



1) METHODS

a). When studying decision-making, one can make use of eight different most common methods. These methods are: observation, process tracing, interview, use of archival data, hypothesis scenarios, training studies, experiments and psychological measurement. In the following, I will explain these methods in more detail.

- **observation**: Observation means that we observe/look at a situation from outside without intervene ~~in order~~ to. This way, we observe the behaviour of consumers. A con is, that we have no control over the situation and it could be the case that the observed consumers act in a socially-accepted way. This means that they do not follow their own goals / preferences anymore. An example can be seen in the fact that ~~people~~ researchers observe the behaviour of consumers in the supermarket. They observe which ways they take when they do their grocery shopping, for example. This way, the management of the supermarket is able to improve its product placement, so that sales figures go up in the future.
- **process tracing**: This means that scientists track the thinking process of people to get to know how they come to conclusions by using computer technology. ~~An example can be~~ The con here is that some thinking processes are sub-consciously, therefore they cannot be tracked



by the scientists. An example can be seen in the field ~~area~~ of neuro marketing. Here, scientists for example make use of "Functional magnetic Resonance Imaging" in order to measure blood flow in certain parts of the brain. This way, they can identify what motivates us and what kind of preferences we have.

- **interview**: this can be either be structured or open. The con is that we have the interviewer effect here. It can be for example used to study opinions or gather personal data. An example can be seen in asking people after a political election ~~who~~ which candidate they choose to predict the new parliament.
- **use of archival data**: you can make use of already selected data. However, sometimes this data is incomplete. It can be used for example when people use PAYBACK cards. Based on the past shopping behaviours, researchers can predict future shopping behaviour.
- **hypothesis scenarios**: Here, researchers try to identify how consumers make a conclusion. Usually, they manipulate the situation in order to find out how this affects the decision. An example can be seen in the following question: "What would you do if you could change your gender for a day?"
- **training studies**: Here, you test prescriptive studies, for example, whether their instructions are clear and helpful.
- **experiments**: in experiments, usually ~~there~~ this type of study method is combined with one of the other. Usually, it is used to test hypothesis and to



find cause-and-effect. It is common that some variables are manipulated to see how the outcome changes. An example can be seen in the Marshmallow test.

- **psychological measurement**: test refers to the field of psychology and education and measures for example the knowledge level of people.

b). Imagine the following situation: In Israel, there are 600 people dying in car accidents. Hence, the government decided to reduce the number of death. Therefore, they developed two different programmes, which can be derived from the following table:

	# of people that can be saved	costs in 1000 €
PROGRAMME A	570	55 €
PROGRAMME B	500	15 €

In the first programme A, 570 can be saved, however, this costs 55.000 €. In the second programme B, (only) 500 people can be saved, but the costs are far lower - only 15.000 €. Now the government wants to

In the following, I will now explain the difference between a choice and a matching task.

* decide for one of the two programmes.

choice task: When given the choice task, people have all information available, which means, that



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they know all figures and facts about both programmes, A and B. Now, people should decide whether they go for programme A or programme B. It means that they have the choice between the two with all information given. In this regard, it was found that people usually go for programme A, as they can save more people with this programme. Hence, saving 70 people more seems to be more valuable than saving 40.000 €.

matching task: In this case, people do have all information about the two programmes except one. The table now looks as the following:

	# of people that can be saved	costs in 1000 €
PROGRAMME A	570	?
PROGRAMME B	500	15 €

Now, people are asked what does programme A have to cost to make it as desirable ^{as} ~~than~~ programme B? Here, usually people say a lower number than 55.000 € ^{which was illustrated} in the choice task. This means that saving 70 people ^{has a lower value now compared} is ~~less valuable than~~ ^{to saving money} ~~saving 40.000 €~~. To give an example: # people for example say that programme A should cost 20.000 €, to make it as desirable ^{as} ~~than~~ programme B. ^{Hence;} ~~saving 70 lives only equals~~ is "only" ~~more valuable than saving 5.000 €, when people~~



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~~decide for programme A.~~ Hence, if they decide to go for programme A, saving 70 lives more is "only" more valuable than saving 5.000€.
~~In the matching task, people are also forced in this context,~~

In this context, the prominence effect occurs. In the choice task, the prominent goal is to save lives, therefore people choose programme A although it is not more expensive. In the matching task, people are also forced to look at the other dimension (in this case the cost dimension). Hence, sometimes people recognize a shift in preferences.

