

The Influence of Sales Incentives on the Orientation to Reference Discounts within the Software Industry

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Abstract

Within this paper it is tested whether “reference discounts”, which are *a)* past discounts given for the same product sold to a similar customer, *b)* past discounts for a different product sold to the same customer, *c)* a competitor’s discount for the exact same product and customer, have an influence on today’s discount decisions of sales people. The focus lies on pricing decisions in the B2B software sales business, since the very low variable costs of software solutions allow the sales force to grant a huge variety of discounts – in many cases between 0 and 98 percent. As possible moderators incentive schemes of these salespeople are tested.

Besides a significant main effect of the reference discount, the results show that all types of incentives lead to a reduction of the influence of reference discounts. However, monetary incentives show the strongest effect, followed by non-monetary ones – both being tangible incentives that in turn show a stronger reduction of the main effect compared to intangible ones.

Keywords Pricing, Sales, Status Quo Bias, Anchoring Effect, Reference Price, Reference Discount, Decision Making

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1 Introduction and Objectives

Development costs for standard software are generally not proportional to sales turnover. In particular, software development comprises the most costs, with few additional expenses generated by production and distribution. Once development is complete, each sale reduces unit costs (Herzwurm et al. 2010, p. 530; Hoisl 2019, p. 34). Because of this cost phenomenon, sales agents are given abundant negotiation latitude with customers to arrive at a mutually agreeable price. The ultimate selling price to each customer is a function of the number of licenses, usage intensity, customer value, product novelty and quality as well as pricing of competitive products (Lo et al. 2016, p. 511; Zoltners 2006, p. 2).

A plethora of research has examined how to motivate salespeople to achieve maximum profits for their software provider. For example, empiricism has revealed that the scheduling and design of incentive schemes tend to direct salespeople to maximize their personal revenues (Fazlzadeh et al. 2011, p. 66). Also, applied pricing schemes afford an optimal balance between agent incentives and corporate interests (Larkin 2014; Taylor 2002). Moreover, sales incentives have been ascertained to influence the level of discount granted to customers (Kräkel and Schöttner 2019; Lo et al. 2016). Additionally, there is evidence within the sociology, behavioral economics, and pricing literatures that employees orient themselves to previous decisions when making future decisions (Furnham and Boo 2011b; Kahneman et al. 1982; Klein and Oglethorpe 1987; Samuelson and Zeckhauser 1988). This specific phenomenon in a software sales context is the focus of interest in the current work. In particular, we explore previously granted discounts (i.e., for the same product but for different customers) and different incentive schemes within sales agents' discount policy in a B2B software business. This previously given discount will be referred to as the "reference discount".

The B2B software sales practice scenario below will provide for further explanation. A software company has acquired BMW as a new customer. The issue now is to negotiate the discount for the first contract/first order. The key account manager is uncertain about a suitable discount amount; so he examines the last order handled by his colleague, who is in charge of a similar kind of customer, for example, AUDI AG. That customer received a 34% discount. The key account manager opts to adopt a relatively similar discount level of 32% for BMW. Because he matches BMW's discount to a past reference discount without knowing the history behind it, the key account manager is possibly not acting in the interest of the software vendor in light of its strategies. Many reasons might justify the 32% discount for BMW, but they may well not have been applicable to AUDI.

In accordance with previous related literature, the study assumes that the reference discount is positively associated with the size of the discount granted to customers in a new/current pricing situation. The type of incentive scheme is posited as moderating the size of the discount. Besides typical monetary-incentives, tangible non-monetary incentives as well as intangible incentives are examined in this context. An experimental design is used. Participants will assume the role of a sales agent who benefits from certain incentives. They will be made cognizant of reference discounts and asked to make a decision concerning the discount amount they will grant a given customer.

2 Research Question

According to Schröder (2019), if a software seller compares the absolute price of one software deal to another, s/he would have to consider various variables, as the kind of software, metric (users, orders, revenue), number of blocks of the individual deal, price per block, size of a single block, and term length. Such detailed scrutiny, though, would be excessively time consuming for the sales agent. Because such efforts would likely not be feasible within the given sales cycle

time period, there is a keen focus in the software industry to use discounts of *previous* decisions – instead of absolute prices – as a basis for discussion with the customer. This situation led us to consider the term *reference discount* to be especially in this context more adequate rather than referring to a “reference value” as a more general term or a “reference price” as a term describing comparison of an absolute price to some referent. Similar to the reference price concept in the B2C literature, information from various sources may have an impact on the level of reference discounts: A) The same software was sold to a similar customer (source e.g., colleagues or team members). B) Another software was sold to the same customer (source e.g., existing software license contract). C) A competitor offers a similar software solution to the same customer and the discount is known (source e.g., the customer).

