

RISK PERCEPTIONS OF INSURANCE POLICYHOLDERS IN THE GAUTENG REGION OF SOUTH AFRICA

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ABSTRACT

The insurance industry's product range is diverse, and the risk perception of each product differs from that of insurers, especially given the constantly changing market conditions. Often, insurance companies misunderstand the risk perceptions of their policyholders and inevitably lose clients. To better understand these perceptions of risk, this paper aims to analyze the endogenous factors that influence the perception of risk of insurance policyholders in Gauteng, South Africa. These endogenous factors include demographics, risk perception, risk tolerance, and behavioral finance biases. South African insurance policyholders residing in Gauteng province of South Africa were identified as the target population for this study. From this study, endogenous factors such as age, health status, representativeness, and availability bias, as well as self-control, were identified as significant factors influencing the risk perception of insurance policyholders. The risk tolerance profile of the sample indicated that most participants would take average financial risks as most assets were covered, but not comprehensively. Risk tolerance was also found to be a contributing factor to the risk perception of policy holders. By gaining deeper insights into insurance policyholder risk perceptions and the antecedents thereof, insurance companies could be better positioned to expand their horizons and provide higher quality insurance services to their clients.

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1. INTRODUCTION

Given the increasing caution of the mankind towards risk, the need for insurance emerged. In 1601, marine insurance, which went a long way towards curbing financial losses attributed to lost or damaged cargo, was the first type of insurance introduced in the history of insurance (Rejda, McNamara & Rabel, 2017). Thereafter, fire insurance came into existence, followed by life and liability insurance. In modern times, there are several types of insurance, including property insurance, social insurance, and guarantee insurance. Historically, insurance was considered a formal and protective way of distributing risk among people who were considered to be at risk of losing a certain item or property. Similarly, today insurance is considered a form of financing directed at the desired assets that need to be protected from future related risks that may occur (Bellando, 2016).

Insurance serves as a financial instrument that protects individuals who could potentially suffer misfortunes. Insurance is one of the best means by which one can financially protect human life, property, and liability from various risks (Gurung, 2010). Premiums paid by an insurance policyholder depend on the insured's willingness to pay and how they consider their assets to be 'at risk' (PWC, 2015). Without insurance in our society, various kinds of risk such as death, fire, accident, and theft would go unprotected (OECD, 2021), which could have serious financial implications. As such, individuals try to find a solution to mitigate and protect themselves from various risks by acquiring insurance policies. According to OECD (2021), the purpose of insurance policies is to mitigate and, in some cases, totally avoid social evils, such as theft and unemployment, which are common enemies in every economy. Individuals also invest in insurance policies due to the high value they place on their property, life, and the lives of people important to them.

Over the years, the insurance industry has grown substantially in terms of the number of insurances, products, buyers of insurance as well as policyholders (Binder & MuBhoff, 2016). Over time, the insurance industry has grown and flourished with various insurance companies offering a range of insurance products to policyholders to protect their assets against financial pressures. With the Fourth Industrial Revolution, a wide range of insurance services were also available through technology, reflecting changes in buyers' needs and insurance preferences. (PWC, 2020). In South Africa, this phenomenon also holds. The South African insurance market had no major catastrophic events from 2010 to 2016, except for the severe drought that affected farmers in 2015 (PWC, 2015). Furthermore, flooding caused damage to crop and agricultural

infrastructure, leading to financial losses for farmers in South Africa (Tom, 2021). This has resulted in lower premiums as they did not plant enough crops, leading in fewer claims and refunds of premiums. In addition, the downgrade in credit ratings affected the growth of premiums in the future (Fitch Ratings, 2020). Furthermore, during 2020, COVID-19 led to higher unemployment rates, which inevitably meant higher crime rates, further inhibiting economic growth (United Nations Office on Drugs and Crime, 2020). Consequently, insurance policyholders are inclined to seek affordable insurance solutions. This will further impact insurers if they do not make their products more efficient. Thus, it is of paramount importance that South African insurers remain competitive to retain their policyholders due to the premiums becoming unaffordable (PWC, 2020).

The determinants of risk perception are important in assessing the risk perception of individuals (Makalani, Ferreira-Schenk & Dickason-Koekemoer, 2022). In a study conducted by Du Toit and Vivian (1995), when people manage their risks, their investment choices are largely influenced by how they perceive the risks involved. A follower of behavioral economic theories, Simon (1956) found that it is human nature to act to the point where one feels satisfied with the decision taken in terms of the psychological and social environment in which they function. Moreover, Paul and Peters (2006) found that insurance policyholders view risks differently. Therefore, this paper aims to analyze the relationship between endogenous factors such as demographics, risk tolerance, behavioral finance, and the dependent variable, the risk perception of insurance policyholders.