In conclusion, one can say that the choice and the matching task affect our decisions ~~the~~ differently. ~~the~~ It means that the trade-off between saving people and saving money differs when using the choice task or the matching task.

c). Typical characteristics of experiments used by experimental economists can be derived from the following.

First of all, experimental economists usually make use of **controlled experiments**, wherefore they either take place in the **field** or in **laboratories**.

It means that they want to **control the situation**. They ^{manipulate} ~~change~~ for example certain variables in order to see how the outcome changes.

Secondly, experimental economists prefer to **observe the decision-making** by people instead of using



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verbal reports of judgments. Furthermore, they prefer it when the decision has a real consequence. Therefore, participants usually get a pay-off, like money for example.

Another typical characteristic can be seen in the fact that experimental economists are of the opinion that the decision-making of participants in the experiment can be transferred to the real life. This means that they think that the participants would have made the same decision ~~they made~~ in their real life. This is due to the fact that it is assumed that experiments can be transferred to all possible situations.

A typical example of this can be seen in the Marshmallow test. Here, 500 kids were tested whether they ~~are able to delay their~~ have the self-control to delay their want of action and wait for a reward in the future. Hence, the children had the choice between eating the given marshmallow now or wait some time and get a second marshmallow when they didn't eat it so far. It came out that 2 out of 3 people couldn't wait. Consequently, they ate the first given marshmallow and therefore didn't receive a second one. The follow-up on this is that those children who were able to wait, ~~are more~~ show a better physical health appearance, are better in stressed situations, are better educated and have a better ~~at~~ social and mental development. Based on this example, I want



to explain the characteristics in more detail. ~~It was~~
in the marshmallow test, it was a controlled
experiment/^{controlled situation} taking place due to the fact that
the children were in a pre-set environment. Further-
more, the experimental economists observed the
decision-making of the children. They were finding
out how the children reacted when waiting for the
second marshmallow. In addition, the children were
given a marshmallow as a pay-off, due to the
fact that experimental economists prefer decision-
making with real consequences. Hence, if the children
could wait, they got a marshmallow as a pay-off.
Lastly, the experimental economists transferred the
behaviour ~~to the~~ of the children in the experiment to
the real world. It means that they are of the
opinion that those children who were able to wait
^{can} ~~could~~ also delay certain delightment in ~~the~~ real
life. Further, they did a follow-up on the experiment
which was already explained before (see page 6).



2) JUDGMENT AND CHOICE UNDER CERTAINTY

a). I want to explain what a non-compensatory ^{decision} strategy is by first saying what a compensatory decision strategy is. This makes the difference between the two approaches more clear.

Compensatory decision strategies: Usually, products or services consist of several components / criteria. If we want to make a rational decision, ~~we should evaluate~~ in order to maximize utility, we should evaluate each criteria of the product / service separately and consider the importance of each criteria. We could therefore use for example the MAUT - model, which is a compensatory decision strategy. When doing so, we don't reject one of our alternatives only because it ranks poorly on one of the decision criteria. This alternative can still be the one with the highest utility, when the poor score on one of the criteria can be compensated through high scores on other criteria. Hence, we allow full compensation in this case.

Non-compensatory strategies: When making use of non-compensatory strategies, we don't allow full compensation. In order to simplify a decision, we ~~we set a minimum level of compensation allowed~~ a minimum level of compensation allowed.

It means that a bad score (below the minimum set level) on one criteria cannot be compensated by higher scores on other criteria.



Two such strategies can be seen in the following:

→ **Conjunctive Strategy**: When applying a conjunctive strategy, ~~for~~ the decision-maker set a minimum accepted level for each criteria. Hence, he ^{decides for} takes the first alternative that meets the requirement on each criteria. An example can be derived from the following:

	waiting time	friendliness	distance
BANK A	2	4	5
BANK B	5	3	5
BANK C	6	7	5

Imagine that the decision-maker set a minimum accepted level of 3 for all decision criteria - waiting time, friendliness and distance. He now wants to decide ~~if~~ whether he opens a bank account in Bank A, Bank B or Bank C.

