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JUDGEMENT BIAS AND CONSUMER WILLINGNESS TO PAY: EMPIRICAL STUDY

[Zkreslený úsudek a spotřebitelova ochota platit: empirická studie]

Radka Kubalová[1], **Martin Klepek**[2]

[1] *Silesian University, School of Business Administration, Univerzitní nám. 1934/3, 733 40 Karviná*
Email:kubalova@opf.slu.cz

[2] *Silesian University, School of Business Administration, Univerzitní nám. 1934/3, 733 40 Karviná*
Email:klepek@opf.slu.cz

Abstract: The recent COVID-19 pandemic brought the focus on the shift in the consumer habits, consumption and spending, as well as the new sides consumers' (ir)rationality, especially in the terms of the panic stock-up purchases and herd behaviour. In this paper, we use the COVID-19 crisis as an opportunity to empirically test the bias in the consumer judgments. Using a simple survey experiment among college students, the difference in their willingness to pay monthly for a life insurance under the COVID-19 frame and general, non-COVID-19 frame is examined. According to the obtained results, it was found out the subjects were willing to pay higher amount for the insurance when the question was framed by the COVID-19 context. This result generally supports the previously found empirical evidence on the influence of the judgment heuristics, importance of the context frame and the consumer irrationality. Practical implications for small and medium enterprises are discussed at the end of the paper.

Keywords: consumer behaviour, context, covid-19, insurance, irrationality, willingness to pay.

JEL classification: D91, M39

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Introduction

Understanding the human behaviour is relevant for the marketing discipline and marketing practice as well as for other social sciences including economics, psychology, politics and sociology. Decades of research in those scientific fields report a number of cases when humans, including consumers, do not behave according to the rational theory and exhibit various biases in their judgment and behaviour. This occurs mainly due to the influence of contextual factors such as incidental emotion, affect, or mood (Cohen et al. 2008, Peters 2006) and the affective reactions when making decisions or affect heuristic for short (King and Slovic 2014). Therefore, two main factors can be also pointed out in relation to the irrational behaviour. One is represented by consumer psychological characteristics such as emotion and the other one is the impact of the external environment. The two factors are also interconnected, as in case of the environment causing an emotional impact on the consumer and thus, resulting in the irrational behaviour.

This environment-emotion-behaviour sequence can be observed also in the in the context of COVID-19 pandemics when the consumers' irrationality is most often discussed in relation to the herd behaviour, consumer panic buying in a form of stock-up purchases of certain goods. For example, spending on paper products (including toilet paper) was up by 50% in Italy, 108% in France, 109% in Germany, 134% in the UK, 210% in Spain and 217% in the US in middle of March 2020 (IRI 2020). In both general and academic public, there seems to not be an agreement whether such behaviour is irrational or not. Hansman et al. (2020) notes stocking up on storable consumer goods in a crisis is not irrational due to the increased risk of supply disruption, increased store visit costs and higher price expectations but Keane and

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Neal (2021) and Chen et al. (2020) also point out there is a high economic, psychological and social cost of stockpiling behaviour for the consumers themselves and for the vulnerable groups.

In this paper, the authors explore a different side of consumers' irrationality, the manifestation of the availability and affect heuristics, using the COVID-19 situation in a simple experiment as a mere contextual frame for consumers' willingness to pay (WTP) for a hypothetical insurance. The aim of the paper is to compare the consumers' WTP under a specific and general context frame in a hypothetical task. The difference in the WTPs between the groups is statistically tested using Mann-Whitney U test and the effect sizes are reported.

1 Theoretical background

Insurance differs not only from tangible products but also from other financial services. Robson (2015, p. 285) considers insurance the most intangible of all financial services since when consumer buys an insurance service they are purchasing peace of mind that in the event of an insured loss they will be returned to the financial position they were in prior to the loss. Although in the case of life insurance, the loss is invaluable and the risk is connected to the compensation. Nevertheless, the risk in the insurance contract is defined an unknown event in terms of its occurrence and non-occurrence which means the risk is of a probabilistic nature. Therefore, when evaluating the insurance contract, the subject's attitude towards the possible risk and their assessment of the probability plays an important role. The subjects who deem the probability of the event in the contract high should more likely to find the insurance service more valuable to them which should result in a higher willingness to pay and those who do consider the risk small should find the insurance service as not as useful and not value it as much.