2. LITERATURE REVIEW

Every action a person takes involves some level of risk. According to Schulmerich, Leporcher & Eu (2015), risk is essentially the uncertainty or possibility of harm, loss, or negative consequences associated with a particular action or event. Similarly, several researchers (Weipers, 2002; Damodaran, 2008; Singh, 2012) define risk management as measures put in place to help individuals in coping with life uncertainties. These uncertainties can cause people to be either less or highly tolerant towards engaging in certain events, causing them to have different perceptions of risk. Perception is defined as the process of organising and interpreting sensory information through the brain (Wade & Tavis, 1996). Risk perception refers to the way individuals subjectively assess and evaluate the level of risk associated with a particular situation or action (Moen, Sjoberg & Rundmo, 2004). This perception of risk can vary widely between

individuals and is influenced by a variety of factors, such as personal experience, emotions, cognitive biases, social and cultural norms, and demographic factors. Understanding the determinants of risk perception is important in assessing how people perceive and respond to different types of risk and can help inform the development of effective risk communication and management strategies.

Weber, Blais & Betz (2002) developed a scale that assesses an individual's attitudes toward risk in five different domains: ethical, financial, health, social, and recreational. This scale provides an opportunity to explore both conventional and perceived risk attitudes in these different areas. For example, an individual may be willing to take risks in the domain of recreation but not in the domain of health. Williams and Noyes (2007) proposed that risk perception is related to the level of uncertainty associated with decision outcomes. This means that when making decisions, people must consider the level of uncertainty involved and the potential consequences of their choices. Uncertainty can lead to certain decision consequences, such as success or failure to achieve specific outcomes. In the context of financial decision-making, investors must predict the future or possible outcomes of their investments. However, the future is often uncertain and can lead to misjudgements and financial losses (Sokolowska & Pohorille, 2000). Therefore, it is essential to understand an individual's attitudes towards risk in the financial domain as well as their perceived level of uncertainty, to make informed investment decisions.

Risk perception and demographic factors

Demographic factors refer to the characteristics that describe individuals such as age, gender, ethnicity, income, and religion (Grable & Joo, 2004). Research has consistently shown that demographic factors play a significant role in shaping an individual's risk perceptions. For example, studies have found that younger people (between the ages of 18 and 34) tend to have a higher tolerance to risk than older individuals. Interestingly, Brooks et al. (2018) found that young, non-white, highly educated, and self-employed individuals tend to have higher levels of risk tolerance than others. This indicates that demographic factors may also influence an individual's attitudes toward risk in specific contexts, such as insurance.

The study conducted by Pilisuk and Acredolo (1988) found that high-income individuals tend to be less concerned about hazards and risks compared to low-income individuals. One possible explanation for this is that high-income individuals often have insurance coverage that can easily replace their possessions, which reduces their perceived risk. On the contrary, low-income

individuals tend to have less insurance coverage, making it more difficult for them to replace their assets and thus tolerate fewer risks (Savage, 1993). Concerning age, Kadoya et al. (2018) found that as people age, they tend to become more informed about risks and are less concerned about risks. This may be since older people feel more exposed to, for example, health risks and are more likely to stay informed about new diseases and potential health risks. Furthermore, young insurance policyholders with children tend to feel more exposed to risks when diagnosed with a health condition (OECD, 2017). This may be because they have dependents who rely on them and are more vulnerable to the consequences of a health condition. Overall, demographic factors can significantly influence the perception of risk of an insurance policyholder. These factors can shape an individual's attitudes towards risk and affect their decision making when it comes to purchasing insurance coverage or making risk-related decisions.

Risk perception and behavioral finance biases

The financial decision-making process of individuals can be irrational. This supports the notion that financial decision making is not always rational and can be influenced by emotions and biases. Ricciardi and Simon (2000) elaborate by explaining that behavioral finance provides an explanation for the impact of emotional processes on financial decision-making and that behavioral finance integrates principles from psychology and economics to better understand the decision-making process of individuals in financial contexts. As such, behavioral finance is based on three elements: financial knowledge, economics knowledge, and cognitive psychology in decision making (Ferreira, 2018). By considering these factors, behavioral finance aims to provide a more comprehensive understanding of how individuals make financial decisions.

