# Trapped in the Status Quo? Cognitive Misperceptions' Effects on Users' Resistance to Mandatory Usage

*Completed Research Paper*

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## Abstract

*Owing to bounded rational decision-making, professional IS users often tend to resist new ISs by sticking with incumbent systems. Mainly due to misconceptualizations about the concept and methodological hurdles in isolating effects, to date, IS research has failed to provide empirical evidence of a fundamental tenet of the status quo bias (SQB): cognitive misperceptions. We address this gap, developing an experimental approach to show that cognitive misperceptions are a cause of user resistance. We find that a manipulated reference point leads to an SQB that ties users to their incumbent IS: A gain framing leads to a lower conversion propensity. The reverse is true for a loss framing. We contribute to the literature by providing empirical evidence of cognitive misperceptions leading to the SQB. For managers of implementation projects, if the objective benefits of novel IS are hard to communicate, they should proactively address the SQB so as to forestall user resistance.*

**Keywords:** Status Quo Bias, User Resistance, Mandatory Usage, Prospect Theory

## Introduction

Especially in a mandatory usage context in which users don't have the freedom to independently decide whether or not to use to use an information system (IS), user resistance is one of the most salient reasons for the failure of new IS (Lapointe and Rivard 2005; Melville et al. 2004). Resistance is especially high when the IS-induced changes are comprehensive and affect users' work routines (Bala and Venkatesh 2013; Laumer et al. 2016b). This is particularly true for advanced ISs, which are designed to take as much effort and as many tasks off users as possible. Despite strong indications of prudent handling of IS implementation projects, managers often fail to correctly manage their employees' perceptions during the implementation of a new IS (Jasperson et al. 2005; Markus 2004). For instance, only 45% of users with access to BI technology actually use it (Logi Analytics 2017).

In a mandatory usage context, users can hold negative perceptions of an IS, while still being compelled to use it. To account for this complexity, the user resistance literature has historically followed a trajectory independent of IS adoption, while still sharing many of the theoretical approaches. Thus,

resistance is either seen as a psychological state or as a behavior (Kim 2010; Lapointe and Rivard 2018). In contrast to other aspects of user resistance, behavioral aspects are less proliferate in the resistance literature (Lee and Joshi 2017). The established behavioral antecedents of user resistance include the status quo bias (SQB), which has been investigated in several resistance studies (Lee and Joshi 2017). Samuleson and Zeckhauser (1988) described the three routes of the SQB: (1) *rational decision-making*, 2) *psychological commitment*, and 3) *cognitive misperceptions*.

While Samuleson and Zeckhauser (1988) provided solid ground for the further analysis of the SQB in different contexts, the IS research has yet to accomplish a solid implementation. In particular, many IS studies of the SQB interpret it wrongly or oversimplify it in their operationalization by focusing on the first route and only implicitly integrating the second or the third route (Lee and Joshi 2017). First, this malformation is due to misinterpretations and oversimplifications of the SQB concept, despising "the 'bias' in users' decision-making arising from their cognitive limitations (e.g. bounded rationality), which should be the core of [SQB]" (Lee and Joshi, p. 734). Second, this is due to methodical hurdles that arise in investigating users' biases: "[…] it can be difficult to conduct (field) experiments in the IS contexts (especially organizational settings)" (Lee and Joshi 2017, p. 737).

This study addressed this deficit in SQB research by theoretically and methodically focusing on *cognitive misperceptions* (Lee and Joshi 2017). Thus, we respond to Lee and Joshi's (2017, p. 748) call to reconceptualize empirical SQB studies, seeking to help to put SQB research "on the right track", by "identify[ing] and assess[ing] the influence of status quo bias factors related to cognitive misperception." We seek to answer the following research question:

*How do cognitive misperceptions affect the decision to switch from an incumbent IS to a new one?*

Our results stem from an online experiment with 237 subjects. We asked them to conduct the job of a salesperson with the time-critical task to identify as many potential clients as possible with the help of a decision support system (DSS). We split the subjects into two groups and treated them with a gain/loss framing. We used logistic regression to show a significant presence of loss aversion. While other studies of the SQB admittedly refrained from assessing the effects of cognitive misperceptions in the SQB or conceptualized it wrongly, we found evidence of its presence. Thus, we extend the current state of the SQB literature by empirically exploring loss aversion's effects and thus the cognitive misperception route of the SQB.