The research in psychology and behavioural economics point out that for most people, it is not that easy to assess the risk, the probabilities of events, in a truly rational way. While experts' judgment of risk correlate with technical estimates of annual fatalities, non-experts including common consumers employ the experiential approach to probability and risk estimation. Thus, Slovic and Peters (2006, p. 322) differentiate risk as feelings and risk as analysis. The early evidence of risk as feelings was made by Fischhoff et al. (1978) when the feeling of dread was the major determiner of public perception and acceptance of risk for a wide range of hazards, e.g. nuclear power being perceived way riskier than X-rays although they both rely on the same harmful radioactivity. That means most consumers depend on intuitive and experiential thinking led by emotional and affective processes when they are led by risk as feelings (Slovic 2000).

The two approaches towards the risk are tied to the dual-processing theory and the two modes of thinking. The main characteristics of the two modes of thinking are summed in the Table 1.

Table 1: Two modes of thinking

Experiential – System 1	Analytical – System 2
Holistic	Analytic
Affective and pleasure oriented	Logical and reason oriented
Images, metaphors, and narratives	Abstract symbols, words, and numbers
Rapid processing and immediate reaction	Slower processing and delayed reaction
Self-evidently valid via experience	Requires justification via logic and evidence

Source: own processing based on Slovic et al. (2002, p. 330) and Kahneman (2011)

For non-experts using analytical mode to estimate probabilities of every event would be too effortful and hence, the reliance on affect and emotion is a quicker, easier, and more efficient

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for them. This more intuitive thinking employs rules of thumb and relies on a wide variety of heuristics, including the availability heuristic and affect heuristic (emotions) which are both closely linked to the assessment and perception of the risk (Keller et al. 2006, p. 631).

When employing the availability heuristic, people are more likely to assess the occurrence of an event by how easily they can recall the examples of such occurrences (Tversky and Kahneman 1974, p. 1127). This means the events seems more likely to happen in the future if they have frequently or recently been experienced or observed in the past. The heuristics reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations. In result, the availability heuristic generally might lead to overestimation of low frequency events and underestimation of high frequencies. The overexposure to some kinds of lethal events among young population led to overestimations to such lethal events like accidents and underestimation of frequency of death connected to diseases like stomach cancer or diabetes (Lichtenstein et al. 1978).

It is been also noted that people are not influenced in their judgment only by the recall of events that happened to them directly but also in their social circle, family, friends and acquaintances. Another major contributor in bringing specific risks to mind easily are the media, which are often skewed toward novelty and rarity (Park and Grow 2008, Lerner et al. 2003). An example of that can be the events of the September 11, 2001 and the judgment of terrorism risk in the months following the event. The respondents in a survey were found deeply pessimistic when they assessed there is a 20.5% personal chance of being hurt in a terrorist attack and almost a 47.8% chance for the average American to be hurt the same way within the next year (Lerner et al. 2003). Of course, when the year passed the estimates of respondents were proved to be highly inaccurate and biased.

Building on these findings, we decided to explore the availability heuristics and the role of the context and we set the following research question: Do consumers exhibit a judgment bias due to the difference in the contextual frames? To answer this question, we use the concept of WTP to reveal how consumers judge and value the hypothetical insurance service under two levels of context frames: general and specific one. Ever since the start of the pandemics in Wuhan, China, the COVID-19 brought lot of uncertainty to the global, including Czech, society and it was getting daily coverage by Czech media as well which was the main motivation to use it for the specific context framing.

We postulated that COVID-19 could be a powerful trigger for the irrationality in connection to the availability and affect heuristics it fits the criteria of the novelty, uncertainty and the high media coverage. However, from the rational point of view, the consumers' WTP should be higher for the insurance with a general death compensation than specifically a COVID-19 death compensation, as the COVID-19 is only one specific cause while general death context includes more causes.

Therefore, we set our main hypothesis in accordance to the rational theory as follows:
H1: Consumers' WTP is higher when they face the general context frame than when they face the specific frame.

In the following chapter, the methods used to answer the research question are introduced.

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2 Research methods

We used a simple online survey experiment where respondents (N = 214) were asked how much are they willing to monthly pay for a life insurance with the death compensation of 200 000 CZK. A group of 89 respondents were answering the question under the general death context frame and 125 respondents were answering under the COVID-19 death context frame. The data was collected electronically in April and November 2020, during the spring and autumn wave of the pandemics when the numbers of COVID-19 victims were reported daily by the media. Majority of the respondents were university students, both full-time and part-time, who could gain additional points as part of the course continuous assessment for participating and completing the survey. No monetary reward was provided for the participants. The assortment of individuals to the groups was done randomly with the help of a link randomizer tool.