Behavioral finance, according to de Bondt and Bange (1992), refers to the underlying psychological factors that drive financial decision-making behavior. Plous (1993) states that behavioral finance examines the impact of biases on financial decision making. Furthermore, Ricciardi (2004) defines behavioral finance as an interdisciplinary field that draws on various decision-making fields, including psychology and behavioral economics, to develop a theoretical basis, expertise, and research methods. Specific concepts such as prospect theory, overconfidence, and loss aversion are examined in behavioral finance to understand how individuals make decisions, as claimed by Fulfer and Maille (2018). Pan (2016) argues that the classical decision theory, which suggests that individuals are rational, is incorrect, since individuals are irrational in the decision-making process. According to Tversky and Kahneman (1979), the

prospect theory of behavioral finance deviates from the classical theory by examining risk-taking behavior.

In 1987, Slovic (1988) (later Slovic, 2000) laid the foundations for further studies on risk perception. Later, Koonce, McAnally & Mercer (2005) defined catastrophic risk as the likelihood of a highly negative outcome and identified a positive correlation between catastrophic risk and individuals’ overall risk perception. Subsequent studies adapted Koonce, McAnally & Mercer (2005) work to examine even more extreme outcomes, such as the risk of losing most or all invested funds and discovered a strong positive correlation (Olsen, 1997; Diacon & Ennew, 2001; Chou & Wang, 2011). Furthermore, Chou and Wang (2011) established a nearly perfect positive correlation between overall risk perception and the risk of losing all invested funds. Table 1 highlights behavioral finance biases in the context of insurance policyholders.

Table 1. Behavioral finance biases in the context of insurance policyholders

Theory	Explanation	Source
Representativeness	Insurance policyholders will base financial decisions on past insurance events.	Ricciardi & Simon (2000)
Framing	Insurance policyholders respond more strongly to losses than gains and rely on a single piece of information to make financial decisions.	Ricciardi & Simon, (2000); Duchon, Ashmos & Dunegan (1999)
Loss aversion	Insurance policyholders will tend to stick to their initial insurance cover instead of altering it during certain events.	Ricciardi (2004); Singh (2012)
Regret aversion	Insurance policyholders make incorrect decisions based on past events to avoid feelings of regret or grief.	Dickason and Ferreira (2018)
Self-control	Insurance policyholders will exert self-control to avoid large losses.	Dickason (2017); Ferreira (2018)
Availability bias	Insurance policyholders will base financial decisions on currently available information.	Ricciardi (2004)
Overconfidence bias	Insurance policyholders make decisions based on their superior financial knowledge. Subjective financial knowledge and confidence in financial decisions can influence reasonable risk attitudes from insurance policyholders.	Ricciardi & Simon (2000); Ajemunigbohun & Ipigansi (2022)
Gambler’s fallacy	Insurance policyholders will base their insurance decisions on future market predictions.	Ricciardi (2004); Singh (2012)
Mental accounting	Insurance policyholders will trust their analysis of the premiums and benefits of the insurance policy.	Tversky and Kahneman (1971)

Source: Authors’ compilation

In general, behavioral finance provides a useful framework for understanding the psychological and emotional factors that can influence financial decision making. This approach recognizes that financial decisions are not always rational and may be subject to biases and other emotional processes that can affect decision making. Behavioral finance biases may impact insurance policyholders' decision-making and may lead them to make suboptimal choices regarding their insurance coverage (Makalani, Ferreira-Schenk & Dickason-Koekemoer, 2022).

Perception and risk tolerance

Risk tolerance is essentially the risks that people are willing to accept in their financial planning. This differs from person to person and tends to influence how one perceives risk (Davies & Brooks, 2014). Risk and perception are closely related concepts that describe an individual's subjective assessment of the severity of a particular risk (Moen, Sjoberg & Rundmo, 2004). While there is a relationship between risk tolerance and risk perception, it is often difficult to differentiate between the two (Hunter, 2002). Risk perception is an essential aspect of an investor's decision-making process (Finucane, 2002), and it is worth noting that perception can involve subjective risk, a concept that is often overlooked by researchers (Epstein & Pava, 1994).

3. METHODOLOGY AND HYPOTHESIS TESTING

This article applied a quantitative research approach, and an online survey was sent to collect the data. A positivistic research paradigm was followed, in which the researcher analyzed individual surveys to obtain a trustworthy understanding of the phenomena in question.

The target population defined for this study consisted of 341 South African insurance policyholders located within the Gauteng province. Purposeful, nonprobability sampling was used to filter insurers who are above 18, insured by any insurance company in South Africa, reside in Gauteng, and have some level of education.

