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Article

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BANKING & FINANCE | RESEARCH ARTICLE

The influence of exogenous factors on risk perception amongst insurance policyholders

Yvonne Makalani¹, Suné Ferreira-Schenk¹ and Zandri Dickason-Koekemoer^{1*}

Abstract: Insurers tend to misunderstand the perceptions of the policyholders and inevitably lose clients. In South Africa, very little research has investigated the perceptions and attitudes expressed by insurance policyholders. Therefore, to bridge this gap, the purpose of this research study is to analyse the exogenous factors that influence the risk perception of insurance policyholders in Gauteng. This will inevitably assist insurers to retain more clients as they will have a better understanding of what influences the risk perception of their insurance policyholders. Exogenous factors relate to external factors influencing the risk perception of insurance policyholders namely, political-legal, market fluctuations, crime and unemployment. The questionnaire was distributed to private insurance policyholders in Gauteng, South Africa. Political events and market fluctuations and volatility had significant relationships with the risk perception of policyholders. It can be assumed that the more market volatility exists, or extreme international events take place the more the level of perceived risk by the insurer will be. In terms of demographics, there were also significant relationships between age, level of education, policy type and gender and risk perception. The empirical findings of this research study will furthermore be of benefit to the insurance industry as it provides an analysis of the exogenous factors influencing the risk perception of the insurance policyholders. This can assist insurers to tailor insurance products accordingly for each policyholder in order to maximise customer satisfaction, especially in unprecedented market conditions.

Subjects: Economics; Finance; Business, Management and Accounting; Industry & Industrial Studies

Keywords: risk perception; insurance; demographics; political-legal; crime; unemployment

JEL Classifications: J10; G22; E24

1. Introduction

Almost everything a person does involves some level of risk attached to it. According to Schulmerich et al. (2015), risk is defined as the uncertainty regarding the outcome of an event. Similarly, several researchers, Holyoake and Weipers (2002), Damodaran (2008), Singh (2009), and Gurung (2016), defined risk as a concept that human beings established to assist them in coping with the hazards and uncertainties of life. These uncertainties can cause people to be either less tolerant or highly tolerant towards engaging in certain events causing them to have different perceptions of risk. Risk perception, therefore, emerges because some individuals may fear engaging in an event while other individuals will not. Similarly, insurance policyholders may be less fearful of engaging in certain financial or non-financial choices, while others may be more averse

to doing so. Insurance was considered a formal and protective way of distributing risk amongst people considered to be at risk of losing a certain item or property. Similarly, it is now considered a form of financing directed to a policyholder's desired assets that need to be protected from future related risks (Bellando, 2016, p. 33).

Insurance, therefore, serves as a financial device that saves those who suffer from misfortunes. Gurung (2001) further describes insurance as the best means by which one can spare human life, property and liability from various risks. Moreover, the premiums paid by an insurance policyholder are dependent on the insurer's willingness to pay and how "at risk" they deem their property to be (PWC, 2015). Without insurance in our society, various kinds of risks are bound to erupt, such as death, fire, accident and theft. This highlights how important insurance is in human life for both businesses and individuals.

In addition, individuals seem to always have a way to find a solution to mitigate risks and taking out insurance is one of them. According to Ibrahim (2008), insurance policies have tried to mitigate and, in some cases, totally avoid social evils, such as theft and unemployment, which are common enemies to every economy. Although, in most cases, people opt for insurance due to the value they put on their property or lives. Nonetheless, others solely do not believe that uncertainties can occur. According to classical economic theory and principles of an efficient market, consumers tend to have full information. The risk is perceived, and each individual pays an insurance amount that maximizes their expected utility (Sargent & Wallace, 1974). This view is supported by a study conducted by Kunreuther and Pauly (2004) which states that a risk-averse individual will pay a greater premium for insurance. The first form of insurance highlighted that insurance policyholders need to be aware of the factors that influence their insurance policy to avoid making uninformed decisions.

Although less than 17 per cent of households in South Africa have medical aid and only 30 per cent of the cars are insured, with Gauteng being the most urbanised province with 15 million people, it constitutes a larger portion of the 17 per cent and 30 per cent of the insured cars (StatsSA., 2019). Additionally, South Africa is one of the most insured societies globally, where more than 35 per cent of Gross Domestic Product (GDP) is spent only on insurance (FinMarkTrust, 2019). Considering that, not much research has been done on the risk perception of policyholders living in Gauteng. The purpose of this study is to, therefore, analyse the risk perception of insurance policyholders in Gauteng. This will allow insurance companies to better understand their clients and insurance policyholders and have better insight into their financial knowledge and make better insurance decisions as they will be well aware of the rationality of the policyholders' decision-making.

2. Literature review

According to Weber et al. (2002), risk perception can be defined as a personal judgment about how an individual views how risky a choice situation is. Similarly, Slovic (2000) supported the notion of risk perception as subjective judgment and further stated that risk does not exist without our minds and cultures because our minds can process and measure risk. Furthermore, subjective dimensions, including people's feelings, beliefs, societal values and attitudes, are important factors in defining risk perception (Kaptan et al., 2013). Hence, Chakreeyarat (2015) defined risk perception as the beliefs, societal values and attitudes that an individual can attach to a financial product. Moreover, not only do researchers define risk perception, but they incorporate factors influencing risk perception to provide an in-depth discussion of the concept.