The remainder of this paper is structured as follows: In our theory section, we explain the connection between prospect theory's choice process and the SQB as the main theoretical foundations of our study before deriving hypotheses and presenting our research model. We continue by describing our method and results, followed by a discussion and implications for theory and practice. We close with a short conclusion, study limitations, and suggestions for further research.

## Theoretical Background

### *Choice Process in Prospect Theory*

Kahneman and Tversky (1979, p. 288) developed prospect theory to analyze decision-making processes in uncertainty and to "be extended to the typical situation of choice, where the probabilities of outcomes are not explicitly given." Two key concepts of this theory are (i) certainty and (ii) isolation effects, which assume that decisions don't necessarily follow mathematical optimality (i.e. the rational weighing of risks and benefits and their probability weights). (i) First, individuals tend to underestimate hardly probable outcomes compared to certain outcomes (Kahneman and Tversky 1979). (ii) Second, individuals base their decisions on changes of possible outcomes rather than on absolute outcomes (Kahneman and Tversky 1979). In accordance with these effects, prospect theory concludes that decision-makers' value functions depend on counter-factual reference points rather than on the de facto outcome. Reference points are the common denominator of collected prospects. Decision-makers utilize reference points to determine the extent to which the expected outcomes of a decision constitute gains (i.e. above the reference point) or losses (i.e. below the reference point, Kahneman and Tversky 1979).

Kahneman and Tversky (1984) argued that individuals set up mental accounts to specify advantages and disadvantages associated with decision alternatives. The setup of these mental accounts takes place during two phases of information processing: the *editing phase* and the *evaluation phase*. During the editing phase, an individual conducts a preliminary analysis of the choice problem and identifies available options and their possible outcomes (Levy 1992). Second, the information is coded, combined or cancelled out to "simplify subsequent evaluation and choice" (Tversky and Kahneman 1981, p. 453). The processed information is then grouped by decision alternatives. These information sets on the decision alternatives are called prospects. The editing phase happens unconsciously – the individual is not aware of this process. Further, the editing phase lays the ground for a cognitive bias to emerge, since it is the phase in which information about the decision situation is prepared. After the formation of prospects, these prospects are consciously evaluated in the evaluation phase. During the evaluation phase, the decision-maker weighs edited prospects against one another and selects the preferred prospect, leading them to behave accordingly (Levy 1992). Thus, as depicted in Figure 1, the setting of counter-factual reference points in the editing phase leads to a misevaluation and therefore a biased behavioral outcome, which constitutes user resistance in the form of an SQB.

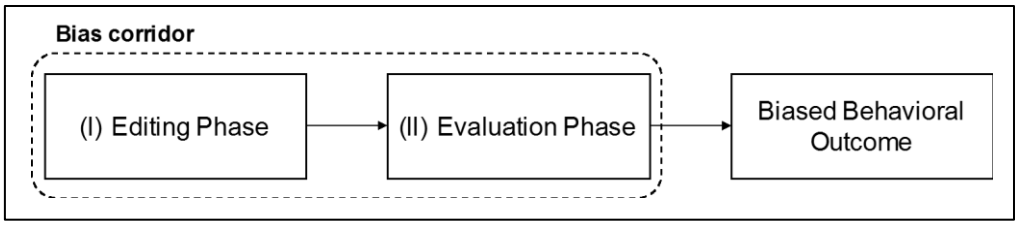


**Figure 1. Phases of the Choice Process of Biased Decision-making according to Prospect Theory**

### *Status Quo Bias*

Samuelson and Zeckhauser (1988) proposed three routes of the SQB: (1) *rational decision-making* in the presence of transition costs and/or uncertainty. "*Rational decision-making* implies an assessment of relative costs and benefits of change (i.e. net benefits) before making a switch to a new alternative" (Kim and Kankanhalli 2009, p. 569). (2) *Psychological commitment* includes the three main factors sunk costs, regret avoidance, and efforts to feel in control. (3) Our primary interest here is the *cognitive misperceptions* route.

