Penalty Reward Contrast Analysis (PRCA) for Categorizing Service Components: A New Approach

Björn Stöcker and Aydin Nasseri

Abstract Ever since Noriaki Kano's research, we have known that the relationship between performance and customer satisfaction is not just linear. Depending on the performance, different customer requirements exist, which are visualized in the Kano Model with three curves. In this article, we would like to present a new method that uses Kano's model to characterize different service components using a cubic term. We then compare the results of the Penalty Reward Contrast Analysis (PRCA) and the cubic terms and recommend how the cubic terms can be interpreted, based on two surveys of an online retailer collected via CATI (study 1 in 2011 with n=480 and study 2 in 2013 with n=500). This paper makes three contributions: 1) We compare three different and popular applications of the PRCA on real customer data, then 2) contrast the results with our new approach of using cubic terms and 3) give hints towards causal relations of different service components to the overall customer satisfaction in the fashion online business.

Björn Stöcker
BAUR Versand, Bahnhofstr. 10, 96224 Burgkunstadt, Germany
✉ bjoern.stoecker@baur.de

Aydin Nasseri
Cogitaris, SömmerringstraSSe 14, 55118 Mainz, Germany
✉ nasseri@cogitaris.de

Archives of Data Science, Series A
(Online First)
KIT Scientific Publishing
Vol. 6, No. 2, 2020

DOI: 10.5445/KSP/1000098012/03
ISSN 2363-9881

1 Introduction

Predatory competition in the retail sector has been taking place for years. The market environment is characterized by an over supply of goods and services. In this highly competitive environment (buyer's market) it is existential to know where investments can be used most profitably. There are many studies concerning the effect of investments in service quality on repeat purchase (Szymanski and Henard, 2001), retention (Bolton, 1998), loyalty (Anderson and Sullivan, 1993), retail sales performance (Gomez et al., 2004) and profitability (Anderson et al., 1994; Bernhardt et al., 2000). A lot of research has been done in recent decades. The original assumption that the relationship between experienced (service) quality and overall satisfaction is simply linear is outdated.

The studies show how important it is to understand the impact relationship on each individual service component. Kano's example is: A Must-be factor must maintain a certain performance level in order not to have a negative effect on satisfaction, an investment beyond this level has no economic benefit. One-dimensional factors, on the other hand, are always perceived by the customer. Poor or good performance influences customer satisfaction and thus indirectly the success of the company. On the other hand, if attractive factors are not expected and if they are not present, they do not lead to dissatisfaction, but these can lead to a differentiation in the market.

Penalty reward contrast analysis (PRCA) is often used to determine the current service performance of a company and the effect of the individual components on overall satisfaction. However, this method is associated with many limitations.

In this paper we would like to show that in the environment of e-commerce Kano's model can also be determined using cubic terms and that this sometimes leads to diametrically different findings than PRCA. We start by laying the theoretical foundations for the emergence and correlations of service quality, the different applications of PRCA and why it is so difficult to get answers from dissatisfied customers in Section 2. In Section 3 we introduce the survey data, apply different PRCA strategies and the new approach with cubic terms and compare the results. In Section 4 we we draw our conclusions, talk about the limitations of the new approach and give a short outlook.

2 Theoretical Background

The initial assumption of a linear correlation between (service) performance and (service) satisfaction has been challenged (Mittal et al., 1998; Anderson and Mittal, 2000). Non-linear relationships can be found in the experiments of Kahneman and Tversky supporting prospect theory (Kahneman and Tversky, 1979), in regression analysis and cross-sectional survey data in health care and automobile settings (Mittal et al., 1998), in hypermarkets (Ting and Chen, 2002), the automotive industry (Matzler et al., 2004), educational program e-portal (Cheung and Lee, 2005, 2009) and e-services (Finn, 2011). Kano (1984) described two different non-linear response functions and classified them as attractive or must-be. Oliver et al. (1997) later described the same response functions as monovalent satisfier and monovalent dissatisfier. Herzberg et al. (1959) also described this asymmetry: Hygiene factors which, if positive, prevent the development of dissatisfaction but do not contribute to satisfaction and motivators thus change satisfaction, but their absence does not necessarily lead to dissatisfaction. Brandt (1987) in the PRCA identifies two characters called penalty and reward factors. The PRCA also supports best service design by calculating driver strength.