As established, risk perception is built on the subjective risk of individuals. Accordingly, subjective risk refers to what an individual believes to be true concerning a given situation (Diacon & Ennew, 2001). This estimation is largely dependent on the individual's state of mind (Williams & Heins, 1989). A fundamental issue with the subjective nature of risk perception is that individuals are guided by opinions, past experiences and attitudes to arrive at a certain worldview or perception

(Chakreeyarat, 2015). Sjöberg (2000) established that most people are biased when making decisions concerning a risky event rather than logically analysing the facts. Furthermore, people do not view information the same due to different beliefs, attitudes and exposure. This is supported by Sutton's (2010) study, which found that even people with high financial knowledge draw different conclusions from the same data set influenced by personal opinions, beliefs, and exposure. Therefore this paper will test whether the *H01: stating that there is no significant relationship between demographics and insurance policyholder risk identification and risk perception, can be concluded.*

Therefore, a distinction between the factors affecting the risk perception of individuals can be drawn, as indicated in Table 1. What can be drawn from the factors influencing risk perception is that they are mainly based on the feelings and acceptability of risk determined by human nature (Sutton, 2010). Therefore, insurance policyholders will take these unconscious factors into account when being exposed to exogenous events.

Table 1 clearly shows that people's perceptions can differ because of certain factors. Kahneman and Tversky (1979) indicated that human judgment is flawed toward numbers and, therefore, would assess one risk as high and another as low without any mathematical computations. Williams and Heins (1989) and Sjöberg (2000) supported Kahneman and Tversky (1979) and stipulated that individuals cannot fully recall relevant experiences used to assess their risk perception. Moreover, logical errors are made by individuals due to the frequency and likelihood of the event happening (Bank for International Settlements (BIS), 2011). Overall, it is important to note that people tend to commit errors and omit information in their subjective perception of risk (Willet, 2002).

According to Mason (2007), the external environment refers to the factors occurring outside that influence the operation of the market. In most cases, businesses have no power over the external environment; however, they can respond to the external environment to maintain the flow of their operations (Kowo et al., 2018). Similarly, Musa et al., (2015) defined the external environment as

Table 1. Factors influencing the risk perception of an individual

Factor	Feelings and willingness to accept risk	Sources
Level of control	An individual feels less risk when they have a relatively high degree of control over the hazardous situation.	Komitete et al. (2013)
Familiarity with hazards	Unfamiliar hazards are perceived as unacceptable.	Burke et al. (2011)
Direct benefits	If the benefits of a situation or event are clear and visible, acceptance of risk will be higher.	Slovic et al. (1981)
Natural vs man-made risk	People are more fearful of man-made risks, therefore, are more accepting of natural risks than man-made risks.	Wachinger et al. (2010)
Recency of events	Events that have occurred in the most recent past tend to be more feared; hence individuals tend to associate them with higher levels of risk.	Komitete et al. (2013)
Consequence term	Individuals tend to attribute high-frequency events with high-risk levels and low-frequency events with low-risk levels.	Burke et al. (2011)

the political and social conditions that influence an organisation and the citizens of a country. Mason (2007) stipulates that although the external environment occurs outside an organisation and its stakeholders, it can significantly impact the organisation and individuals in the long term. Ricciardi (2004) believed that the external environment can significantly influence individuals' financial behaviour, causing them to have a certain perception of risk. Therefore this paper will test the H_{02} : *stating that there is no significant relationship between exogenous factors and insurance policyholder risk perception.*

Garling et al. (2009) investigated the 2008 financial crisis and found that young people are more flexible towards risk than older people. However, older people who have experienced economic downturns in the past are more risk-averse and tend to be more alert and updated about current market fluctuations. According to a study by Ward and Zurbrugg (2002), political circumstances influence the risk perception of individuals. The study shows that individuals who consider political circumstances when making a financial decision tend to be more averse to risk. Such individuals tend to exhibit low tolerance towards risk affecting their possessions. Therefore the paper will test the H_{03} : *stating that there is no significant relationship between political and legal factors and insurance policyholder risk perception.*

Also, market fluctuations may influence the decisions people make concerning their possessions. The most recent being COVID-19, a flu-like virus that affected the global economy. The end of 2019 marked the beginning of a new way of life for the entire world as a global pandemic took the world by surprise (World Bank, 2020). The markets showed huge shock, causing many people to lose money. Several businesses completely closed down due to a lack of proper investment in risk management strategies (PwC, 2020). According to OECD (2020), the world shook, and the coronavirus effects will be felt for many more years to come. According to World Health Organization (WHO; 2020), people who have life insurance wonder whether their insurance policies cover deaths caused by COVID-19. Some are concerned about the financial stability of the insurance companies they have invested their money in. Howard (2020) stated that policyholders show concern because most covers currently exclude COVID-19. Individuals, therefore, become more inclined to consider these circumstances when taking out insurance. World Health Organization (WHO; 2020) states that much of the concern stems from the fear that insurers will be negatively affected since they provide coverage for claims for death, health, and other contingencies. Concerning the policyholders of life and health insurance, pandemics are the most important to consider. However, the risk tolerance of insurers shows that since 1918 pandemics are a one in 30-year event, and those with short-term insurance tend to be less concerned about pandemics as they are usually incorporated in insurance policies (World Bank, 2020). Therefore, the paper will test the H_{04} : *stating that there is no significant relationship between market fluctuations and international events and insurance policyholder risk perception.*

For individuals with life or health insurance policies, the increase in deaths may increase the costs associated with providing for the benefits that come with each claim more than previously anticipated (Howard, 2020). This intensifies the risk perceptions of such individuals as the uncertainty about their insurance covers increases. In contrast, for non-life insurance policyholders, the concerns are somewhat less predictable. Policies such as liability insurance and motor vehicle insurance tend to exclude pandemics (OECD, 2020). As such, COVID-19 was not covered by most non-life insurance policies from the early 2000s. Nonetheless, to a certain extent, the impact depends on the precise definitions stipulated in the contract. Moreover, insurers expect to be hit by high demand for insurance pay-outs if product cancellations and surrenders increase due to the inability to pay premiums (Bank for International Settlements (BIS), 2011). Lastly, Hang et al. (2018) established that high market fluctuations cause people to take more calculated risks concerning financial decisions. Policyholders, many tend to increase their premiums to get a higher cover for fear of losing possessions (Bank for International Settlements (BIS), 2011). However, a few people are drawn to withdraw from the insurance policy completely due to fear that they will not be able to continue paying the insurance policy for the cover offered in exchange.

