tolerance. This result suggests that an increase in any element of investor well-being will result in an increase in risk tolerance level. Additionally, a positive and statistically significant ($p < 0.01$) relationship was found between financial well-being and satisfaction with life. The relationship between financial well-being and satisfaction with life yielded large linear associations ($r > 0.5$). An increase in an investor's financial well-being will result in an increase of satisfaction with life. No statistically significant relationship was found between financial well-being and physical activity; nor was a statistically significant relationship found between satisfaction with life and physical activity.

4.4. SEM of investor well-being and risk tolerance

The study's main empirical objective was to construct a conceptual model which depicts the influence of the elements of investor well-being on risk tolerance. Figure 1 illustrates the SEM (adapted from original) wherein the influence of investor well-being on risk tolerance is depicted.

Table 6. Correlation between investor well-being and risk tolerance

Scale(s)	Spearman Correlation	GLRTS	FWB	SWLS	IPAQ
GLRTS	Correlation Coefficient	1.000			
	Sig. (2-tailed)	-			
IFDFW	Correlation Coefficient	.197**	1.000		
	Sig. (2-tailed)	0.000	-		
SWLS	Correlation Coefficient	.104**	.610**	1.000	
	Sig. (2-tailed)	0.001	0.000	-	
IPAQ	Correlation Coefficient	.097**	0.031	0.008	1.000
	Sig. (2-tailed)	0.001	0.311	0.783	-

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

N = 1 065.

Source: Author compilation.

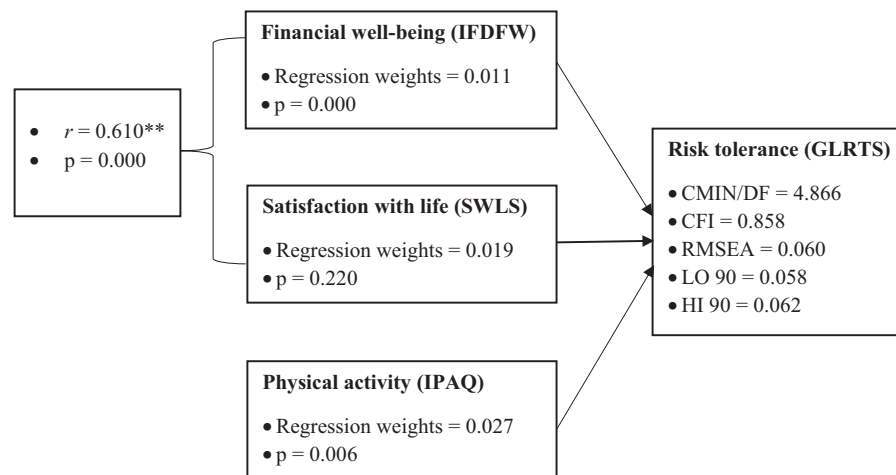
As seen from the regression weights in Figure 1, there is a positive relationship between risk tolerance and: (i) physical activity, (ii) financial well-being, and (iii) satisfaction with life. An additional positive relationship was established between financial well-being and satisfaction with life. The goodness-of-fit measures for risk tolerance (GLRTS) encompassed the following:

- Chi-square test statistics divided by the degrees of freedom (CMIN/DF) value of 4.866 which indicates a good fit (Mueller, 1996);
- CFI value of 0.858 suggests an acceptable overall model fit (Mueller, 1996); and
- RMSEA value of 0.060 is smaller than 0.1 and indicates an acceptable fit (Blunch, 2008).

In general, financial institutions only make use of factors pertaining to demographics and risk personalities to estimate an investor's risk tolerance level during risk profiling. The SEM depicting the influence of investor well-being on risk tolerance has established that there are factors outside of demographics and personalities that have an effect on risk tolerance, namely the respective elements of investor well-being. It is important for financial institutions to take these factors into consideration

Figure 1. SEM of investor well-being's influence on risk tolerance.

Source: Author compilation



during the risk profiling stage of their investors. By doing this, the composition of an investor's investment portfolio may be affected and their risk tolerances might be more accurately measured.

Therefore, it is advised that financial institutions include questions of financial well-being, satisfaction with life, and physical activity in their tools to measure an investor's risk tolerance. Perhaps there are differences in the investor's perception of investment risk when his or her respective levels of financial well-being, satisfaction with life, and physical activity are considered during risk profiling. Investor well-being included with questions pertaining to an investor's demographics and personality can help financial institutions more accurately advise suitable investments to the investor.

5. Conclusion

The primary objective of the study was to develop a conceptual model which depicts the influence of the elements of investor well-being, namely financial well-being, satisfaction with life, and physical activity on risk tolerance. The conceptual model depicting the influence of investor well-being on risk tolerance is a new spectrum to consider. The following provides a summary of the main findings from this study:

- satisfaction with life does has a positive relationship with risk tolerance, however not statistically significant;
- financial well-being has a positive and statistically significant relationship with satisfaction with life; and
- financial well-being, and physical activity, respectively have positive and statistically significant relationships with risk tolerance.

In each of these established relationships, an increase in one variable leads to an increase of the other. Ultimately, the conceptual model depicting the influence of investor well-being on risk tolerance is a new spectrum to consider. This SEM is an instrument which can be considered by financial institutions and financial advisors to implement as a way to measure risk tolerance from an investor's well-being perspective. This study is a first step which has to be replicated on other data. With this, further research can be implemented from primary data to compare the results and establish how practically significant the influence of investor well-being on risk tolerance is. This study is limited to the secondary data from the database of a single investment company, therefore it is recommended that multiple financial institutions be targeted as a means to broaden the sample size for future research. As such, the impact of this model practically will be able to be established and its theories would be strengthened.

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