Cognitive misperceptions describe the application of heuristics to human decision-making (Simon 1990). Heuristics are "methods for arriving at satisfactory solutions with modest amounts of computation" (Simon 1990, p. 11). The application of heuristics can lead to sub-optimal outcomes for a decision-maker and other affected individuals (Wilkinson and Klaes 2012). The cognitive misperception that contributes most to the SQB is loss aversion (Kim and Kankanhalli 2009). Loss aversion is a person's tendency to prefer the status quo over a 50/50 chance of positive and negative alternatives with the same absolute value. Based on a specific reference point, users will perceive the utility of acquiring something to be smaller than the disutility associated with giving up something (Kahneman et al. 1990). Individuals are risk-averse concerning gains but risk-seeking concerning losses. When individuals consider the choice of retaining the status quo or changing to a new alternative, they show the tendency to stick with the status quo and weigh potential losses from switching heavier than the potential gains from the alternative. In other words, people tend to prefer the status quo even if all available objective criteria suggest that the status quo is equally valuable as the alternative. Loss aversion can lead to a resistance to adopt a new IS, since small losses from changing from the status quo could be perceived as larger than their gains. Although loss aversion as a concept has been successfully applied in IS research (e.g. Koch and Benlian 2017), it has not been effectively applied to study user resistance through the SQB.

## Hypothesis Development

Professional IS users are often confronted with newly introduced systems. In many cases, users are not immediately compelled to use the new system (Laumer et al. 2016a). Instead, owing to incremental software development, users often see a substantial transition phase during which usage of the new system is quasi-nonmandatory (Weiler et al. 2019). Here, while users are encouraged to switch to the new IS by their superiors, the incumbent systems are still available for use. In such situations, in which users are not directly forced to use a system, and the incumbent system is still available, a user's conversion propensity strongly depends on the circumstances they find themselves in (Cenfetelli 2004). Although users are ultimately confronted with the same decision-making, their reference points will differ sharply (Kim and Kankanhalli 2009). Users whose situations are good and who are told that they will still receive their annual bonus make this potential gain their counter-factual reference point when deciding to switch to an alternative IS. Due to the counter-factual reference point being above the factual one (i.e. the bonus has not been guaranteed), users feel that they have more to lose and become more sensitive to future losses than before. This leads to more risk-averse decision-making in the actual decision on switching to a new IS and has a negatively effects the conversion propensity (Kahneman and Tversky 1979). The same applies in reverse for users whose situations are bad and who are informed that it is not certain that they will receive their annual bonus. They adopt a counter-factual reference point below the factual one and become more sensitive to future gains so as to overcome their losses. Thus, they tend towards more risk-seeking decision-making, which shows in a higher conversion propensity.

We expect that users in positively framed circumstances are afraid of losing their gains and thus tend towards risk-averse decision-making by sticking with the *incumbent* system instead of changing towards an *alternative* one. We propose that levering loss aversion by implementing a positive reference point (i.e. gain framing) as opposed to a negative reference point (i.e. loss framing) will lower users' conversion propensity after they have been familiarized with an IS. Thus, we hypothesize:

*Due to cognitive misperceptions, users with a positive reference point will display a lower conversion propensity than users with a negative reference point.*

## Method

### *Experimental Design*

Experiments are a common method in IS to generate insights about usage behaviors or preferences, as it is the case in our study (Bardsley et al. 2010). Experiments are test arrangements to verify causal relationships (Cook and Campbell 1979). To minimize alternative explanations of findings, inter-individual differences between participants can be averaged out by a randomized assignment of respondents to different experimental conditions (Colquitt 2008). Thus, outcome differences between the experimental groups are likely to be caused by the treatment and not by inter-group differences that already existed at the start of the study (Shadish et al. 2002). To ensure the results' internal validity, we reduced experimental changes within the groups to a minimum, namely only to the respective treatment, so as to keep everything else constant.