Evidence from the 2008 global financial crisis shows that while high market fluctuations may cause people to make unexpected financial decisions, some people choose to continue with their initial financial decisions.

With the increasing importance of insurance in this century, the Department of Presidency (South Africa; 2018) mentioned that in keeping the desired living standards, many South Africans, particularly in Gauteng, safeguard their belongings in the form of insurance. Although seen in this light, it is difficult to accept the negative effects of an unwanted event; however, some people have insurance while others still do not. Nonetheless, the question of whether insurance policyholders feel more at risk now than they were years ago still goes unanswered. Moreover, as crime rates and unemployment rates are increasing and the risk of falling victim to theft, fires, market disruptions and other unforeseen events is heightened, evidence is still required to indicate whether insurance policyholders perceive risk in the same light or not. Moreover, high crime rates, unemployment rates and political unrest put people at higher risk of losing their belongings if they are not insured. Therefore, this paper will test the H_{05} : *stating that there is no significant relationship between crime rates and insurance policyholder risk perception* and H_{06} : *stating that there is no significant relationship between unemployment and insurance policyholder risk perception*

Nonetheless, for insurance companies to improve their variety and client base, they need to understand how their clients think and feel about their products (Buzatu, 2013). Gauteng is the most populous province in South Africa, with many people safeguarding their belongings in the form of insurance. A study by StatsSA. (2019) in their General Household Survey revealed that the most urbanised provinces constitute many people who are insured by an insurance company. Therefore, with Gauteng being the most urbanised province in South Africa, conducting this study with the target population residing in the province became significant. The problem with not taking both endogenous and exogenous factors that may influence risk perception into account is that it may lead to actions that may affect the business of insurance. Therefore, to understand how policyholders perceive risk several factors have to be taken into account to help the insurer tailor insurance accordingly. This paper aims to explore and identify the factors contributing to risk perception and the relationship between those variables.

3. Methodology

This study comprised a quantitative research approach where an online questionnaire was distributed and completed by those willing to participate. Observations should be quantifiable, and the use of scientific methods yields universalised answers, while positivistic researchers believe that the knowledge gained through direct observation is more realistic, trustworthy and factual (Hammersley, 2012). Thus, a positivistic research paradigm was followed where the researcher analysed completed questionnaires from individuals to acquire a trustworthy understanding of the phenomena in question (Pham, 2018). The following sections within the methodology represent the research approach and instrument used, the sample size, formulated hypothesis and statistical analysis.

3.1. Research instrument

The questionnaire was only distributed electronically to the participants due to COVID-19. The questionnaire firstly outlined the importance of the study and the participation of the participants. The questionnaire consisted of the following sections: (A) demographic information (B) risk perception scale and (C) exogenous factors. Exogenous factors refer to external factors influencing the risk perception of insurance policyholders namely, political-legal, market fluctuations, crime and unemployment.

The first section, Section A, comprised various demographic factors such as age, gender, employment status, marital status and the insurance policy type. The demographics mentioned above

were used because previous studies have found a difference in the number of risks participants are willing to take based on their demographics (Dickason & Ferreira, 2018). Moreover, demographical questions will consist of age, gender, level of education, annual income and policy type. In addition, studies by Yao et al. (2011), Sund et al. (2017), Dickason (2017), and Abass (2018) found that demographic factors are an important part of research as they influence an individual's risk perception.

Section B consists of the risk perception scale that used the Domain-Specific Risk-Taking (DOSPERT) scale, indicating how insurance policyholders perceive the risk involved in taking out insurance. Weber et al. (2002) developed this scale and highlighted that it is significant in research because individuals can score differently on the psychological risk perception dimensions. Moreover, it allows researchers to assess perceived risk attitudes in activities in different domains (Blais & Weber, 2006). The scale included five sections of risk perception namely: ethical risk perception (items 1–3), financial risk perception (items 4–7), health perception (items 8–11), social perceptions (items 12–15), and recreational risk perceptions (items 16–19). A total risk perception scale was also constructed to test the total risk perception of insurance policyholders. This section also incorporated the relationship between risk tolerance on risk perception of insurance policyholders.

Statements included:

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. *Gambling a week's income at a casino*
8. *Driving a car without a seat belt*
9. *Swimming far out from shore on an unguarded lake or ocean.*
10. *Riding a motorcycle without a helmet*
11. *Sunbathing without sunscreen*
12. *Speaking u your mind about an unpopular issue in a meeting at work*
13. *Moving to a city far away 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*

Insurance risk perception questions:

- (1) *I feel more at risk of losing my possessions now than I did 10 years ago*
- (2) *10 years ago, I felt safer without insuring my possessions*
- (3) *10 years ago, I paid a lower premium on my insurance due to lower risk*

Section C consisted of international events occurring in the external environment, such as political-legal and global pandemics, affecting the insurance policyholder's perception of risk. To achieve this, the insurance policyholders were required to indicate the likelihood that their risk perception was influenced and was measured on a six-point Likert scale, the following mapping exists; (1 = very unlikely, 6 = very likely) or (1 = strongly disagree, 6 = strongly agree). Moreover, the external environment was a significant section in this study to analyse the effect of external

events on the risk perception of the insurance policyholders risk perception. This section was self-constructed and required exploratory factor analysis.