The special cost structure of business software is one of the main influencing factors to its price management process (Clement and Schreiber 2013). The development of the first “unit” entails high fixed costs. The investments necessary for this unit’s production are generally not retrievable, and are hence sunk costs (Shapiro and Varian 1999, p. 21). Each additional unit can be produced simply by copying its predecessor. Even at low prices, a positive contribution margin can be achieved (owing to the low unit variable costs). As soon as fixed costs are fully covered, any additional revenue constitutes a net profit (Clement and Schreiber 2013). Given the preceding cost context, a software seller has a variety of discount alternatives from which to choose. If variable costs comprise only 2% of the list price, the seller can theoretically grant up to a 98% discount. This situation is different from the retailing industry, where a discount of 3% can possibly eliminate the margin or even create a negative one (D’Arcy et al. 2012). Fernandez and Rodrik (1991) and Samuelson and Zeckhauser (1988) averred that, in software sales, a large range for a possible discount (from 0 to 98% in our theoretical example) leads to a higher tendency to orient a given day’s discount level on past choices. Ritov and Baron (1990) showed that this is the case, even when not all information about the circumstances of past choices is known.

The above context induces software companies to try to curtail salespersons’ excessive price discounting with the use of a targeted incentive policy. Although such policies may be advantageous, they are far from a panacea to prevent excessive discounting. Indeed, Larkin (2014) has argued “it is well-known that employees ‘game’ incentive systems by taking actions that increase their pay but hurt the objectives of their employer. [...] Employees often manipulate incentive systems in legal ways where the ethics of the manipulation are at worst questionable.” Apart from non-monetary incentives, a range of monetary incentives exist, including a fixed salary, as well as variable compensation (commissions and bonuses) (Becker 1990). Both monetary and non-monetary incentives are considered tangible incentives. Besides these tangible rewards, intangible incentives – which are characterized by not having a financially measurable value – play another role in incentivizing the sales force (Sorauren 2000). According to von Rosenstiel (1975), a distinction is made between personal, work-related and organizational incentives. Personal incentives are aimed at the individual sales agent. These include appreciation, praise, awards/prizes and mentoring. Work-related incentives refer to the work itself and how it is conducted. Among these are interesting work content, flexible working hours, room for decision-making for employees and options for further training. Organizational incentives are, for example, a company day-care or medical-care (Albers and Krafft 2013).

3 Research Model

Main effect *Derivation of hypothesis 1:* The assumption that software salespeople are influenced by reference discounts when making their current discount decisions can be derived from the “anchoring effect” (for literature reviews, see Furnham and Boo (2011a) and Wegener

et al. (2010)). According to Tversky and Kahneman (1974), when people make decisions on consciously chosen numerical values such as discounts, presently available environmental information influences them without their being aware of this influence. The anchor is a certain piece of information – in our case a reference discount. This information can be created by the decision maker from the extant circumstances, received from another person, or appear purely by chance. It then affects the decision maker's assessment of the situation. The consequence is a systematic distortion in the direction of the anchor. In practice, the anchoring effect occurs often when decisions are made in relation to numerical information values, as is the case with discounts (Gilovich et al. 2013). Samuelson and Zeckhauser's (1988) theory of preferences for the current state of affairs provides additional support for that presupposition. This accounts especially for the case that another software was sold to the same customer (source e.g., existing software license contract), since only in this case a current state of affairs exists in form of a previously given discount. *H1: When making current price decisions in software sales, the size of an existent reference discount positively influences the size of today's chosen discount.*

Moderating effect's *Derivation of hypothesis 2:* The degree to which people actually take action on behalf of their self-interest has been examined in various research fields. Standard experiments in political science, for example, aim at disentangling the motives that lead people to acting on behalf of their self-interest. Shared consensus in this field is that self-interest is strong whenever outcomes are explicit and people are encouraged to consider the outcomes, i.e., when perceived importance is high (Chong et al. 2001). In a software sales setting, this could, for example, be the exact cash number of a bonus that is explicitly tied to a clearly defined goal, paid out on a specific date. However, the outcome does not have to be a monetary one. It can consist of other tangible or intangible incentives. Besides, researchers find that the level of significance of economic activities to an individual, perceived return, and time cost are also factors determining to what degree a person acts on behalf of his self-interest (Harrington and Smith 2017; Young et al. 1987). Above all, level of attention and consideration time collectively play a significant role between self-interest and reference discounts. Research has shown that self-interest influences "information processing such that perceivers exert more effort when evaluating messages and pay closer attention to the content of arguments" (Kim 2014, p. 101). Based on this, one can argue that sales incentives indirectly mitigate two key drivers of the tendency for current state of affairs, again the level of attention and consideration time. Dean et al. (2017) argue that a key driver for the emergence of a preference for the current state of affairs is that individuals tend to evaluate alternatives poorly. Given that the possible influence of a reference discount arises from poor evaluation of alternatives, self-interest in form of sales incentives could induce profounder analyses. As already deeply discussed, sales incentives are very common in software sales. On the other side, it is argued that reference discounts have a high influence in software sales practice. However, these two lines of argumentation sound like contradictions – but they are not. If one combines the argumentation of H1 and H2 the influence of reference discounts will still exist when incentives are given, but this influence would be even stronger without the self-interest created by incentives. *H2: When making decisions about current discounts, salespeople are less affected by reference discounts when they receive a sales incentive in relation to the outcome of their decision.*