A survey was distributed electronically to participants due to COVID-19 regulations. The survey consisted of the following sections: (A) demographic information age (scale variable); level of education (ordinal variable): a) no matric, b) matric, c) diploma, d) bachelor's degree, d) honours degree, e) master's degree, f) doctoral degree); household size and number of dependents: a) 1-2 individuals, b) 3-5 individuals, c) more than 6 individuals; level of health status: a) poor, b) fair, c) good, d) excellent; and subjective self-report on financial

knowledge: a) little, b) average, c) above-average, d) superior. Annual income was ordinally measured per 100 000 until 1 million and more than 1 million per annum. Participants also had to report on their income variability: a) My income is very stable & predictable, b) My income is somewhat stable & predictable, c) My income is fluctuating and unpredictable. Net worth was measured on an ordinal scale: a) less than 1 million, b) 1mil – 3.5 mil, c) 3.5 mil – 7mil, d) 7mil -12mil, e) 12mil - 30mil, f) 30 mil and more. Demographic data were required to profile the sample of insurance policyholders in Gauteng. Among these demographics were age, the highest level of education, annual income, income variability, net worth, household size, health status, and level of subjective self-report on financial and insurance knowledge. Refer to Appendix A for the survey items.

The DOSPERT scale was first developed by [Weber, Blais and Betz \(2002\)](#) as a 40-item 6-point Likert-type scale and was later reduced to 30 items ([Blais & Weber, 2006](#)). For this study, some items that could have posed an ethical risk to the sample population were removed and 19 items in total (adjusted scale by [Dickason, 2017](#)) were used to measure the sample's risk perception based on their attitude towards risky activities ([Makalani, Ferreira-Schenk & Dickason-Koekemoer, 2022](#); [Dickason 2017](#)). EFA was utilised to assess the risk-taking that is likely to influence the risk perception of the insurance policyholders. Ethical risk consisted of three items (1, 2 and 3). The KMO index obtained a value of 0.692, which is in the mediocre range. The three items explained 70.108 percent of the total variance with an eigenvalue of 2.103. The ethical factor was deemed reliable because it obtained a desired Cronbach's alpha of 0.786, suggesting good reliability for measuring the perception of insurance policyholders. Three items (4, 5, 6 and 7) made up the financial risk factor of the DOSPERT scale. The KMO index obtained a good value of 0.782, which exceeds the minimum value of 0.5. The items obtained an eigenvalue of 2.760. The financial factor also accounted for 69.010 percent of the total variance. The Cronbach's alpha obtained was 0.786, which can be regarded as good reliability as it exceeded the minimum required of 0.6. The DOSPERT scale also looked at the health factor (items 8-11) and assessed how likely the policyholders were to make certain health decisions. The KMO index achieved a satisfactory value of 0.799, exceeding the minimum required value of 0.5. Bartlett's test of sphericity achieved a p-value of 0.000, which was statistically significant at $p < 0.05$. To determine the reliability of the financial factor, Cronbach's alpha was computed. It obtained a desirable value of 0.903, which exhibited very good reliability as it was above the minimum required of 0.6. The adjusted dospert scale also assessed the social domain (Items 12-15) to assess how policyholders were likely to engage in certain social

events. KMO and Bartlett’s test of sphericity for the social factor achieved satisfactory results. The KMO index obtained a value of 0.845, suggesting very good adequacy for factor analysis as it exceeded the minimum required value (0.5). The Cronbach’s alpha was computed and obtained a value of 0.902, which indicated very good reliability. The last factor of the DOSPERT scale was recreational (items 16-19), which aimed to assess policyholders’ likelihood of taking part in several recreational events. The KMO index obtained a value of 0.805, signifying very good adequacy which is higher than the minimum value of 0.5. Bartlett’s test of sphericity also achieved satisfactory results as it obtained a null hypothesis of $p < 0.05$, which is statistically significant. This suggests that the variable correlate with itself but not with other variables. Ultimately this proves that the variables are related to the data in the DOSPERT scale of factor analysis. A high Cronbach’s alpha (0.910) was obtained, making this factor a reliable scale for measuring the insurance policyholders’ risk perceptions due to risky recreational events.

A nine-biases behavioral finance bias scale was included using a nine-item behavioral finance scale developed by Ferreira (2018), which included statements aimed at elucidating the biases which individual investors base on their financial decisions (Makalani, Ferreira-Schenk & Dickason-Koekemoer, 2022). The behavioral finance bias scale had a Cronbach α -value of 0.69, thereby making it reliable.