Political-legal questions:

- (1) *I take political circumstances into consideration when making insurance decisions.*
- (2) *The current political uncertainty in South Africa negatively influences my confidence and causes me to insure more possessions in the South African market.*
- (3) *I believe that the current political circumstances in South Africa are negatively influencing insurance performance.*

Market fluctuations:

- (1) *I take market fluctuations and volatility into consideration when making investment decisions.*
- (2) *Periods of high fluctuations and volatility in the markets, make me take more calculated risks concerning my insurance policy.*
- (3) *I will remain with my initial long-term insurance policy, regardless of high market fluctuations and volatility.*
- (4) *Periods of high market fluctuations and volatility cause me to doubt my current insurance coverage*
- (5) *During a global pandemic, I will take out insurance*
- (6) *During a global pandemic, I will increase my insurance coverage*

Crime questions:

- (1) *I do keep myself informed regarding news about the crime that may affect my level of insurance coverage.*
- (2) *I do take news regarding local criminal events into consideration when making insurance decisions.*
- (3) *Negative crime statistics negatively influence my level of insurance coverage.*
- (4) *As a result of previous crimes in Gauteng, I take more calculated risks when making insurance decisions.*

Unemployment questions:

- (1) *1. I do keep myself informed regarding news about unemployment that may affect my insurance policy coverage.*
- (2) *2. High unemployment levels influence my insurance decisions.*
- (3) *As a result of previous unemployment rates in Gauteng, I take more calculated risks when making insurance decisions.*

Notably, the Likert scale, a psychometric response scale used to measure perceptions and attitudes, has been utilised throughout the questionnaire to assess an individual's perception of various statements. The responses were measured on a six-point scale as established above. Due to COVID-19, a global pandemic, certain restrictions have been put in place by the government. On 26 March 2020, the government put the first national lockdown into effect to curb the spread of the virus. Therefore, the participants completed the questionnaire online to limit physical contact, and no hard copies were issued. Moreover, this study used QuestionPro to construct a structured online questionnaire and collect the responses.

3.2. Research sample selection

The target population for this study comprises South African insurance policyholders situated in the Gauteng province. The study comprised insurance policyholders who are permanently based in Gauteng, ideally a sample of 350 Gauteng residents. This number was chosen because not much research has been done about the insurance industry using primary data. Kunle et al. (2018), Abass (2018), and the State of California Department of Insurance (2018) are some of the researchers who combined a sample of 305, 350 and 300, respectively, respondents to determine the effects of risk perception on the demand for insurance. Therefore, although Gauteng has a large population, a sample of 350 respondents was used. In this study, purposeful snowball sampling was used to filter insurers who are above 18, insured by any insurance company in South Africa, residing in Gauteng, and has some level of education. Comrey and Lee (1992) generated a rough rating scale for adequate sample sizes in factor analysis: 100 = poor, 200 = fair, 300 = good and 500 or more = very good. In support, MacCallum et al. (1999) suggested that researchers should obtain samples of 300 or more observations whenever possible in factor analytic studies for good and meaningful results.

3.3. Statistical analysis

In order to test for reliable constructs, exploratory factor analysis was performed on the exogenous factors that were constructed in the questionnaire. Reliability analysis was further employed to ensure the reliability of these constructs used further in the paper. After reliability had been established, correlation analysis was performed between the independent variables and risk perception to test the relationships and effect sizes.

4. Empirical results and discussion

The sections below discussed the descriptive analysis, ANOVA analysis and correlation analysis of the demographic variables concerned and the exogenous variables with the risk perception of insurance policyholders in Gauteng, South Africa.

4.1. Descriptive analysis and comparison

Table 2 below indicates the demographic variables, such as age, gender, education level, annual income and type of insurance policy.

Most of the participants were between the age category of 25–34, representing 47.2 percent, followed by the 35–49 age group with 20.8 percent. As indicated in Table 2, the third biggest age group was between 18–24, representing 12.3 percent. The fourth age group was 50–59, which represented 14.1 percent. Most participants were female insurance policyholders (54.8%) while 45.2 percent were male insurance policyholders. Most of the participants completed an honours degree, represented by 34.9 percent. This was closely followed by participants with a bachelor's degree made up 33.7 percent. Participants with a diploma made up 12 percent of insurance policyholders, while 11.4 percent were participants with a master's degree. Participants with a doctoral degree, and no matric represented 1.2 percent and 0.9 percent, respectively.

The results show that 24.9 percent of the participants earn between R300 001 and R400 000. The second biggest group in the range between R400 001 to R500 000 represent 17.3 percent of the participants. Approximately 15.5 percent of the participants earn between R200 001 and R300 000 annually. This was followed by individuals who earned R500 001 and R600 000, representing 12.0 percent of the sample. The fifth group consisted of individuals with an annual income between R100 001 and R200 000 and represented 8.5 percent of the sample. Participants earning an annual income below R100 000 and from R600 001 to R700 000 represented 5.6 and 5.0 percent of the sample respectively. Approximately 4.1 percent of the sample was between R700 001 and R800 000. Participants earned more than a million representing 3.5 percent of the sample in the study. The remaining two groups represented 2.3 and 1.5 percent and the participants had an annual income between R900 001 and R 1 million and between R800 001 and R900 000.