To examine the difference in consumers' WTPs in two different context frames Mann-Whitney U test is used. To interpret the approximate effect size of the context r and CL effect sizes suitable for non-parametric tests were used.

3 Results

In this chapter, the results from the questionnaires are presented with the focus on the differences between the consumers' WTPs under the two context frames. Firstly, brief descriptive statistics is presented to introduce the characteristics of the sample. Then the results of the questionnaire are presented in regards to the WTP and the differences between the consumers' WTP under the two different contexts are statistically tested and the two effect sizes (r and CL) are presented. The end of the chapter is dedicated to discussion and the research limitations.

3.1 Sample description

Firstly, we present the Table 1 which contains the distribution of the participants based on the socio-demographic factors such as gender, age and income. We labelled the group of participants who answered the questionnaire under the general death frame as a control group and the respondents answering under the specific COVID-19 frame as an experimental group.

Table 2: Characteristics of the sample

		CONTEXT FRAME	
Characteristics	Demographic groups	Control group (N = 89)	Experimental group (N = 125)
Gender	Male	41.57%	40.80%
	Female	58.43%	59.20%
Age	18-27	41.57%	40.48%
	28-37	13.48%	11.11%
	38-47	15.73%	24.60%
	48-57	21.35%	16.67%
	58 +	7.87%	6.36%
	Median	33	35
	Mode	23	21
Income	Up to 10 000 CZK	17.98%	16.80%
	10 001 CZK – 15 000 CZK	13.48%	7.20%
	15 001 CZK – 20 000 CZK	12.36%	24.00%
	20 001 CZK – 25 000 CZK	20.22%	19.20%
	25 001 CZK – 30 000 CZK	21.35%	21.60%
	30 001 CZK – 35 000 CZK	6.74%	7.20%
	Over 35 000 CZK	7.87%	4.00%
	Median	20 001 CZK – 25 000 CZK	20 001 CZK – 30 000 CZK
	Mode	25 001 CZK – 30 000 CZK	15 001 CZK – 20 000 CZK

Source: authors' calculation

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In both groups, there were more women (58.43% and 59.20%) than men (41.57% and 40.80%). When it comes to the age characteristics, the majority of respondents were young adults which correspond with the use of a student sample. For the income categories, the group with the income between 20 001 CZK – 25 000 CZK was the median category in both examined groups. This is below the current Czech wage median which was 35 402 CZK in 3rd quarter of 2020 according to the Czech Statistical Office (2021).

Although, the sample is not representative in regard to its size and its structure which represents one of the main limitations, there is also one reason why the student sample data might make the research more challenging. From early on, it has been known young people, unlike seniors, are not generally at such a high risk when it comes to the COVID-19 epidemics and hence, from the rational point of view, it is to be expected the younger generations should evaluate the COVID-19 context frame as less risky as opposed to the older generations.

3.2 Consumer WTP between the context frames

Beside the data about the respondents, we include also the descriptive statistics for the WTP results between the groups as shown in Table 3.

Table 3: Descriptive statistics for WTP

Group	Mean	St.Error	St.Dev.	Variance	Median	Mode	Min.	Max.	Sum
Control	448.86	54.74	513.55	263743.52	300	200	0	3000	39500
Experimental	892.66	99.49	1107.92	1227507.49	500	1000	0	7000	110690

Source: authors' calculation

According to the results, the respondents' average WTP was higher by 443.8 CZK when the context of the insurance compensation included only the death due to the COVID-19. Also, the median and mode values are higher for the COVID-19 context group in comparison to the general context group.

All 214 observations were included in the analysis and no extreme values were removed as it can be assumed the extreme values in this case are a legitimate observation that is a natural part of the respondents' judgment, e.g. the minimal value of 0 is a stated preference of not wanting such an insurance at all. However, the presence of 0 value also leads to the skewed distribution with median values being lower than the means in both groups. Therefore, the normality of the distribution was tested and the null hypothesis of normal distribution was rejected for both groups (Shapiro-Wilk test; $p1 < 0.001$; $p2 < 0.001$).

Given the non-normal distribution, we used non-parametric test to find out whether there is a statistically significant difference between the medians of the both groups. According to the obtained results (Mann-Whitney U test; $p < 0.05$), the null hypothesis of the group data distribution is rejected.