The Survey of consumer finance (SCF) by Grable and Lytton (2001) measures risk tolerance behavior. It is acknowledged that the SCF scale omitted some variables known to the financial market but is a comprehensive measure (including a four-item scale) for investment choice behavior and experience (Makalani, Ferreira-Schenk & Dickason-Koekemoer, 2022).

Correlation analysis was done to analyze the strength and direction of the relationship between insurance policyholders’ risk perception, demographics, risk tolerance, and behavioral finance biases. Linear regression analysis was used to indicate how the determinant factors explained the variance in the dependent variable.

The following regression formula was used in the study:

$$Y_i = f(X_i, \beta) + e_i \dots\dots\dots(1)$$

Where,

Y_i = dependent variable (risk perception scale)

f = function

X_i = independent variable (demographics, risk tolerance, behavioral finance)

β = unknown parameters

e_i = error terms

The null and alternative hypotheses were formulated as stated below:

H_{01} : *There is no significant relationship between demographics (age, highest level of education, annual income, income variability, net worth, household size, health, level of financial knowledge) and insurance policyholder risk perception.*

H_{a1} : *There is a significant relationship between demographics (age, highest level of education, annual income, income variability, net worth, household size, health, level of financial knowledge) and insurance policyholder risk perception.*

H_{02} : *There is no significant relationship between risk tolerance and insurance policyholder risk perception.*

H_{a2} : *There is a significant relationship between risk tolerance and insurance policyholder risk perception.*

H_{03} : *There is no significant relationship between behavioral finance biases and insurance policyholder risk perception.*

H_{a3} : *There is a significant relationship between behavioral finance biases and insurance policyholder risk perception.*

4. RESULTS AND DISCUSSION

Table 2 shows the nonparametric correlation of the determinant factors that influence the perception of risk of insurance policyholders assuming a level of significance, level for a two-tailed level of significance ($p < 0.01$). There were no autocorrelation between these factors.

As shown in Table 2, Spearman's correlation coefficient ($r = -0.418$) for age had a medium statistically significant negative relationship at a level of 99 percent significance level ($p < 0.01$) with risk perception. This relationship indicates that higher levels of risk perception are associated with insurance policyholders in a lower age category. Therefore, young insurance policyholders will engage in risky activities that could expose them to greater risk. The association between the level of education and risk perception had a coefficient of $r = 0.197$, which represents a small positive linear effect at a level of significance of 99 percent significance level ($p < 0.01$). Therefore, there is a small relationship between the

policyholders of risk perception and their level of education, indicating that a higher level of education could be associated with a higher risk to a small degree.

Table 2. Non-parametric correlation of risk perception

Determinant factor	Spearman correlation with risk perception
Age	-.418*
Highest level of education	.197*
Annual income	.717
Income variability	-.080
Net worth	-.084
Household size	-.130*
Health status	.320*
Level of financial and insurance knowledge	.139*
Representativeness	.177*
Regret aversion	.084
Framing	-.006
Overconfidence	.150*
Availability	.189*
Gambler's fallacy	.184*
Mental accounting	.140*
Loss aversion	.009
Self-control	-.343*
Risk tolerance	-.468*

* $p < 0.01$

Source: Authors' compilation

Table 2 also indicates a small negative relationship between household size and risk perception significant at the 99 percent significance level ($p < 0.01$). This indicates that households want to be exposed to less risky activities (high perception towards risk and behavioural activities) the more their family or households grow. A significant association was also found between insurance policyholder health status and their risk perception towards risky activities. This could indicate that individuals with better health status will take part in more risky activities and those with a poor health status will be less inclined to participate in such activities in perceiving risk differently and not engaging in risky activities. Table 2 also indicates an association (small positive linear effect at the 99 percent significance level $p < 0.01$) between the perceived risk and their level of financial and insurance knowledge.

The association between representativeness bias and risk perception was $r = 0.177$, showing a small positive linear effect at the level of significance of 99

percent significance level ($p < 0.01$). As mentioned in Section 2 of the article, those individuals subjected to representativeness bias tend to make financial decisions based on the past performance of the insurance company. Therefore, there is a slight association between their financial biases and their perception towards taking part in risky activities. Similarly, the association between overconfidence bias ($r = 0.150$) and risk perception was found where the superior financial knowledge drives their decisions. The association between availability bias ($r = 0.189$) and risk perception indicates a positive relationship with how these insurance policyholders make decisions based on their instincts when engaging in risky activities. For the fallacy bias ($r = 0.184$) a small linear association was also found for these individuals who base their insurance decisions on future market predictions. For mental accounting ($r = -0.140$), a significant association was also found. These individuals trust their analysis over the premiums and benefits from the insurance company and will be less likely to engage in risky activities. A negative association was found between self-control ($r = -0.343$) and risk perception at the level of significance of 99 percent significance level ($p < 0.01$). Therefore, there is a negative relationship between these individuals who exercise self-control when making decisions and their intention to participate in risky activities. Overall, behavioral finance biases may impact insurance policyholders' decision-making and may lead them to make suboptimal choices regarding their insurance coverage (Makalani et al., 2022).