Derivation of hypothesis 3: As already mentioned, intangible rewards of salespeople are an important performance reinforcer in addition to money. A primary reason is that intangible incentives, such as awards, titles, and employee events, go hand in hand with the concept of public social recognition. Such rewards provide the seller with status through publicity (Bandura 1986; Haynes et al. 1982; Markham et al. 2002; Stajkovic and Luthans 2003). Kosfeld and Neckermann (2011) and Bradler et al. (2016) discerned that public recognition positively

influences work effort. However, as Stajkovic and Luthans (2003) showed, social recognition and feedback (both forms of intangible incentives) increased performance by 17% and 10%, respectively. Tangible incentives (i.e., money), however, augmented performance by 23%. These findings are consistent with those obtained in many other studies, which have determined that tangible benefits lead to more improved performance than intangible rewards (Gerhart and Milkovich 1990; Gupta and Shaw 1998; Lawler 1981, 1990; Stajkovic and Luthans 2003). In software, sales performance, however, is in most cases not measured by successfully applying value pricing – in many cases resulting in a necessary deviation from the reference discount, but by the overall turnover the seller makes within a certain period of time (Schröder 2019). As Biglaiser and Mezzetti (1997), Dewan and Hortala-Vallve (2012), Hermalin (1993) and Holmstrom and Costa (1986) found, the possible public social recognition of tangible incentives leads to risk-averse decision making. These findings are justified by a decision outcome which is more public: bestowing intangible incentives. A more public decision outcome leads to higher reputational concerns of the decision maker. Choosing the current state of affairs (i.e., the reference discount) lowers the perceived risk and the chances of blaming the salesperson for the negative consequences of his or her decision. Taking the argumentation of H2 into consideration, the self-interest effect of the incentive does still exist. However, it is supposed to be a lot weaker with intangible incentives. *H₃: When making decisions about current discounts, salespeople receiving an intangible incentive in relation to the outcome of their decision are less affected by the reference discount, however, this effect is weaker than with using a tangible incentive.*

Derivation of hypothesis 4: Early literature considered monetary incentives to be the most potent influence on employee performance and other desired behaviors (Baker et al. 1988; Jenkins Jr et al. 1998; Locke et al. 1980; Locke et al. 1981; Skaggs et al. 1992). Since 1996, the number of companies using non-monetary rewards as keen motivators increased from 26 percent to 84 percent (Incentive Research Foundation 2017). In light of hypothesis 3 and a comparison between non-monetary and monetary tangible incentives, currently non-monetary rewards tend to have the ones with higher public visibility. This infers that non-monetary rewards in sales lead to an increased tendency to be influenced by reference discounts, as the reference discount alternative has a lower perceived risk. By analyzing the literature that compares non-monetary and monetary incentives, a similar view emerges. Waldfogel (1993) observed that a non-monetary reward is *perceived* to be between 1/10, and 1/3 lower in value than it actually is. Prendergast and Stole (2001), however, argued that non-monetary benefits are perceived to be of higher value than monetary ones, if the preferences of the recipient are well known. Accordingly, management needs to know the individual salespeople so well that it will select the appropriate non-monetary benefits for each salesperson. However, Kaplan and Ruffle (2009) argued that, on average, this is not the case. In most instances, preferences of the salesperson receiving the non-monetary rewards are not perfectly known. Consequently, s/he receives a reward that has a lower perceived benefit than the same value of cash. For non-monetary incentives, exchanging them for money is hardly possible, as doing so would require the salesperson's effort (e.g., asking the employer for a receipt and return the good to the store), which is further decreasing the perceived value of the reward. Kube et al. (2012) tested whether employees prefer a monetary or a non-monetary payment, if both have the same value and the value of the non-monetary one is openly communicated to the participant. Eighty percent of the participants choose money. In our case of the payment of the software sales, the higher perceived value of the monetary incentive likely leads to a higher perceived incentive in general. Per the logic behind the derivation of hypothesis 2 that a larger self-interest results in a lower tendency to opt for the reference discount, a similar situation should apply comparing monetary and non-monetary incentives. *H₄: When making decisions about current discounts, salespeople receiving a non-monetary incentive in relation to the outcome of their decision are less affected by the reference discount, however, this effect is*

weaker than with using a monetary incentive.

4 Methodology

The study uses a 3x2x2x2 experimental design (see appendix a). Participants will assume the role of a software sales agent benefiting from certain incentives, and in two of three cases informed about a reference discount. In one of these two scenarios, the reference discount has a relatively low value (25%); in the other, a relatively high value (86%). Shown in appendix B are the 18 groups into which participants are randomly assigned. Every group will receive a scenario in which participants are asked to put themselves into the position of a software salesperson facing a pricing decision: *Imagine you are an account executive working in the sales department of a large software company managing customers in the automotive industry. You had several workshops with your customer, AUDI, already, as AUDI was searching for a new finance software solution. AUDI now wants to know what discount you would give it, if it chooses your software. Because the variable costs of software are very low, you have a lot of freedom in choosing a discount level. Which discount level do you choose?*

Groups 7 through 18 with a (relatively high or low) reference discount will receive one additional piece of information: *Your colleague is an account executive assigned to another premium car manufacturer, BMW. This customer bought the same finance software last year and received a discount of 25% (relatively low reference discount; high = 86%).* Furthermore, all groups will receive one additional piece of information regarding their sales incentive; one example (non-monetary incentive; group 6, 12, 18): *Be aware that the sales revenue that you generate with this customer has a direct impact on an incentive trip you may receive if you are a successful seller in this quarter.* In a next step, the participants are asked to select the discount size. Since participants are allowed to enter any percentage between 0 and 100, this leads to a high number of decision possibilities from the participant's point of view, and therefore reflects the complexity in software sales practice better than a low number of choices, e.g. three or four options to choose from (Samuelson and Zwickhauser 1988).