Considering Bank A, the criteria "waiting time" was ranked 2. This is below the set minimum accepted level of 3. Although Bank A ranks ~~is~~ higher on "friendliness" and "distance", the decision-maker rejects Bank A, as he does not allow full compensation.

~~But~~ He now goes over to Bank B. Bank B ranks 5 on "waiting time" and "distance" and received a 3 on "friendliness", hence, the minimum accepted level of 3 is fulfilled. Consequently,



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the decision maker decides to open a bank account and Bank B. He doesn't take a further look on Bank C now, because he takes the first alternative that meets the minimum accepted level of each ~~of~~ in terms of all criteria (although Bank C ranks even better).

→ **lexicographic strategy**: In this case, the decision maker chooses the option according to the criteria he perceives to be most important. An example can be seen in the fact that a consumer is standing in the supermarket and wants to decide between different cookie brands. ~~After~~ Let's assume that ~~be~~ his most important criteria is ~~that~~ the amount of chocolate bits in the cookies. Hence, the consumer will decide for the cookie brand that contains the most chocolate bits.

b). The **endowment effect** hypothesises that we value things we own more than things we don't own, which means that we want to keep up with the status quo. ~~It~~ It is suggested that the endowment effect ~~of~~ is the result of the loss aversion. People don't like to give things of their belongings. It is said that ~~the~~ losses hurt more than gains make us happy. I want to give an example that illustrates the endowment effect. There was an experiment in which 50% of the participants received a coffee mug. Afterwards, all participants were allowed



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to either sell (those 50% who owned the coffee mug) or buy (those 50% who didn't receive the coffee mug) the coffee mug. It came out that the owners of the coffee mug wanted to charge higher prices than the buyers would pay for it. This illustrates that the seller's willingness to accept was far higher than the buyer's willingness to pay. The gap between these two issues is called the endowment effect. Consequently, the participants of the experiment would rather keep the coffee mug (to keep up with the status quo) rather than selling it.

The **status quo** means that people want things to stay as they are. It means that they want to stick to a decision they previously made for example, although another alternative might bring higher utility. There was an experiment which illustrates the status quo: 50% of the participants were given a coffee mug, the other 50% received chocolate. Then, the participants were allowed to exchange the coffee mug with the chocolate. However, the results show that in 30% of the cases the participants didn't want to exchange. Hence, they wanted to keep their belongings, either the chocolate or the coffee mug to keep up with the status quo.

c) In order to understand how a choice architect can make use of the default option to influence decisions, one should first understand what is



meant by a choice architecture and a nudge.

A **choice architecture** is the design in which options are presented to a consumer, and those can have a vast impact on their decision-making. For example, how options are framed, which option to show first, how many options to show to the consumer influences his decision. One should know that there is no neutral design, everything matters.

A **nudge** is part of the choice architecture. It can influence the decision of people in a predictable way ~~without~~ without prohibiting any option and without ~~influencing~~ influencing people's economic incentives too much. Hence, an intervention can only be called a nudge if it does not restrict freedom of choice. Nudges should be cheap and easy to avoid and should improve people's lives.

A **"default" option** is such a nudge. The default option is an option that is automatically selected. Hence, the option a consumer receives is equal the default option if ~~to~~ the consumer doesn't change anything. To make the definition more clear I want to give an example. ~~If the~~ is at a checkmark is already made by "yes, I want to receive ~~the~~ the newsletter", then it is the default option. If the consumer doesn't remove the checkmark, he will receive the newsletter.



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~~Hence, choice architects - for example politicians - can make use of such "default" options in order to for example increase the welfare in the society. To give an example: in Germany, Austria, the default option~~

In conclusion, as people prefer the path with the lowest resistance possible, they usually go for the default option, no matter of what consequences this might have for them. Hence, Austria for example makes use of such a "default" option to increase the number of organ donors.

~~The default option~~ When people make their driving license, the "default" option is that they are willing to donate their organs in the case that they die for example in a car accident. ~~Consequen~~ Due to the fact that people ^{usually} stay with the pre-selected option, they become organ donors. Consequently, 90% of the Austrians are organ donors. ~~In contrast,~~ ~~there is the~~ because they have the "opt-out" chance. In contrast, in Germany the "opt-in" option is used. This means that people have to sign up to become organ donors. Due to the fact that Germany doesn't use the same "default" option as Austria, only 10% of the Germans are organ donors.