In Table 2 it can also be seen that there is a medium association between the perception of insurance policyholders of risk taking ($r = -0.343$) at the 99 percent significance level ($p < 0.01$). Therefore, those who take substantial financial risk are also categorised as those who only have one or a few insured assets associated with taking part in risky activities as a function of risk perception. Subsequently, a multiple linear regression analysis was conducted to analyse the influence of the determinant factors on the insurance policyholders' risk perception.

Next, multiple linear regression analysis was performed to explain the variance in the dependent variable. Table 3 shows the summary of the regression model calculated, where R^2 shows that the determinant factors explained 45.90 percent of the total variance in risk taking as a product of risk perception. Furthermore, the F-ratio ($p < 0.01$) was statistically significant at the level of 99 percent significance, which means that the variables influence risk taking as a product of risk perception.

Table 3. Model summary

Model	Sum of squares	Df	Mean Square	R ²	F-value	P-value
Regression	5290.363	19	278.440			
Residual	6231.208	321	19.412	0.459	14.344	0.000*
Total	11521.571	340				

*Significant level (0.01)

Source: Authors' compilation

As shown in Table 3, all the determinants were statistically significant at the level of 99 percent significance level ($p < 0.01$), signifying that they influence the perception of risk of insurance policyholders. Variables are explained independently in Table 4. The age of insurance policyholders influences their perception of engaging in risky events. A statistically significant value for age ($p < 0.000$) was obtained for age ($p < 0.000$) at the level of significance of 99 percent. As shown in Table 4, when there is a unit change in age, the likelihood of policyholders engaging in risky events will result in a -0.247 change in their perception of risk toward risky events. The beta coefficient also indicated that age is the third largest contributing variable in predicting the risk perception of insurance policyholders. Hence the alternative hypothesis can be concluded which indicate there is a relationship between demographic factors such as age and risk perception. These results agree with the findings of [Bonem, Ellsworth & Gonzalez \(2015\)](#) who found older individuals to have a higher risk perception and found risky behaviors and situations less enjoyable and less likely to produce gains compared to younger individual. Overall, the findings suggest that risk perceptions may vary based on age.

The health status of insurance policyholders was also found to influence their perception of risk to engage in risky events. A person with a better health status will be more likely to participate in risky events and will perceive risk differently from those with a lower health status. Hence the alternative hypothesis can be concluded which indicate there is a relationship between demographic factors such as health status and risk perception. [Bonem, Ellsworth & Gonzalez \(2015\)](#) found that older individuals with a lower health status will have a higher risk perception and are less likely risky behaviors and situations compared to younger individual who might have a better health status. According to [Hanoch, Rolison & Freund \(2018\)](#) throughout adulthood, people face increasingly serious medical problems and decisions. [Hanoch, Rolison & Freund \(2018\)](#) also found individuals of an older age with more medical complications and a deteriorated health status will be less likely to engage in risky behaviour.

The results in Table 4 show that insurance policyholders subject to representativeness bias would likely engage in risky events. The representativeness bias was significant at a level of 99 percent significance level ($p < 0.01$). Therefore, a unit change in the coefficient of representativeness bias would result in a 0.133 change in the scale of the risk perception variable. These results concur with Ricciardi and Simon (2000). Regarding availability bias, the results indicate significance at a 98% level ($p < 0.01$). This suggests that a unit change in the availability bias would result in a 0.120 change in the risk perception variable scale. Insurance policyholders subject to self-control bias are less likely to engage in risky events. Self-control bias was statistically significant at a 99 percent significant level ($p < 0.01$), indicating that it influences risk perception. A unit change in the self-control bias of insurance policyholders will result in a -0.343 beta coefficient change on the risk perception variable scale. The beta coefficient also indicated that self-control bias is the largest contributing variable in influencing the perception of insurance policyholders. These results are similar to Xu (2023) who found these behavioral finance biases to have a significant relationship with risk perception. Similar to Almansour, Elkrggli & Almansour (2023) the overconfidence bias did not have an influence on risk perception.