Table 2. Demographic variable percentage

Demographic variable	Characteristic	Frequency	Valid percentile
Age	18–24	42	12.3
	25–34	161	47.2
	35–49	71	20.8
	50–59	48	14.1
	60–69	18	5.3
	70+	1	0.3
Gender	Male	154	45.2
	Female	187	54.8
Highest level of education	No matric	3	0.9
	Matric	18	5.3
	Diploma	41	12.0
	Bachelor's degree	115	33.7
	Honours degree	119	34.9
	Master's degree	39	11.4
	Doctoral degree	4	1.2
	Other	2	0.6
Annual income	Below R 100 000	19	5.6
	R 100 001–200 000	29	8.5
	R 200 001–300 000	53	15.5
	R 300 001–400 000	85	24.9
	R 400 001–500 000	59	17.3
	R 500 001–600 000	41	12.0
	R 600 001–700 000	17	5.0
	R 700 001–800 000	14	4.1
	R 800 001–900 000	5	1.5
	R 900 001–R 1 million	8	2.3
	More than R 1 million	12	3.5
Type of policy	Short-term insurance (car, home)	179	52.5
	Long-term insurance (life insurance)	58	17.0
	Both long-term and short-term insurance	103	30.2
	Other	1	0.3

The largest group of participants (52.5%) were individuals with short-term insurance policies, followed by 30.2 percent who had both short-term and long-term insurance policies. Participants with long-term insurance represented 17.0 percent, while 0.3 percent had other types of insurance policies.

4.2. Exploratory factor analysis

The scales used for the exogenous factors were self-constructed from theory. Hence, exploratory factor analyses were performed to see which of the variables came out as factors. This section of the questionnaire comprised four sections linked to external environment influences, namely political-legal, reaction to market fluctuations, volatility and international events, crime and unemployment. The EFA conducted on all four sections is discussed below.

5. Political-legal

For the political-legal factors, the KMO index obtained a value of 0.715, indicating good sampling adequacy for factor analysis because it was greater than the minimum required value of 0.5 (Samuels, 2017). Likewise, Bartlett's test of sphericity attained satisfactory results which were statistically significant at $p < 0.05$. It can, therefore, be concluded that the variables in political-legal are suitable for factor analysis. The political-legal construct comprised three items and explained 79.04 percent of the total variance and attained an eigenvalue of 2.371. The Cronbach alpha from political-legal achieved desired results with a value of 0.867, signifying the internal consistency reliability of the construct (Churchill, 1979).

6. Market fluctuations, volatility and international events

As shown in Table 3, the KMO index generated great sampling adequacy with a value of 0.812, which is satisfactory as it is greater than the minimum required value of 0.5. Bartlett's test of sphericity was significant at $p < 0.05$, signifying that the market fluctuations, volatility and international events construct is appropriate for factor analysis. Market fluctuations, volatility and international events explained 57.41 percent of the total variance with an eigenvalue of 3.444. A very good Cronbach's alpha value of 0.851 was obtained indicating very good reliability.

7. Crime

Concerning crime, the KMO index produced a value of 0.804, which is above the minimum required of 0.5 for factor analysis. Moreover, for factor analysis to be appropriate, Bartlett's test of sphericity should be statistically significant ($p < 0.05$) to ensure the variables are strongly related (Kaiser, 1974). As indicated in Table 3, Bartlett's test of sphericity was statistically significant. The crime construct explained 77.90 percent of the total variance with an eigenvalue of 3.116. The Cronbach's alpha achieved a satisfactory value of 0.905, indicating very good reliability.

8. Unemployment

As observed in Table 3, the KMO index attained a value of 0.740, which is satisfactory for factor analysis since it exceeds the minimum required value of 0.5 (Samuels, 2017). Bartlett's test of sphericity also attained desired results as it is statistically significant at $p < 0.05$. Consequently, the unemployment construct is deemed appropriate. The construct explained 84.29 percent of the total variance with an eigenvalue of 2.529. Cronbach's alpha achieved a value of 0.907, which signifies very good internal consistency reliability regarding the unemployment construct.

8.1. Analysis of variance between gender and policyholders

As observed in Table 4, the mean values of the perception of risk by insurance policyholders regarding comparing male and female insurance policyholders were computed.

Table 4 above shows that five statistical differences were found between the gender of the insurance policyholders and their risk perception regarding risky events in these domains ($p < 0.01$). The higher mean value ($M = 4.06$, $SD = 1.40$) for males suggests that males are more likely to engage in risky social events than females ($M = 3.14$). The responses for males show higher means in all risk perception categories, ethical risk, financial risk, health risk, social risk and recreational risk perception than females, and this suggests that males generally have a higher likelihood of engaging in risky events than females. Hence, males perceive risk in these domains differently from female policyholders. These findings agree with a study conducted by Morrongiello and Rennie (1998), who found that males have a different risk perception than females and would engage in risky events compared to females. The mean values for insurance risk perception were very high on a 6-point Likert scale, indicating that males and females felt that they were now more at risk of losing their possessions than they did 10 years ago and felt safer 10 years ago than they do now.

Table 3. KMO and Bartlett's test of sphericity for Exogenous factors

Political-legal		
Kaiser-Meyer-Olkin measure of sampling adequacy (KMO)		0.715
Bartlett's test of sphericity	Approx. chi-square	512.901
	Degree of freedom (df)	3
	Significance (Sig)	0
Market fluctuations, volatility and international events		
Kaiser-Meyer-Olkin measure of sampling adequacy (KMO)		0.812
Bartlett's test of sphericity	Approx. chi-square	873.649
	Degree of freedom (df)	15
	Significance (Sig)	0
Crime		
Kaiser-Meyer-Olkin measure of sampling adequacy (KMO)		0.804
Bartlett's test of sphericity	Approx. chi-square	931.537
	Degree of freedom (df)	6
	Significance (Sig)	0
Unemployment		
Kaiser-Meyer-Olkin measure of sampling adequacy (KMO)		0.74
Bartlett's test of sphericity	Approx. chi-square	689.932
	Degree of freedom (df)	3
	Significance (Sig)	0

However, there was no significant difference between males and females since the mean value was comparable high.