3) JUDGMENT UNDER UNCERTAINTY

a) The normative theory of probabilistic judgment says that people should assign probabilities to all potential outcomes. These probabilities should range from 1 = very likely to 0 = very unlikely. Hence, people in situations under uncertainty can better judge the likelihood that a certain event takes place. Consequently, or based on the probabilities assigned to the different potential outcomes, people should choose the event with the highest probability.

In this regard, it is important to make good judgments of the likelihood of events in risky situations and in situations under uncertainty. In the following, I want to explain these two issues in more detail.

→ **Risky situations:** In this context, two states of the word are unknown, but their probabilities are known. Apart from the problems/challenges we have in situations under certainty, we also have to evaluate the likelihood of each event that it occurs. Hence, we have to search for information that helps us to better judge and to combine it with the given probabilities so that we can better assess the situation. This helps us to make better decisions.



→ **Situations under uncertainty:** In situations under uncertainty, both the state of the world and also their probabilities are unknown. Apart from the challenges we are faced with in risky situations, we also have to estimate the probabilities of the different potential events here. This makes it even more complicated to arrive at good decisions that maximize ~~the~~ utility.

An **example for a risky situation** can be seen for example in the fact that a person wants to either invest in bonds, stocks or mutual funds. As one can see, the probabilities are given, but the state of the world - in this case whether the economy is declining, staying stable or increasing, is unknown.

	Economy		
	declining	stable	increasing
Bonds	10	13	3
Stocks	5	10	7
Mutual funds	40	-5	10

Here, it is not known whether the economy declines, stays stable or increases. Hence, the state of the world / economy is unknown.

These are the three alternatives for the decision-maker

the numbers in the red box are the probabilities of the state of the world

to If we would have a **situation under uncertainty**, we would not know the probabilities either. So the numbers in the red box wouldn't exist and we would have to estimate them based on information we collect for example.



b). In our decision-making, we make use of heuristics to facilitate the decision. Heuristics, by its definition, are rule of thumbs or common sense. People make use of judgmental shortcuts in order to sooner arrive at a possible ~~outcome~~ that satisfies solution for their problem that satisfies them in that particular moment. They hope that the decision they made is the "optimal answer" to their problem. But this is not guaranteed. Although the chosen ~~crosser~~ option seems to be satisfies people in a particular moment, they could have find one that ~~more~~ increases utility more. Although the use of heuristics can lead to good choices, they can also lead to errors, wherefore we might make wrong decisions.

The representativeness heuristic is such a heuristic. When we apply the representative heuristic, we judge the ~~possibility that an outcome was of an event that it was the outcome~~ probability of an event to be the outcome of a process by evaluating how representative it is. It means that we compare a certain situation with ~~pre-existing~~ ~~examp~~ prototypes that already exist in our mind and we perceive to be suitable to the certain situation.

If we judge that the outcome ~~of~~ is really ^{representative} likely of a particular process, we judge a high probability that a certain event occurs. If an outcome is not really representative of a process, the probability is assessed to be low.

Hence, the representativeness heuristics influence



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our probability judgments. To make this heuristic more clear I want to make use of an example.

We assess for example the sequence of TTTTTT (6 times tails) to be less representative than THTHT (tails and heads mixed), although their probability is equal.

Although we assess a certain sequence to be more representative, ~~that~~ it is not true to say that the probability of this sequence is higher!

e). The hindsight bias means that judge a particular event that already took place ~~to be~~ as unavoidable and obvious, without recognizing that the retrospective of the outcome has influenced our judgment. ~~An example can be seen in other words, we for example say that it was obvious that~~ ~~I~~ An example can be seen in the following:

The social security office observes a family that is likely to mistreat their child. ~~They~~ The social security office obeys all rules (so they make regular checks for example and visit the family to see whether everything is ~~is~~ okay).

However, it ~~is~~ turns out that one day the child dies because the parents didn't give the child enough food. Now, the society asks how something like that could happen?

The society here might say it was obvious that something like that had to happen!

They don't realize that ~~their~~ ^{the} retrospective of the outcome is influencing their judgment of the situation.