5 Findings

Appendix C presents a summary of means and confidence intervals for the chosen discount for each of the 18 groups. It allows for an easy visual comparison. It can be seen that the confidence interval for the existent and high group is always higher on the vertical axis than that for any of the two other groups. At the same time, the presence of some incentive reduces the difference between the existent and high group and the two other groups, supporting the hypothesis of the moderating role of the sales incentive on the effect of a reference discount on the chosen discount.

Means and standard deviations of the chosen discount are summarized in Appendix D. Sample means are the highest in the "Existent and high" reference discount group no matter whether and what kind of sales incentive was provided. The chosen discount is not only the highest in the case of "existent and high" reference discount but is also the most homogeneous as indicated by the lowest ratio of standard deviation to mean. When the reference discount is existent, but low, the mean chosen discount is still significantly higher than that in the case of no reference discount, but the difference between the "existent and low" and "no reference discount" conditions was less pronounced under the monetary incentive and non-monetary incentive conditions.

In order to test the first hypothesis (H1), we compared the mean discounts across reference discount groups (non-existent, existent and low, and existent and high) using a one-way ANOVA. According to the Levene's test the assumption of equal variances between groups can be rejected ($F(2,566)=48.4, p<0.001$), which is why the Welch's test not assuming equal variances were used. According to this robust test of means, the null hypothesis of equal means

was rejected ($F(2,363)=441.3$, $p<0.001$). Tamhane's test was chosen for post-hoc pairwise comparisons as a conservative test in the presence of non-homogeneous variances across groups. All pairwise differences were significant ($p<0.001$) and had the expected sign and magnitude. On average, those who had existent and low discount chose 11.082 percentage points larger discount compared to those without any reference discount. Those from the high existing discount on average chose a 37.886 percentage points larger discount than those from the "existent and low" group.

In order to test H2-H4 a two-way ANOVAs through a series of OLS regressions with heteroscedasticity-robust standard errors with the chosen discount as the dependent variable was conducted. Reference discount (3-level factor variable), sales incentive (2-level factor variable) and their interaction were used as regressors in each of the models. Each time, a subset of observations corresponding to the two types of sales incentives specified in the hypothesis, was used. The significance of the interaction term would imply there is evidence of the moderating effect of incentive existence/type on the association between reference discount and chosen discount thus supporting the corresponding research hypothesis. When testing H2 the subset of our sample with two levels of the sales incentive – "no incentive" (222 subjects) and "incentive" (224 subjects) was kept. Both main effects and the interaction term are statistically significant ($p<0.05$), implying that sales incentive (no incentive vs. incentive) moderates the relationship between the reference discount and the chosen discount. According to the analysis of marginal means the mean chosen discounts are insignificantly different in the presence and in the absence of a sales incentives under the no and low reference discount conditions, but the absence of an incentive significantly ($p=0.039$) increases the mean chosen discount (by 14.74 percentage points). This result is clearly illustrated by appendix E: while bars for the non-existent and the low reference discounts are at about the same level under both sales incentive conditions, the two error bars for the high reference discount condition are clearly located at different levels. These findings agree with H2 and confirm that the absence of sales incentive encourages the choice of a higher discount, but only when the reference discount is high.

In regard to H3 both main effects and the interaction term are statistically significant ($p<0.05$), implying that sales incentive (intangible vs. tangible) moderates the relationship between the reference discount and the chosen discount. According to the analysis of marginal means, mean chosen discounts in the case of no and low reference discounts differ insignificantly between intangible and tangible incentive conditions. At the same time, the intangible incentive is significantly ($p=0.001$) associated with an increased mean chosen discount (17.05 percentage points difference). This result is clearly illustrated by appendix F: while bars for the non-existent and the low reference discounts are at about the same level under both sales incentive conditions, the two error bars for the high reference discount condition are clearly located at different levels. These findings agree with H3 and confirm that intangible sales incentives encourage the choice of a higher discount – compared to a tangible incentive, but only when the reference discount is high.

For H4, both main effects and the interaction term are statistically significant ($p<0.05$), implying that sales incentive (non-monetary vs. monetary incentive) moderates the relationship between the reference discount and the chosen discount. According to the analysis of marginal means, the mean chosen discounts in the case of no and low reference discounts differ insignificantly between monetary and non-monetary incentive conditions. At the same time, the non-monetary incentive is associated with a significantly ($p=0.024$) increased mean chosen discount (11.79 percentage points difference). This result is clearly illustrated by appendix G: while bars for the non-existent and the low reference discounts are at about the same level under both sales incentive conditions, the two error bars for the high reference discount condition are clearly

located at different levels. These findings agree with H4 and confirm that non-monetary sales incentive encourages the choice of a higher discount than a monetary incentive, but only when the reference discount is high.