Table 5 shows the results of the one-way ANOVA conducted to identify and analyse the effect of the type of policy an individual has on insurance policyholder risk perception.

Two out of five DOSPERT domains of risk perception, health risk and recreational risk were statistically significant in **Table 6** at a 1 percent significance level. Individuals with short-term achieved the highest mean for health risk ($M = 2.88$) and recreational risk ($M = 3.38$). This indicates that individuals with short-term insurance are more likely to engage and relate to the aforementioned risky factors than the other groups. This signifies that the policy type of the individuals has influenced the risk perception of the insurance policyholders.

Moreover, as seen in **Table 6**, insurance risk perception was statistically significant at a 1 percent significance level. Individuals with short-term (for example, house and car insurance) achieved the highest mean for insurance risk perception ($M = 4.39$), showing that they felt more exposed to risk currently than 10 years ago compared to the other groups and have to pay higher premiums now due to increased risk.

8.2. Establishing relationships with risk perception

This section aims to discuss the influence of the demographics (age, education level, income level, policy type and gender) and the external factors (political-legal, market fluctuations, crime, and unemployment) on the risk perceptions of insurance policyholders in Gauteng. This was achieved through the non-parametric Spearman's correlation to determine the strength and direction of the relationship between the external events and risk perception of the insurance policyholders.

Table 4. Independent t-test of gender and risk perception							
Risk perception	Gender	N	Mean	SD	T	Df	Sig.
Risk Perception							
Ethical	Male	154	3.08	1.29	4.76	339	0.000**
	Female	187	2.47	1.06			
Financial	Male	154	2.87	1.34	5.33	339	0.000**
	Female	187	2.16	1.12			
Health	Male	154	3.24	1.59	6.93	339	0.000**
	Female	187	2.17	1.24			
Social	Male	154	4.06	1.40	5.97	339	0.000**
	Female	187	3.14	1.42			
Recreational	Male	154	3.57	1.60	4.86	339	0.000**
	Female	187	2.75	1.49			
Insurance risk perception							
Insurance risk perception	Male	154	4.14	1.32	0.90	339	0.369
	Female	187	4.01	1.43			
**Significant at 0.01 level							
							0.13573

Table 5. ANOVA for policy type status and risk perception

		Sum of squares	Df	Mean square	F-ratio	Sig.
Risk perception						
Ethical	Between Groups	8.405	2.00	4.20	2.931	0.055
	Within Groups	483.178	337.00	1.43		
	Total	491.583	339.00			
Financial	Between Groups	9.246	2.00	4.62	2.870	0.058
	Within Groups	542.755	337.00	1.61		
	Total	552.001	339.00			
Health	Between Groups	21.355	2.00	10.68	4.829	0.009**
	Within Groups	745.101	337.00	2.21		
	Total	766.457	339.00			
Social	Between Groups	10.970	2.00	5.48	2.527	0.081
	Within Groups	731.524	337.00	2.17		
	Total	742.493	339.00			
Recreational	Between Groups	32.205	2.00	16.10	6.556	0.002**
	Within Groups	827.732	337.00	2.46		
	Total	859.937	339.00			
Insurance risk perception						
Insurance risk perception	Between Groups	43.443	2.00	21.72	12.025	0.000**
	Within Groups	608.733	337.00	1.81		
	Total	652.176	339.00			

**Significant at 0.01 level

*Significant at 0.05 level

Table 6. Significant differences between policy type and risk perception

Risk perception	Mean		
	Short-term insurance	Long-term insurance	Both short-term and long-term insurance
Risk perception			
Health	2.88	2.25	2.50
Recreational	3.38	2.56	3.00
Insurance risk perception			
Insurance risk perception	4.39	3.52	3.81

To determine the size effect between the independent variables and risk perception as recommended by Cohen (1988):

- $r = 0.10$ to 0.29 point towards a small/weak strength relationship;
- $r = 0.30$ to 0.49 point towards a medium strength relationship; and
- $r = 0.50$ to 1.00 point towards a large/strong strength relationship.

9. Political-legal

Concerning the relationship between political-legal and risk perception, Table 7 shows a small size effect ($r = 0.10$ – 0.29). However, there is a positive, statistically significant relationship between the political-legal factor and recreational risk ($p = 0.000 < 0.01$) at the 1 percent significance level. It can be concluded that the political-legal factor influences recreational risk. The results suggest that insurance policyholders whose insurance decisions are influenced by political-legal factors are more likely to engage in recreational risk. In terms of the overall risk perception, a positive, statistically significant relationship was found between the political-legal factor and overall risk perception ($p = 0.000 < 0.01$) at the 1 percent significance level. The null hypothesis (H_{03}) can be rejected, and the alternative hypothesis (H_{a4}) can be concluded at the 1 percent significance level. Concerning the relationship between political-legal factors and insurance risk perception, there was a statistically significant 1 percent level. This indicates that there is a relationship between policyholders' perception of current political circumstances and feeling more exposed to risk currently than 10 years ago. This indicates that political and legal circumstances in South Africa will negatively influence insurance perceptions and their perception regarding insurance performance.