We conducted the experiment as an online experiment, asking participants to dive into a scenario in which they had to solve problem sets via software. This setting sought to resemble a realistic job setting for students. During the experiment, we asked the participants to put themselves in a business-to-business (B2B) scenario, holding the functional role of a sales employee who works with a DSS. We chose a DSS system for our experimental vignettes, since DSS systems are comprehensive and affect users' work routines (Laumer et al. 2016b; Weiler et al. 2019). The subjects had to identify high potential customers to maximize their individual job performance. We designed and developed two illustrative DSS interfaces. They were very similar in their design and functionalities, differing only slightly in the layout used, the fictional software name (*Customer Care* and *Sales Drive*), and the way the recommendations were presented. We chose to model two DSS vignettes, which were the same in their functionality but not identical in their perception, to isolate the treatment effect. Both software versions provided an output about every person's sales potential (i.e. the DSS offered a lead

prioritization) in the sales representative's customer portfolio (the so-called book of business). The software the participants worked with first was randomly alternated, so that 120 participants started with the DSS *Sales Drive*, and 117 started with the DSS *Customer Care*.

We divided the participants into two groups with differences in the treatment (independent variable), while everything else remained constant. The *gain domain* (i.e. positive framing) group was told that they had performed very well this year and had already reached their sales targets, which resulted in the prospect of a financial bonus. The *loss domain* (i.e. negative framing) group faced the situation of a weak sales year and poor prospects of a bonus. Positively labeled contexts are usually understood as situations in which performance is above a target level and thus people are in the so-called gain domain. Vice versa, negatively labeled contexts imply below-target performance, defined as the loss domain (Sitkin and Pablo 1992). To reinforce the feeling of a gain/loss, the situational framing contained a notice on how the participant's manager reacted on the situation – either praising or criticizing the sales employee. The bonus was an important part of the storytelling, since it supported the feeling of potentially losing something they had already gained versus being able to overcome a certain loss by taking more risk.

The experiment had a 2x1 between-subjects design, where we manipulated the loss/gain framing via different cover stories. We incentivized the subjects through a quasi-monetary reward (participants' job performance during part IV of the experiment influenced their chance of winning Amazon vouchers). Monetary rewards serve as an additional extrinsic motivation and as an emotional trigger, since the observation of real rather than imaginary situations is preferable (Read 2005).

As depicted in Figure 2, the experiment had five major phases: [Part 0] Participants received a general introduction, in which they were confronted with their randomly assigned cover story and DSS vignette. [Part 1] They then had the opportunity to become familiar with the first DSS version and were asked to solve two test rounds of problem sets. One round consisted of two tasks, each of which took 20 seconds. Participants saw a timer that indicated their remaining time. We told them that the DSS was the *incumbent one* in their workplace and that they had been working with it for several years. In [Part 2] they solved a test round of problem sets with the alternative DSS. The alternative DSS was merely described as an alternative software system they could also choose to use. Parts I and II had different lengths – just long enough to assure familiarization with the incumbent DSS and just short enough to not induce any external effects. [Part 3] asked for social demographics, the manipulation checks, and personal preferences regarding the software and a selection of one of the two software versions with which they wished to solve the problem set in the final round. In [Part 4], participants solved the problem sets with the software version they had selected in step 3. At the end, we debriefed the subjects and thanked them for their participation.