6 Discussion and Conclusion

The significant main effect stands in line with several theories describing how people refer to past decisions when making current or future decisions. According to the sociological theories of Luhmann (1977) and Selznick (2015), time constraints do not afford even vague understanding of the factual and social complexities of most of individuals' decisions. When one must make a complex decision with several options available, as it is the case with pricing in software sales, that person's past actions will influence his/her decision. In psychological and behavioral economics research, the foregoing phenomenon is described as "reference points", "reference values", or "anchors" that affect the decision; these points of reference, though, may not even be related or only marginally relevant to the circumstances of the decision (Furnham and Boo 2011b; Kahneman et al. 1982; Klein and Oglethorpe 1987; Samuelson and Zeckhauser 1988). Kalyanaram and Winer (1995) state that findings from many investigations undertaken in behavioral economics and reference pricing research can be explained using prospect theory (Kahneman and Tversky (1979). It espouses that an alternative action's utility is not measured by the ultimate welfare realized – as in expected utility theory (Jehle and Reny 2011), but by changes compared to a reference value and perceived as gains or losses from this perspective. Relative changes in adverse situations (e.g., losing considerable sums of money in the stock market) are felt much more keenly than improvements to the same extent (e.g., making considerable sums of money in the stock market). Moreover, people tend to be willing to take risks with regard to losses but are more risk averse vis-a-vis gains.

As Northcraft and Neale (1987) observed, both amateurs and experts are equally affected by the anchoring effect, so conceivably even experienced software sales people are unlikely to be immune to distortion by reference discounts. Anchoring has been demonstrated in a variety of decision-making situations, e.g. probability estimates (Chapman and Johnson 1999; Plous 1989), legal judgements (Englich and Mussweiler 2001; Englich 2006; Englich and Soder 2009), purchasing decisions (Mussweiler 2001), forecasting (Critcher and Gilovich 2008), negotiations (Galinsky and Mussweiler 2001), and self-efficiency (Cervone and Peake 1986). Furnham and Boo (2011a) regarded the effect as an extremely robust impact with a multiplicity of implications to all decision-making processes.

Looking at the significant moderating effects, what the incentives seem to do is producing a self-interest in the outcome of the decision. In summary, the picture that the study draws is that all types of incentives lead to a reduction of the influence of reference discounts. However, monetary incentives show the strongest effect, followed by non-monetary ones – both being tangible incentives that in turn show a stronger reduction of the main effect compared to intangible ones. In other words, the perceived self-interest is lowest with intangible incentives and highest with monetary incentives (a sub-category of tangible incentives). As previous studies have shown incentive systems must be designed so that they reward achievements, promote company goals, ensure employees' satisfaction, and increase customer loyalty (Spiro et al. 2007). As a managerial implication of this paper, it is now proven that in order to promote the typical company goal of high profits, incentive systems can help to increase the final price – which is the strongest profit driver – by reducing unnecessary discounts. In doing so, companies should use mainly monetary incentives such as commissions and bonuses.

For future research in relation to the usage of reference discounts, it would be relevant to have a deeper look to the percentage of variable remuneration that should optimally be given. Generally

speaking, fostering salespeople's long-term orientation tends to favor a large proportion of the fixed remuneration attendants with a considerably reduced variable component (Albers and Krafft 2013). A high portion of fixed remuneration, though, militates against a high impact on salespersons' achievement motivation, and therefor reduces short term sales figures (John and Weitz 1989). Accordingly, combined compensation plans have become especially prevalent in sales; they generally include a fixed salary portion along with success-dependent incentives, as commissions and bonuses (Ingram 2015). When designing combined compensation plans, the length of the sales cycle, complexity of the product or service, sales agent's level of experience, and industry demand for suitable sales personnel are of particular concern (Albers and Krafft 2013). For instance, with respect to the length of the sales cycle, a comparatively long one combined with a high proportion of variable compensation can lead salespeople to neglect finding and cultivating new customers (Krafft 1995).

A second aspect interesting for future research is that complex sales are often made using a sales team. As a result, an individual's contribution to the sale tends to be difficult to determine, so the performance-related remuneration is problematic (Rouziès et al. 2009). With regards to the influence of reference discounts the question is raised of whether incentives should be based on individual or team performance and how variable compensation should be distributed among individuals. If sales success especially depends on the cooperation across individual employees, allocating the contribution of effort across individual salespersons is fraught with difficulty and may even be impossible (Krafft et al. 2002). Nevertheless, 36.5% of companies do not provide team compensation, and many others use discretionary systems that depend on a perceived contribution to success. (Albers and Krafft 2013, p. 234).

What is new? Price calculation in software sales is very complex and based on various variables. The salesforce has in a lot of software companies the power to decide what final discount size is adequate, since it is assumed that they can decide best, what value a software has for the respective customer. Additionally, high margins in software sales lead to a broad decision spectrum for the software seller when it comes to discount decisions. As the experiment shows, when making such decisions, sellers are influenced by previous given discounts, that are introduced as "reference discounts".

Why is that relevant? The price is the largest profit driver. Giving higher discounts than necessary leads automatically to a reduction of profits. This is why it is highly important to understand in depth all factors leading to an inappropriate allocation of discounts with reference discounts being one of them.