Using Cohen's guidelines for effect size r according to which a large effect is 0.5, a medium effect is 0.3, and a small effect is 0.1 (Sawyer and Ball, 1981), it can be concluded the effect size ($r = 0.21$) of the context is relatively small. According to the Common Language effect size ($CL = 0.635$), the difference in the medians of the two groups is statistically significant with 63.5% probability that the random value from the experimental group with COVID-19 context would be higher than the random drawn value from the control group with general context.

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4 Discussion and research limitations

We used the global situation around the COVID-19 pandemics as an opportunity to bring an empirical evidence of the bias in the specific consumers' judgement, building on the findings about the role of availability and affect heuristics. It is concluded that the consumers WTP differs according to the two used context frames. However, the WTP of consumers in the specific context is higher than in the general context. Specifically, consumers valued insurance which covers only death due to COVID-19 more than an insurance covering death due to any unspecified cause. Comparing the obtained results with the rational theory and the hypothesis we set in the beginning, we have to reject H1. Thus, we conclude consumers' WTP is not higher when they face the general context frame than when they face the specific frame.

The obtained results support the previous research about the existence of bias in consumer judgment and the employment of the heuristics when it comes to predicting the values and assessing the risk. In this case, consumers were evaluating the insurance covering only death by COVID-19 as more valuable than same insurance covering death in general.

However, it is not intended to generalize the presented results by assuming majority of the consumer population would be willing to pay more for an insurance containing COVID-19 as a risk, nor we imply adopting such a context in the insurance product design would make it more attractive to the consumers as there is several constraints to make such assumptions.

First of all, the size and the structure of the sample can be pointed out as the limitation. The student sample is quite specific in its characteristics like age, education, intelligence, income, attitudes towards technologies and financial products. Moreover, financial products are known to be tied with the consumer's life cycle with life and the needs of the person at different stages of life (Rajshekhar and Dion 1999). Life insurance is one of the products which becomes more relevant to the consumers once they settle down and found the family. Therefore, it could be possible that most of the students in the sample do not have life insurance yet, nor considered getting one and thus, are not familiar with this product category. This is not necessary a disadvantage when it comes to the judgment as unfamiliar problems appear more complex and it is known that heuristics help to solve complex tasks. However, it is possible that a group with more experience with the life insurance products would have also other intuitive rules of thumbs available to solve the problem.

Secondly, although we used the concept of WTP to measure and compare the outcome of the judgment task, we were less interested in WTP in connection to the different levels of product attributes and more towards what is around it. Therefore, the research is less about the specific product of insurance and more about consumers' reaction to the context.

Lastly, another important limitation in this research might be the time aspect. The data was collected specifically when the pandemic was relatively new and there was a high uncertainty about it during the spring and during the autumn when the epidemical situation in the country got worse. It is highly possible the novelty of the COVID-19 topic and the media impact on the consumers eventually does wear off with the time. Thus, it would be questionable to assume its impact and power to trigger the irrationality is everlasting which could be the topic of a later replication of the study.

Conclusion

The findings of studies focusing on risk and probability perception indicate the significant role of experiential processing which uses various heuristics to make the complex problem easier to solve. The most discussed ones in connection to the risk are the affect and availability heuristics as literature suggest consumers judge the frequency or probability based on an emotion (most often fear when it comes to the risk) or the frequency of the event they either experienced themselves in the past or were reported by members of their social circle or media. However, the estimations based on the heuristics were proved to lead to a judgment bias in the estimations in the past.

Building on these findings it was explored whether consumers would exhibit a judgment bias in two different contexts, using the case of COVID-19 for the context framing. The global pandemics which disrupted the everyday life of humans all over the world, including the people in the Czech Republic had the characteristics of actual, topical and emotional context, making it suitable to use as a frame.

In a simple survey experiment, we found a significant difference in the consumers' judgment based on the context, resulting in a bias contrasting the rationality. In a broad sense, this paper confirms the general importance of the context in consumers' decision making. Although, there are several significant limitations of the study, we believe the better understanding of the consumers' behaviour, including the exploration in consumers' judgment and irrationality in specific cases, is valuable.

Practical implications for small and medium companies, besides obvious framing effect usage in their offerings, is in buying services. Many small and medium companies' owners or self-employed entrepreneurs do decide, buy and consume financial services such as insurance. Thus, having this particular bias in mind and being aware of its influence on decision making in certain contexts could help these businesses make a better decision.

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