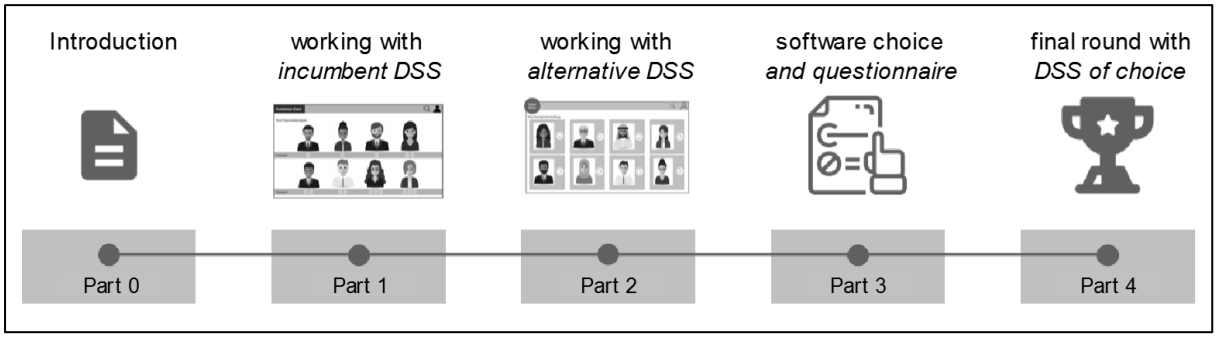


**Figure 2. Experimental Procedure**

## *The Operationalization of Constructs*

We tested the hypothesis by treating conversion choice as the dependent variable. We measured conversion choice with a binary (converted vs. not converted) based on the de facto decision in the experiment to stay with the incumbent DSS or to switch. Further, we described conversion propensity [*P*] as the probability of converting (i.e. switching from the incumbent DSS to the alternative DSS),

where *G* refers to one of the two experimental groups (loss domain / gain domain), *n* denotes the total number of participants in group *G*, and $x_c$ is a dichotomous variable that equals 1 when a participant decided to convert and 0 if not: $P(conversion\ in\ group\ G) = n^{-1} \times \sum_{c=1}^{n} x_c$ .

Besides the software preferences, we measured several control variables; these included age, gender, education, profession, risk-aversion, and tech-savviness. The risk-aversion scale was based on four items (Burton et al. 1998) and tech-savviness had a seven-item scale (Parasuraman 2000). To ensure that participants not only had a preference for a software version based on its design or perceived functionalities, the questionnaire also included questions regarding perceptions of the software system's functionalities and design. We based the functionality questions on a four-item scale (Venkatesh et al. 2003) and the design questions on a three-item scale (Mathwick et al. 2001). All ordinal scales were measured by using a seven-point Likert scale (from 1 = strongly disagree, 4 = neutral, to 7 = strongly agree). Only the end-points of the scale were labeled, and we offered a *Don't know* option.

Although not explicitly captured, we analyzed participants' performance in part I and II to control for participants' success with the two versions before making the final decision. By analyzing performance, we controlled for an unconscious influence of the user's performance when making the decision. Although participants were not informed about their de facto performance in the test rounds, we assumed that they had a feeling for it and thus their attitude toward the two software versions may have been influenced. However, we found no significant influence between user performance and the depended variables. Further, we included two manipulation checks. The participants had to verify the software version they had worked with first and the cover story they confronted.

### *The Experiment Administration and Sample*

Analogous to commonly accepted sampling procedures (e.g. Ho et al. 2011; Koch and Benlian 2017; Lowry et al. 2014), we recruited participants via a mailing list of a large German public university by providing an anonymous link. We used the Qualtrics online survey software to conduct the experiment and IBM SPSS to analyze the gathered data. We conducted a pre-test of the experiment in the form of a focus group with eight participants. The focus group participants discussed the two cover stories and the two DSS vignettes. Further, we ensured that a) the manipulations were understood as intended and that b) potential subjective preferences (the interface's aesthetics) between the two software versions were vanished.

After the data cleaning, a final sample of 237 complete observations remained. We omitted 54 participants from the sample, since they did not complete the study, failed the manipulation tests, their duration to finish was well above average, or their statements in the comment field suggested a misunderstanding of the experiment. The gender ratio was 37.6% male and 61.2% female, the average age was 25.22, and around 47.7% had a college degree; 80.6% were college students, 13.9% employees and 5.5% had other professions. The control variables risk-aversion, tech-savviness varied between 3.11 to 4.55, and the visual appeal of the two IS vignettes differed by 0.76 Likert scale points. Table 1 summarizes the descriptive statistics, including all the metric control variables.