4) APPLICATION OF BEHAVIOURAL ECONOMICS

a). The ~~good~~ goal of **behavioral welfare economics** is to make use of behavioural economic theories in order to improve the welfare in the society. They for example use them when doing ^{public} politics in order to improve welfare. Hence, ~~they can~~ there are some interventions possible that are thought to enhance welfare in the society.

→ Firstly, it is advisable to **make use defaults in a more strategically way**. This means that in public policies, the ^{best} option that enhance welfare should be the default. To give an example, ~~politico~~ the default option in the ~~do~~ organ donation question should be "yes, I want to donate my organs when I ~~see~~ die in an accident" This way, there are more organs available to save people that need an organ. Thus, the welfare in the society can be improved. A detailed example about organ donation in Austria and Germany was given previously and can be found on page 13.

→ Furthermore, it is advisable to **implement cooling-off periods**, especially for decisions which are likely to be affected by emotions. This ~~way~~ way, people have more time to think about their decision-making and rethink certain options. Consequently, people are able to make better decisions. An example can be seen in consumer credits for example.



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→ Thirdly, an intervention to enhance welfare in the society would be to exploit people's more rational behaviour ~~state~~ when they are in the cold state. The cold state means that people's ^{influenced} ~~are not~~ decision-making is not so much ^{affected} by emotions. This is also due to the fact that the consequences of their decisions are not in the present but in the future. An example in this regard can be seen in the so called "Save-More-Tomorrow-Plan". Due to a lack of self control and loss aversion, Americans didn't save enough for their pension. Indeed, 2/3 of the Americans didn't save money at all. This was also due to the fact that they had to ~~enrol~~ enrol for the ~~the~~ 401k plan to save for their ~~retirement~~ retirement. As there was no automatic enrolment, the Americans were too lazy to fill out all the papers to get enrolled in the pension plan. ~~And~~ But in order to enhance welfare in the society, there was a ~~prescriptive~~ prescriptive method developed called "Save More Tomorrow plan". This can function as a good intervention to exploit the rational behaviour of people when they are in the cold state. ^{In advance,} ~~Here,~~ people agreed on saving some of their future salary for their retirement. Here, the saving rate was ~~expected~~ linked to increases in salary. Hence, if a person earns more money, this money goes directly to the retirement saving. Due to this fact, people don't see the money and don't have the feeling



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of "loosing money", due to the fact that they bring home the same amount of money as before. That this prescriptive method enhances welfare in the society can be seen in the results of the "save more tomorrow plan": of all people who enrolled in the plan, 80% stayed! Furthermore, saving rates increased over time!

b). The **nudge agenda** - Sometimes, we make irrational decisions wherefore we cannot maximize utility. For that reason, it might be better if a third party would take over some decisions for us. Recently, politicians started to make use of nudges in order to influence our decision-making in a desired way. An example can be seen in the fact that politicians for example want us to elect the "right" candidate or to donate organs. There are some empirical evidence for that the use of nudges by politicians is in favour of the society. For example, it has been shown that automatic enrollment in pension saving plans have ~~seen~~ ~~se~~ prevented people from economic pain (~~so~~ in other words: the politicians made it possible that ~~the~~ ~~social~~ people have enough money when they are old). However, one can also see the nudge agenda more critically. This is due to the fact that the nudge agenda could also influence the welfare in the society negatively. ~~mean,~~ ~~do~~ ~~the~~ ~~politicians~~ ~~see~~ We should consider the following **critical aspects**:

→ Do we really know what people want? If politicians set a certain option as the "default", they have to be sure that this outcome is appreciated by the society. But, the critical argument is here, whether they can really judge what people want!

→ Secondly, can we hold open ~~choice~~ discussions about politics when we make use of choice architecture in order to influence the decision-making of people? This actually makes no sense in the way that people would act on these open discussions in the way politicians want them to behave. Furthermore, we cannot have open discussions about topics in which we already influence people being in that situation.

→ Thirdly, what about those who do not react to defaults? This is also something politicians should consider in this regard.

~~in~~ In conclusion, I would say that the nudge agenda can be seen as a complementary aspect to the traditional way of making politics. This is due to the fact that nudges can indeed help to increase welfare in the society, ~~at~~ however, I would not recommend to replace the traditional way of making politics by the nudge agenda due to the previously mentioned critical arguments.