10. Market fluctuations

Regarding the relationship between market fluctuations and risk perception, Table 7 exhibits a small size effect ($r = 0.10$ – 0.29). It is evident that a positive statistically significant relationship between the market fluctuation factors and recreational risk ($p = 0.000 < 0.01$) at the 1 percent significance level. In terms of the overall risk perception, a positive, statistically significant relationship was found between the market fluctuations, volatility and international events and overall risk perception ($p = 0.000 < 0.01$) at the 1 percent significance level. The null hypothesis (H_{05}) can be rejected, and the alternative hypothesis (H_{a5}) can be concluded at the 1 percent significance level. Concerning the relationship between insurers' perception of market fluctuations and insurance risk perception, there was a statistically significant at a 1 percent level. This indicates that there is a relationship between policy holders' perception of current market fluctuations and feeling more exposed to risk currently than 10 years ago. This indicates that market fluctuations in South Africa will negatively influence insurance perceptions and cause insurers to doubt their current insurance coverage. Insurers will also be more likely to take out more insurance coverage during a pandemic.

11. Crime

Concerning the relationship between crime and risk perception, Table 7 shows a small size effect ($r = 0.10$ – 0.29). It can be observed that a positive statistically significant relationship between the crime factor and recreational risk ($p = 0.001 < 0.01$) at the 1 percent significance level. It can be concluded that the crime factor influences recreational risk. Therefore, the results suggest that there is a relationship between crime rates and the recreational activities of the policyholder. In terms of the overall risk perception, a positive, statistically significant relationship was found between the market fluctuations, volatility and international events and overall risk perception ($p = 0.000 < 0.1$) at the 10 percent significance level. The null hypothesis (H_{06}) can be rejected, and the alternative hypothesis (H_{a6}) can be concluded. Concerning the relationship between insurance policy holders' perception regarding crime and insurance risk perception, there was a statistically significant at a 1 percent level. This indicates that there is a relationship between policy holders' perception of crime in South Africa and feeling more exposed to risk currently than 10 years ago.

Table 7. Non-parametric correlation of demographics, exogenous factors and risk perception

Factor	Spearman's correlation	Political-legal	Market fluctuations	Crime	Unemployment	Age	Highest level of education	Income
Ethical	P	−0.051	−0.030	−0.033	−0.022	−.249**	0.05	−.128*
	Sig. (2-tailed)	0.350	0.585	0.539	0.690	0.00	0.31	0.018
	N	341	341	341	341	341.00	341.00	341
Financial	P	0.030	0.028	−0.014	−0.061	−.346**	.154**	−0.001
	Sig. (2-tailed)	0.575	0.605	0.794	0.263	0.00	0.00	0.984
	N	341	341	341	341	341.00	341.00	341
Health	P	0.027	0.077	−0.007	0.005	−.341**	.127*	0.056
	Sig. (2-tailed)	0.619	0.156	0.893	0.922	0.00	0.02	0.302
	N	341	341	341	341	341.00	341.00	341
Social	P	0.061	0.035	0.033	−0.002	−.371**	.214**	.126*
	Sig. (2-tailed)	0.262	0.520	0.539	0.973	0.00	0.00	0.020
	N	341	341	341	341	341.00	341.00	341
Recreational	P	.210**	.217**	.183**	.149**	−.333**	.193**	0.048
	Sig. (2-tailed)	0.000	0.000	0.001	0.006	0.00	0.00	0.375
	N	341	341	341	341	341.00	341.00	341
Risk perception	P	.129*	.148**	0.079	0.069	−.418**	.197**	0.020
	Sig. (2-tailed)	0.017	0.006	0.144	0.202	0.000	0.000	0.717
	N	341	341	341	341	341	341	341
Insurance risk perception	P	.328**	.301**	.357**	.315**	−.113*	−0.01	0.004
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.04	0.81	0.938
	N	341	341	341	341	341.00	341.00	341

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

This indicates that crime in South Africa will negatively influence insurance perceptions and take crime levels into account when taking out insurance coverage.

12. Unemployment

Regarding the relationship between unemployment and risk perception, it is shown in Table 6 that there exists a small size effect ($r = 0.10-0.29$). It can be observed that a positive statistically significant relationship between the unemployment factor and recreational risk ($p = 0.006 < 0.01$) at the 1 percent significance level. In terms of the overall risk perception, a positive, statistically significant relationship was found between the market fluctuations, volatility and international events and overall risk perception ($p = 0.000 < 0.1$) at the 10 percent significance level. The null hypothesis (H_{07}) can be rejected, and the alternative hypothesis (H_{a7}) can be concluded. Concerning the relationship between unemployment and insurance risk perception, there was a statistically significant at 1 percent level. This indicates that there is a relationship between policy holders' perception of current unemployment levels and feeling more exposed to risk currently than 10 years ago. This indicates that high unemployment in South Africa will negatively influence insurance perceptions and will cause insurance holders to make more calculated decisions when it comes to insurance coverage.

13. Demographics

Table 6 shows that the correlation coefficient for age had a medium negative effect ($r = -0.418$) on risk perception, which was statistically significant at a 1 percent significance level ($p < 0.01$). The table also shows that all the determinants risk perception determinants had a negative association with age. The results in Table 7 show that five determinants, ethical risk, financial risk, health risk, social risk and recreational risk perception, were statistically significant at a 1 percent significance level ($p < 0.01$). Therefore, the null hypothesis (H_{01}) can be rejected, and the alternative hypothesis (H_{a1}) can be concluded at the 1 percent significance level. It can be concluded that there is a relationship between age and the perception of engaging in a risky activity of insurance policyholders. This agrees with the study conducted by Ferreira and Dickason-Koekemoer (2019), who discovered that younger individuals have a higher likelihood of engaging in risky events. Insurance risk perception was statistically significant at a 5 percent significance level ($p < 0.05$). This signifies a negative correlation between age and the perception of insurance risk of the insurance policyholders over the last 10 years. Thus, younger insurance policyholders are less likely to feel that their risk has increased over the last 10 years. This could be attributed to the fact that they might not have an insurance policy for this long.