| Construct | Mean | StD | Min. | Max. |
|---|---|---|---|---|
| Demographics | | | | |
| Age | 25.22 | 8.17 | 17 | 85 |
| Controls | | | | |
| Risk-aversion | 3.11 | 1.19 | 1 | 7 |
| Tech-savviness | 4.55 | 1.11 | 1 | 7 |
| Performance (points scored) | 3.72 | 0.75 | 0 | 4 |
| Visual appeal (Sales Drive) | 4.14 | 1.38 | 1 | 7 |
| Visual appeal (Customer Care) | 4.90 | 1.29 | 1 | 7 |

**Table 1. Descriptive Statistics**

As described in Table 2, the sample's group allocations were fairly equal, represented by 118 participants (49.8%) in group 1 (gain framing), 119 participants (50.2%) in group 2 (loss framing). In the two treatment groups, subjects had two choices: to stay with the incumbent IS or to switch to the alternative, resulting in four different choice options. Across treatment groups, 51.9% decided to stay with the incumbent system, while 48.1% wanted to switch. In the treatments groups, the distribution differed. In the gain group, 58.5% preferred the incumbent IS, while in the loss group only 45.4% preferred the incumbent IS

| | | | *Gain/Loss domain* | | |
|---|---|---|---|---|---|
| | | | Gain | Loss | Total |
| *DSS choice* | Incumbent | No. of subjects | 69 | 54 | 123 |
| | | Share | 58.5% | 45.4% | 51.9% |
| | Alternative | No. of subjects | 49 | 65 | 114 |
| | | Share | 41.5% | 54.6% | 48.1% |
| | | Total | 118 | 119 | 237 |

**Table 2. Group Distribution**

## Data Analysis and Results

### *The Randomization and Manipulation checks*

We conducted a factorial analysis of variance (ANOVAs) to confirm the random assignment of participants to the four experimental groups. The results indicated no statistically significant differences in age, risk-aversion, and tech-savviness between all experimental groups, suggesting that randomization was successful (all $p > 0.05$) and that their personal properties were not the reason for potential differences in the dependent variable.

To check whether the treatments were correctly understood, we included two manipulation checks. We checked whether subjects correctly understood which software system they were dealing with as well as whether they were aware of their cover story. Of the respondents, 35 (12%) failed the manipulation checks; thus, we excluded them from the sample.

### *The Experimental Analyses*

To test our hypothesis, we conducted a logistic regression on the binary dependent variable conversion choice. The model we tested was statistically significant at $p < 0.05$. For hypothesis testing, we estimated the effect between the independent variable (i.e. loss/gain framing) and the dependent one. We excluded control variables from the analysis, since they did not differ significantly across treatment groups.

The logistic regression revealed a significant effect of gain/loss framing ($b = 0.528$, Wald statistic (1) = 4.05, $p < 0.05$). We calculated the odds according to the propensities described in Table 2: $Odds_{Gain}(alternative) = \frac{0.415}{0.585} = 0.710$ ; $Odds_{Loss}(alternative) = \frac{0.546}{0.454} = 1.204$. As described in Table 3, and consistent with the hypothesis, the odds ratio of converting (i.e. switching DSS) were 1.695 times higher in the group that was treated with a loss framing than in the group that was treated with a gain framing: $Oddsratio_{Lossgain} = \frac{1.204}{0.710} = 1.695$.

| | Model | | |
|---|---|---|---|
| Construct | Coefficient | SE | Odds ratio |
| Intercept | -0.870* | 0.417 | 0.419 |
| Covariates | | | |
| Gain/Loss framing[a] | 0.528* | 0.262 | 1.695 |

* p < 0.05; ** p < 0.01; *** p < 0.001, N = 237.
[a] Gain/Loss framing was dummy coded with 0 = gain framing and 1 = loss framing.

**Table 3. Binary Logistic Regression**

Figure 3 illustrates that the conversion propensity for the gain frame treated group was 41.5% (49 of 118 subjects), and for the loss frame treated group 54.6% (65 of 119 subjects). The treatment groups differed significantly (p < 0.05) in their choice, according to the logistic regression.