What do we learn? A high reference discount leads to a higher discount choice today and vice versa. Given an optimal incentive scheme, salespeople tends to limit the usage of reference discounts. All types of incentives lead to a reduction of the influence of reference discounts. Monetary incentives show the strongest effect, followed by non-monetary ones – both being tangible incentives that in turn show a stronger reduction of the main effect compared to intangible ones.

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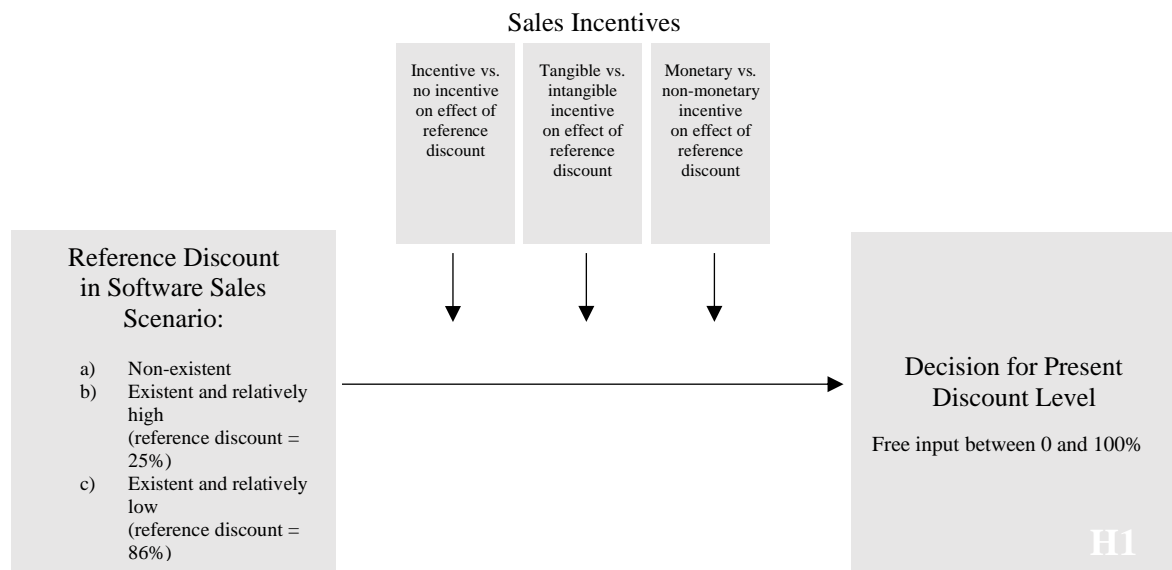
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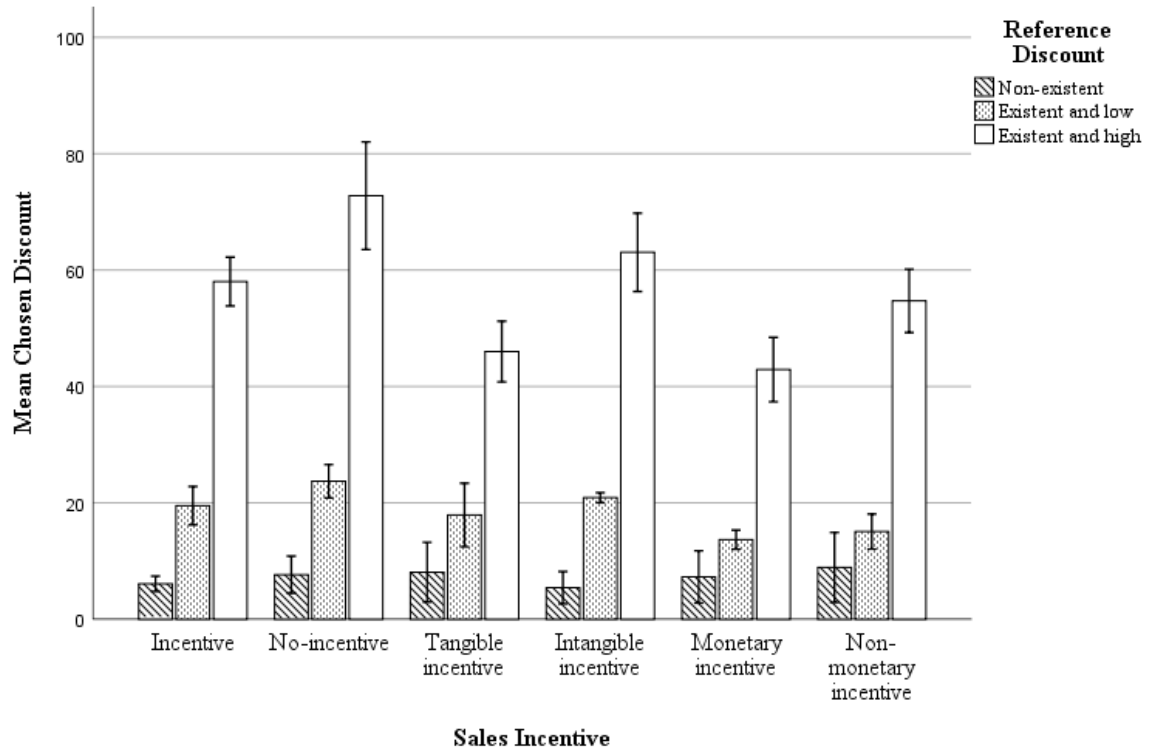
Appendix