The risk tolerance of insurance policyholders influences their perception of engaging in risky events. A statistically significant value for age ($p < 0.000$) was obtained for age ($p < 0.000$) at the level of significance of 99 percent. As shown in Table 4, when there is a unit change in the risk tolerance level of insurance policyholders, their likelihood of engaging in risky events will result in a -0.274 change in their risk perception. The beta coefficient also indicated that risk tolerance is the second largest contributing variable in influencing the perception of risk of insurance policyholders and their likelihood of engaging in risky events. These results are similar to Ricciardi and Rice (2014) who found a significant relationship between risk tolerance and risk perception.

Table 4. Summary of the independent variables model

Variables	B	T	P-value
Age	-0.247	-4.294	0.000*
Highest level of education	-0.012	-0.250	0.803
Annual income	0.039	0.733	0.464
Income variability	-0.060	-1.344	0.180
Net worth	0.080	1.553	0.121
Household size	0.022	0.465	0.642
Number of dependents	-0.009	-0.180	0.858
Health status	0.133	2.672	0.008*

Variables	B	T	P-value
Level of knowledge of financial and insurance product knowledge	-0.013	-0.270	0.787
Representativeness	0.133	2.280	0.023*
Regret aversion	0.038	0.709	0.479
Framing	-0.064	-1.216	0.225
Overconfidence	-0.015	-0.236	0.814
Availability	0.120	2.099	0.037
Gambler’s fallacy	0.116	1.688	0.092*
Mental accounting	0.032	0.482	0.630
Loss Aversion	0.028	0.506	0.613
Self-control	-0.343	-6.877	0.000*
Risk tolerance	-0.274	-5.887	0.000*

*Significant level (0.01)

Source: Authors’ compilation

5. CONCLUSIONS

Risk is an inherent part of life, and the insurance industry is no exception, being exposed to various risks. However, people perceive risk differently, which is why insurers need to understand the factors that influence their policyholders’ risk perceptions to retain them. Therefore, this article aimed to identify the endogenous factors that could affect policyholders’ risk perception and their likelihood of engaging in risky events. The study targeted South African insurance policyholders residing in Gauteng province, and a sample of 341 such policyholders was collected by electronic data collection using validated scales in the questionnaire due to the Covid-19 pandemic.

Correlation analysis revealed that several factors influence the perception of insurance policyholders. Specifically, demographic factors such as age, level of education, household size, level of health status subjective self-report on financial knowledge were found to have a relationship with policyholders’ perception of risk concerning their likelihood of participating in risky events. Behavioral finance biases, including representativeness bias, overconfidence bias, availability bias, gamblers’ fallacy, mental accounting and self-control bias, also explained risk perception to some extent. The level of risk tolerance of policyholders was found to have the strongest relationship with their perception of risk. All three null hypotheses were rejected, concluding the alternative hypothesis indicating a significant relationship between demographic factors, behavioral finance biases, risk tolerance, and policyholder risk perception levels.

Over the past decade, the importance of understanding insurance risk perception has increased considerably both nationally and globally. As such, this study represents a valuable contribution to the literature and empirical analysis of the insurance industry, particularly in terms of the profile of insurance policyholders and their risk perception. The study's findings can help insurers gain insight into the factors that shape policyholders' risk perception and how they perceive risky events. By incorporating this analysis into their operations, insurance companies can design better suited products and enhance their client profiles.

Conflict of interests

The authors declare there is no conflict of interest.