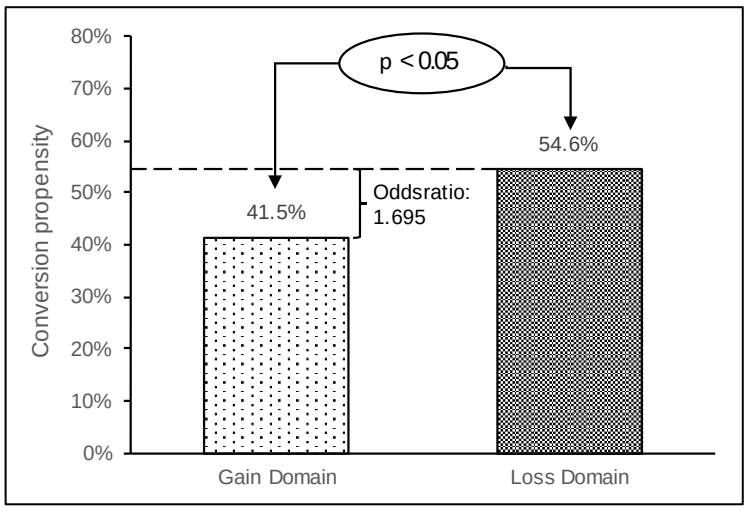


**Figure 3. Conversion Propensities**

## Discussion and Implications

We addressed the problem of misinterpretations and oversimplifications of the cognitive misperceptions route in SQB research, as raised by Lee and Joshi (2017). While other studies that sought to integrate all three routes admittedly failed to model cognitive misperceptions (Kim and Kankanhalli 2009), others unpromisingly tried to implicitly integrate them into their otherwise cost-benefit-based models (Li and Cheng 2014). Following Samuelson and Zeckhauser's (1988) original explanations of the SQB, we examined cognitive misperceptions in the SQB by adopting a prospect theory perspective. Specifically, we focused on loss aversion, since "none of the IS (if not a few) studies have empirically examined the mechanism of loss aversion" (Lee and Joshi 2017, 741f). Thus, we discarded the overemphasis of a cost-benefit analysis (SQB's first route) for modeling the SQB, which prior studies solely or primarily focused on (Lee and Joshi 2017). By considering prospect theory's two stages of decision-making (the editing and evaluation phases) in our experimental design, we could show that diverging monetary framings induced a biased information processing in the editing phase, which leads to a misinformed user decision during the evaluation phase.

Our results extend the work of authors who emphasized IS characteristics' influences (e.g. functionality, performance, etc.) on a user's resistant behavior (e.g. Klaus and Blanton 2010; Maier et al. 2013). We found that if we control for an IS's characteristics (by two similar but not identical IS choices), we still see differences in the usage patterns. Thus, our results support authors who view the introduction of a new IS as a stimulus event (Laumer et al. 2016a; e.g. Stein et al. 2015) that triggers psychological

responses in users. Stein et al. (2015) found that different IS stimuli can generate ambivalent emotions owing to a change in work routines. According to Stein et al. (2015), these ambivalent emotional reactions can lead to the same behavioral outcome that stems from uniform emotional reactions. We explain this finding by arguing along with prospect theory, backing this with our empirical results. Users process information about a decision's context individually, owing to individual preconditions and differently weighted reference points. Because of these individually different "norms, habits, and expectancies of the decision maker," the codification of information in the editing phase results in different codifications among users (Tversky and Kahneman 1986, p. 257). The behavioral outcome is based on the evaluation (i.e. evaluation phase) of the individual codifications. Although it can be assumed that, on average, individuals have the same cognitive misperceptions (Tversky and Kahneman 1981), this effect's size on behavior can differ among users, owing to learning, self-reflection, and different personal experiences (Soll et al. 2014). Laumer et al. (2016a) picked up the idea of the impacts of a user's personality traits on user resistance, accounting for these individual differences. However, we argue that the ways these individual antecedents of user resistance are formed must be looked at in depth and under consideration of cognitive misperceptions. We consider this necessary if one is to understand to what extent differences in individual resistance behaviors stem from personality traits and/or cognitive biases. Further, since firms tend to restrict data access, and because IS implementation projects' timing is hard to align to research projects' agendas, our approach offers future researchers of the SQB a promising outlet for generating otherwise inaccessible data material.