Appendix A, figure 1: Detailed model of the 3x2x2x2 experimental design

		Reference Discount in Software Sales Scenario		
		<i>Non-existent</i>	<i>Existent and high (ref. discount = 86%)</i>	<i>Existent and low (ref. discount = 25%)</i>
Sales Incentive	<i>Incentive</i>	Group 1	Group 7	Group 13
	<i>No-incentive</i>	Group 2	Group 8	Group 14
	<i>Tangible incentive</i>	Group 3	Group 9	Group 15
	<i>Intangible incentive</i>	Group 4	Group 10	Group 16
	<i>Monetary incentive</i>	Group 5	Group 11	Group 17
	<i>Non-monetary incentive</i>	Group 6	Group 12	Group 18

Appendix B, table 1: Existence/size of reference discount and type of sales incentive per participant group

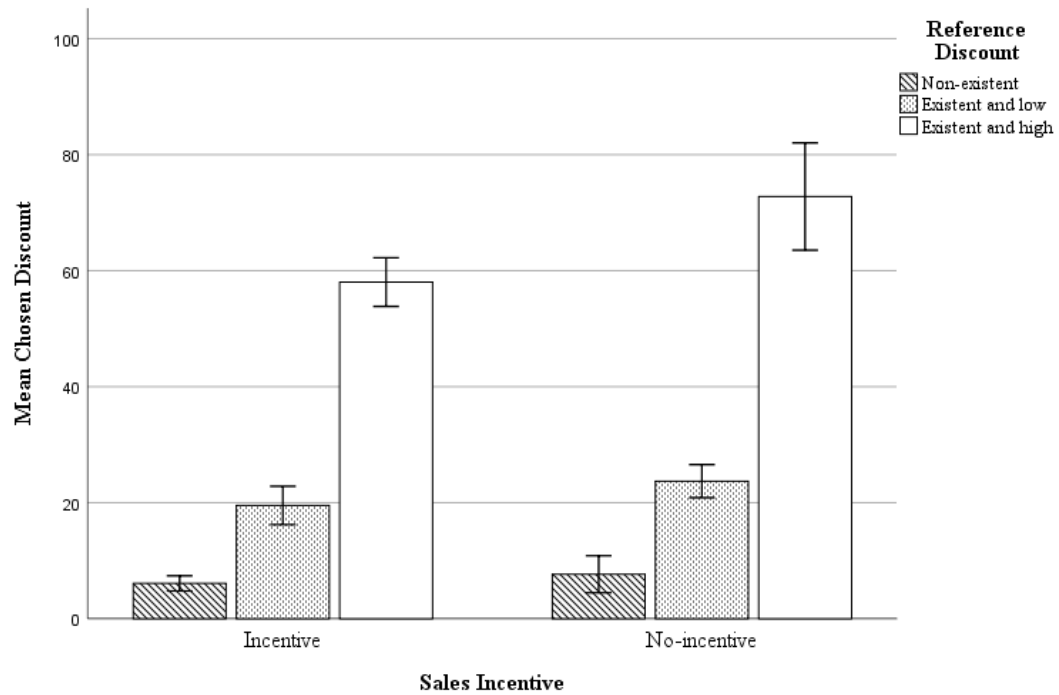


Appendix C, figure 2: Error bar plot: mean chosen discount (with 95% CI) for all levels of the sales incentive factor (incentive/no-incentive) and the reference discount

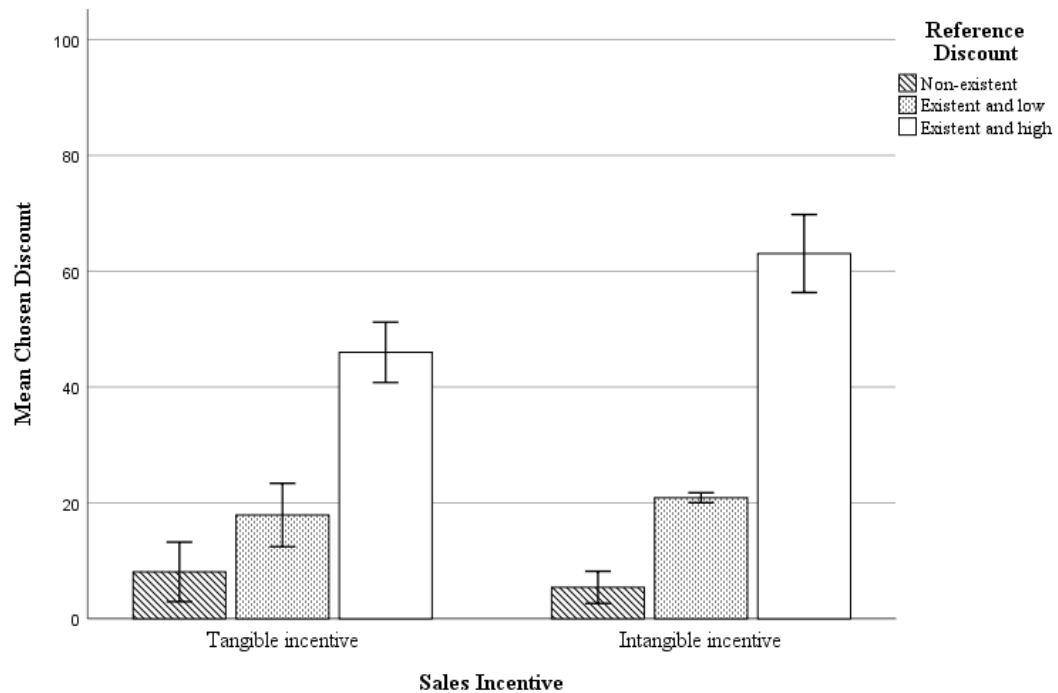
	No Reference Discount		Existent and low		Existent and high	
	(A)		(B)		(C)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
<i>Incentive</i>	6.09	3.70	19.52	8.35	58.03	11.84
			A		A B	
<i>No-incentive</i>	7.66	9.27	23.71	7.37	72.77	25.21
			A		A B	
<i>Tangible incentive</i>	8.08	15.40	17.91	15.41	46.00	15.17
			A		A B	
<i>Intangible incentive</i>	5.42	7.83	20.89	2.17	63.05	20.46
			A		A B	
<i>Monetary incentive</i>	7.28	11.78	13.68	4.46	42.91	15.60
					A B	
<i>Non-monetary incentive</i>	8.90	15.79	15.07	8.06	54.70	13.78
					A B	