The association between the level of education and risk perception was $r = 0.917$, signifying a small positive linear effect at a 1 percent significance level ($p < 0.01$). Three determinants, financial, social and recreational, were all statistically significant at a 1 percent level. Conversely, health was statistically significant at the 0.05 level. This signifies a positive correlation likelihood of engaging in a risky activity of the insurance policyholders. Thus, the higher the education level, the more likely the individuals are to engage in higher risks. It can be concluded that there is a relationship between the level of education and the likelihood of engaging in a risky activity of insurance policyholders. This agrees with a study by Grable (1997), who discovered that individuals with higher education levels are more likely to engage in higher risks. Insurance risk perception was not statistically both at a 1 percent significance level ($p < 0.01$) and at a 5 percent significance level ($p < 0.05$). This signifies that the level of education does not influence the perception of insurance risk of the insurance policyholders over the last 10 years.

Ethical and social risk factors are significant at the 0.05 significance level when correlated with the income level. Given the positive relationship between social risk and income levels, there is a positive correlation with the likelihood of engaging in a risky social event. This signifies a positive correlation likelihood of engaging in a risky social activity of the insurance policyholders. Thus, the higher the annual income, the more likely individuals will engage in higher social risks. However, there is a negative relationship between ethical risk and income levels. It can be concluded that there is a negative correlation with the perception of engaging in a risky ethical event. These

results agree with a study by Van den Bergh (2018), who found that individuals with a higher income tend to take higher risks. Thus, the lower the annual income, the more likely individuals will engage in higher ethical risks. Insurance risk perception was not statistically both a 1 percent significance level ($p < 0.01$) and at a 5 percent significance level ($p < 0.05$). This signifies that the level of income does not influence the perception of insurance risk of the insurance policyholders over the last ten years. Likewise, policy type had a small positive linear association with risk perception ($r = 0.150$), which was statistically significant at 1 percent ($p < 0.01$). A medium positive effect ($r = 0.352$) was obtained for gender and risk perception, which was statistically significant at a 1 percent significance level ($p < 0.01$) and was the highest effect size obtained. The null hypothesis (H_{01}) can be rejected, and the alternative hypothesis (H_{a1}) can be concluded at the 1 percent significance level.

14. Conclusion

The insurance industry is highly dependent on its clients for its daily operations and understanding the impact of their clients' risk perceptions is vital for the industry. With very limited research on the insurance industry as a whole, this paper provided a meaningful contribution to the insurance industry by looking at more than one category of risk perception and self-constructed exogenous factors such as crime, unemployment, and political-legal factors and market volatility.

In the results, it was found that exogenous factors influence the risk perception of the insurance policyholders. The results showed a combination of small and medium-strong relationships with risk perception. Political events and market fluctuations and volatility had significant relationships with the risk perception of policyholders. Therefore, as political events take place, the perceived risk that insurance policyholders face would also increase. The same was true for market fluctuations, volatility and international events as a significant relationship was found between this construct and the perceived risk that insurers face. It can be assumed that the more market volatility exists or extreme international events take place the more will be the level of perceived risk by the insurer. In terms of demographics, there were also significant relationships between age, level of education, policy type and gender and risk perception. Males showed higher means in all risk perception categories, ethical risk, financial risk, health risk, social risk and recreational risk perception than females, and this suggests that males generally have a higher likelihood of engaging in risky events than females. Hence, males perceive risk in these domains differently from female policyholders.

In terms of insurance risk perception males and females felt that they were now more at risk of losing their possessions than they did 10 years ago and felt safer 10 years ago than they do now. However, there was no significant difference between males and females since the mean value was comparable high for both gender groups. Individuals with short-term (for example, house and car insurance) indicated they felt more exposed to risk currently than 10 years ago compared to the other policy types (long and medium-term) and have to pay higher premiums now due to increased risk. There was also a significant relationship between insurance policyholder perception of current political-legal, market fluctuations, crime and unemployment and insurance risk perception. This indicates that there is a relationship between policyholders' perception of current exogenous market-related factors and feeling more exposed to risk currently compared to 10 years ago. This indicates that exogenous factors in South Africa will negatively influence insurance perceptions and will cause insurance holders to make more calculated decisions when it comes to insurance coverage.

In addition, previous research studies have mainly focused on one type of insurance, motor vehicle insurance. This study therefore significantly contributes to the insurance industry because it incorporates more than one type of insurance which were previously not incorporated by other researchers. The empirical findings of this research study will furthermore, be of benefit to the insurance industry as it provides an analysis of the exogenous factors influencing the risk perception and insurance risk perception of the insurance policyholders. This can assist insurers to tailor

insurance products accordingly for each policyholder to maximise customer satisfaction, especially in unprecedented market conditions. In turn, this will help insurers retain clients and realise higher profits. Additionally, retaining customers is a challenge commonly faced by insurers and can put insurers out of business. This research study will assist insurers in retaining clients and ultimately realise higher profits in the future.

During this research endeavour, the researcher experienced some limitations and recommendations were provided. Future researchers can expand on the sample size although this study met the sample adequacy as recommended by previous researchers. This research study considered the influence of demographics and exogenous factors on risk perception. Accordingly, future researchers should consider including more variables such as the demand for insurance. Moreover, this research was performed amid the COVID-19 pandemic. It was recommended for future researchers, to perform such analysis before and after an extreme market event to analyse the change in the risk perception. Lastly, it was recommended to include participants from varying geographical locations as this study considered participants from Gauteng, South Africa only. This paper was unique in its contribution in that it provided risk perception of South African insurance policyholders based on its current economic and political landscape. This illustrated whether the risk exposure of South African policyholders has increased based on the current economic climate. The suggestion for future research for other countries, not in Africa, are to profile their insurance policyholders and their risk exposure based on their economic climate and other external variables.

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