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Appendix A. Scale items

<p><i>Demographic information</i></p> <p><i>Age</i> (scale variable)</p> <p>level of education (ordinal variable, a) no matric, b) matric, c) diploma, d) bachelor’s degree d) honours degree e) master’s degree f) doctoral degree);</p> <p>Household size and number of dependents a) 1-2 individuals b) 3-5 individuals c) more than 6 individuals.</p> <p>Number of dependents a) 0 individuals b) 1-2 individuals c) 3-5 d) more than 6 individuals.</p> <p>Level of health status a) poor b) fair c) good d) excellent.</p> <p>Subjective self-report on financial knowledge a) little b) average c) above-average d) superior.</p> <p><i>Annual income</i> ordinally scale measured per 100 0000 until 1 million and more than 1 million per annum.</p> <p><i>Income variability</i> a) My income is very stable & predictable b) My income is somewhat stable & predictable c) My income is fluctuating and unpredictable.</p> <p>Net worth was measured on an ordinal scale a) less than 1 million b) 1mil – 3.5 mil c) 3.5 mil – 7mil d) 7mil-12mil e) 12mil-30mil f) 30 mil and more.</p>	
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<p>Risk perception: Likelihood of engaging in each activity or behavior in 5 domains Ethical: Item1-3 Financial: Item 4-7 Health/safety: Item8-11 Social: Item12-15 Recreational: Item 16-19 Measured on a six-point Likert-type scale – (1) very unlikely (6) very likely</p> <ol style="list-style-type: none"> 1. Taking some questionable deductions on your income tax return 2. Downloading proprietary software from the Internet 3. Not returning a wallet you found that contains R500 4. Investing 10% of your annual income in a moderate growth mutual fund 5. Betting a day’s income on the horse races 6. Spending all your money on an unauthorised business venture 7. The wager of a week’s income at a casino 8. Driving a car without a seat belt 9. Swim far out from shore on an unprotected lake or ocean. 10. Riding a motorcycle without a helmet 11. Sunbathing without sunscreen 12. Talk about an unpopular issue in a meeting at work 13. Moving to a city far from your extended family 14. Disagreeing with an authority figure on a major issue 15. Choosing a career that you truly enjoy over a more prestigious one 16. Going camping in the wilderness 17. Going down a ski run that is beyond your ability 18. Taking a weekend sky diving class 19. Bungee-jumping off a tall bridge 	<p><i>DOSPERT scale, Weber, Blais & Betz (2002)</i> <i>Adjusted scale from Dickason (2017)</i></p>
<p>Behavioral finance biases: Measured on a six-point Likert-type scale – (1) strongly disagree (6) strongly agree</p> <ol style="list-style-type: none"> 1. I base my financial decision on the past performance of the insurance company 2. I regret insuring when I try to claim but I get complications 3. I insure with a company only when I hear positive word of mouth 4. My superior financial knowledge drives my decisions 5. I insure at a company based on my instincts 6. My financial decisions are based on future market predictions 7. I trust my own analysis over my premiums and benefits from the insurance company 8. I would rather forfeit a lower premium for more cover 9. I exercise self-control when making financial decisions 	<p><i>Ferreira (2018), (Makalani et al., 2022).</i></p>
<p>Risk tolerance:</p> <ol style="list-style-type: none"> 1. Take substantial financial risks, as I only have insurance on one of my assets 2. Take an above-average financial risk, as most of my assets are not covered 3. Take average financial risks as most of my assets are covered, but not comprehensively 4. Not willing to take any financial risks, I have comprehensive insurance cover 	<p><i>The Survey of consumer finance (SCF) by Grable and Lytton (2001)</i></p>

ПЕРЦЕПЦИЈА РИЗИКА ВЛАСНИКА ПОЛИСА ОСИГУРАЊА У РЕГИОНУ ГАУТЕНГ ЈУЖНОАФРИЧКЕ РЕПУБЛИКЕ

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САЖЕТАК

Асортиман производа индустрије осигурања је разнолик, а перцепција ризика за сваки производ се разликује од перцепције осигураваача, посебно имајући у виду континуирано промјенљиве тржишне услове. Осигуравајућа друштва често погрешно схватају перцепцију ризика својих осигураника и неизбјежно губе клијенте. Да би се боље разумјеле ове перцепције ризика, овај рад има за циљ да анализира ендogene факторе који утичу на перцепцију ризика власника полиса осигурања у Гаутенгу, Јужноафричка Република. Ендогени фактори укључују демографију, перцепцију ризика, толеранцију ризика и предрасуде у складу с бихејвиоралним финансијама. Јужноафрички власници полиса осигурања који живе у јужноафричкој провинцији Гаутенг идентификовани су као циљна популација за ову студију. Из ове студије, ендогени фактори као што су старост, здравствено стање, репрезентативност и предрасуде доступности, као и самоконтрола, идентификовани су као значајни фактори који утичу на перцепцију ризика власника полиса осигурања. Профил толеранције ризика узорка показао је да би већина учесника прихватила просјечне финансијске ризике пошто је већина средстава била покривена, али не свеобухватно. Такође је утврђено да је толеранција ризика фактор који доприноси перцепцији ризика код власника полиса. Стицањем дубљег увида у перцепцију ризика власника полиса и његових претходника, осигуравајућа друштва би могла да буду бољој позицији и прошире своје хоризонте, те пруже квалитетније услуге осигурања својим клијентима.

Кључне ријечи: *перцепције ризика, осигурање, толеранција ризика, предрасуде бихејвиоралних финансија, Јужноафричка Република*