Results are based on two-sided tests assuming equal variances. For each significant pair, the key of the smaller category appears in the category with the larger mean. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

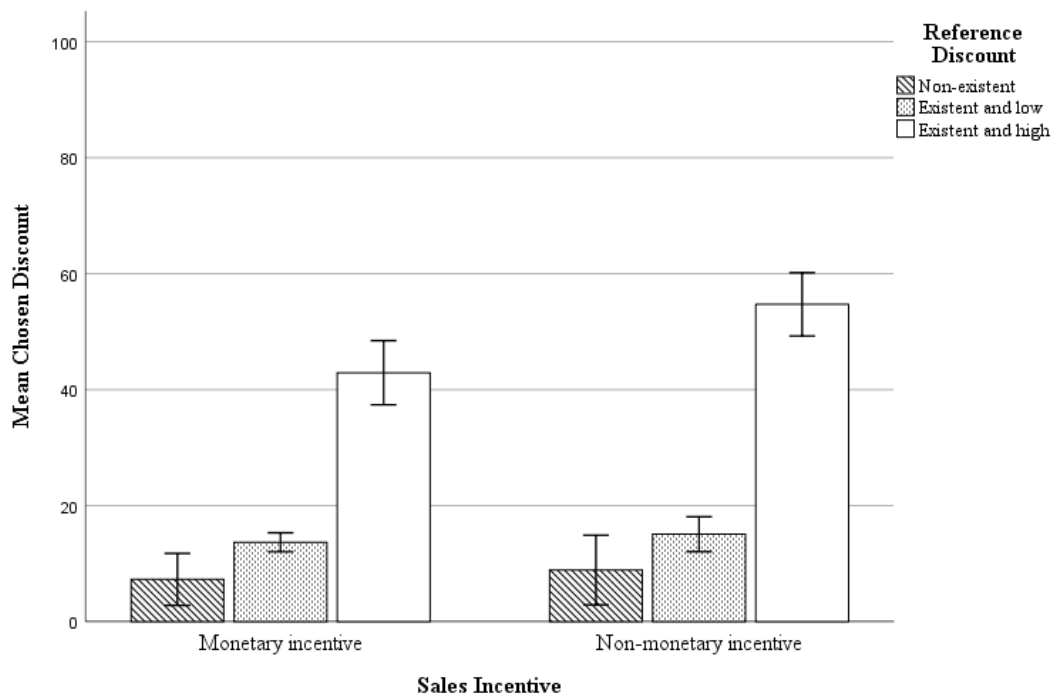
Appendix D, table 2: Means and standard deviations of the chosen discount for each group of subjects



Appendix E, figure 3: Error bar plot: mean chosen discount (with 95% CI) for two levels of the sales incentive factor (Incentive/No-incentive) and the reference discount (H2)



Appendix F, figure 4: Error bar plot: mean chosen discount (with 95% CI) for two levels of the sales incentive (Tangible/Intangible) and the reference discount (H3)



Appendix G, figure 5: Error bar plot: mean chosen discount (with 95% CI) for two levels of the sales incentive (Monetary/Non-Monetary) and the reference discount (H4)

Role	“Make final price decision”			“Take part in price decision”
	List prices	Discounts	Price promotions	
<i>Executive Office</i>	73 %	52 %	43 %	89 %
<i>Head of Finance/Controlling</i>	1 %	1 %	< 1 %	50 %
<i>Marketing manager</i>	5 %	3 %	9 %	66 %
<i>Sales manager</i>	15 %	34 %	39 %	81 %
<i>Head of Key Account Management</i>	< 1 %	5 %	4 %	45 %

Appendix H, table 3: Share of different business roles in the pricing decision (Fassnacht et al. 2013); multiple answers possible