Our findings contribute to IS research, in several ways. First, our finding for users' cognitive misperceptions should be considered when investigating the SQB in IS, since it highlights that a user's evaluation to use or not use an IS does not start from a blank slate but from rugged terrain – situational aspects such as a positive job environment can negatively influence switching behaviors, and vice versa. Thus, we responded to Lee and Joshi's (Lee and Joshi 2017, p. 742) call by providing evidence of the extent of loss aversion's effects: "the extent of the effect of loss aversion is yet to be fully identified in the IS context." Second, we have contributed to the ongoing discourse in user resistance literature about the object of user resistance in organizational contexts (Lapointe and Rivard 2018), because we provide evidence for viewing the introduction of a new IS as a stimulus for ambivalent psychological user responses (Laumer et al. 2016a).

Our findings have important implications for managers who are responsible for the acceptance of a new IS, and for individuals who face an IS switching decision. In a situation in which a new IS provides no immediate advantages, but does provide long-term improvements, users can be unsettled by the introduction of the IS (Weiler et al. 2019). In such uncertain IS adoption situations, professional users can exhibit biased decision-making owing to counter-normative reference points induced by the surrounding environment. Managers should proactively address this potential decision bias. If possible, managers should seek to prevent cognitive misperceptions in the first place. They should create transparency by communicating relevant information about the technology and the changes that such implementation entails. It should always be assured that the introduction of a new IS is not indirectly linked to monetary restrictions. Further, trust toward a technology should be enhanced by making individuals familiar with its technological functionalities. Any IS implementation project that changes people's work routines should be accompanied by change management in the form of clear communication, incentives, training, and performance management (Atkins et al. 2016). The process of successful implementation can "take 12 to 18 months to build or acquire the necessary capabilities and to affect the cultural changes that make collaboration and integration possible" (Andersen et al. 2018, p. 7).

## Limitations, Future Research, and Concluding Thoughts

The fact that most of our study's subjects were students (80.6%) is a limitation; however, because students quickly understand and adopt incentivized experiments, they are often used as a sample base (e.g. Koch and Benlian 2017). Also, our results are limited, since we mimicked the situation of new IS adoption in an organizational context. Further, as subjects had different familiarization lengths for the incumbent and the alternative IS, we may have induced familiarization effects (e.g. inertia). Nonetheless, we decided on this tradeoff, since we had to simulate the situation of a user's typical work

processes assisted by an incumbent IS. We see promise in a future field experiment grounded in real-world software implementation, thereby leveling out familiarization effects or issues of real-world appeal. Further, future research should investigate cognitive misperceptions among IS that hold different value propositions to see how the cognitive misperception route interacts with cost-benefit analysis. In addition, there should be research into the natures of loss and gain frames. We followed the common understanding in studies on loss aversion that frames that trigger cognitive misperceptions should be associated with monetary terms. Future research should empirically calibrate which frames can trigger cognitive misperceptions in the IS context.

Our objective was to investigate a user's cognitive misperception's effect on the decision to switch from an incumbent IS to a new one in a scenario where 'objective' indicators don't suggest the superiority of one or the other system. Our results reveal that, in a situation in which the advantages of using an alternative IS are not clear to a user, such as during the introduction of a new IS (Venkatesh et al. 2016), much of the decision to switch is determined by a cognitive misperception – loss aversion. This bias unconsciously pushes a decision-maker toward not making a choice at all, or to choose to stay with the incumbent. A user's decision to resist a new IS stems in part stems from biased information processing under the influence of counter-normative reference points. Specifically, a situational gain or loss framing significantly affects the conversion decision. A gain frame increases the likelihood of a user staying with their incumbent IS, while a loss frame decreases this likelihood. We trust that our study will stimulate future research interest, leading to the further investigation of the cognitive misperception route of the SQB, thereby going beyond the traditional perspectives and enriching our understanding of user resistance.

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