2.1 Service Component Categories

Kano was the first person to describe two non-linear relations. In his work he supplemented the linear relationship, which was the initial assumption for the drivers for customer satisfaction in the early days (Figure 1(a)) and argued that the degree to which customer requirements are met depending on the importance of the product or service component has different effects on customer satisfaction. Quality components whose poor fulfillment leads to great dissatisfaction but when done well not to satisfaction are classified as basic factor. Second, the attractive factors describe those components which contribute to a high degree of customer satisfaction when done well, but have no negative effect when poorly fulfilled. The one-dimensional factors show a proportional correlation between the degree of fulfillment and satisfaction (Kano, 1984, 1968, 1987, 1995; Berger, 1993; Sauerwein, 2000; Löfgren and Witell, 2005; Lee and Newcomb, 1997; Högström, 2011). In addition

to its use to categorize services, the Kano model is also used in other areas, such as conversational user interfaces (Baier et al., 2018) or digitalization cases for e-commerce retailers (Baier et al., 2019). Kano (2001, p.1) and Fundin (2005, p.18) found that the classification of the components is not static but changes over time to follow an attribute lifecycle.

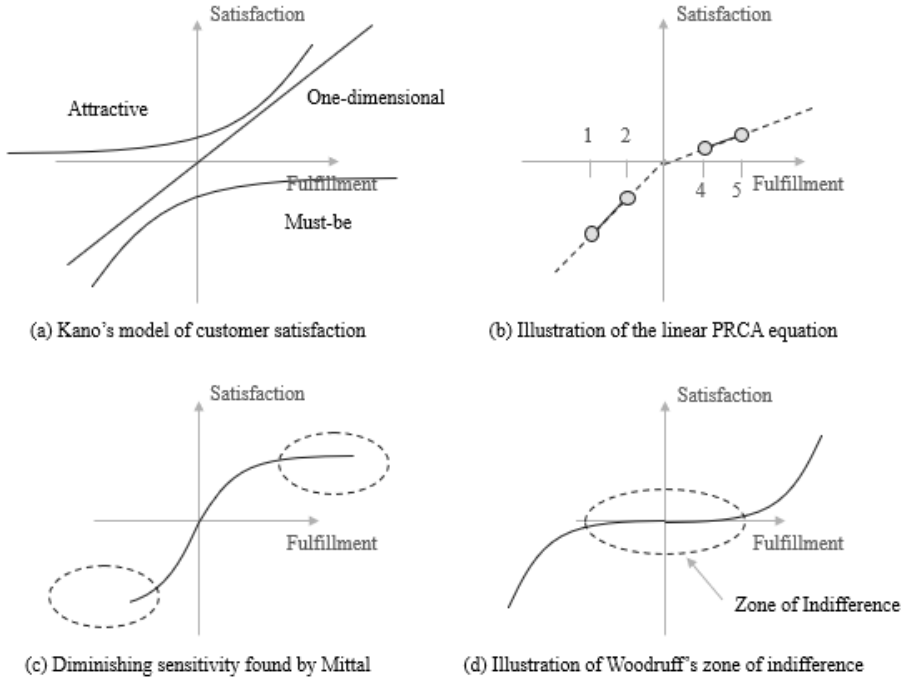

Figure 1: Asymmetric relationships between fulfillment and satisfaction.

Non-linear response functions are claimed in different shapes: Components showing an asymmetry towards satisfaction are linked to customer delight (Oliver et al., 1997). Furthermore, customer delight mostly arises from unexpected positive customer experience (Rust and Oliver, 2000). An explanation for the asymmetry towards dissatisfaction can be found in the prospect theory (Kahneman and Tversky, 1979). Customer satisfaction or dissatisfaction arises from the difference between the expected and the experienced performance standard of an individual. People tend to weigh losses heavier than gains (loss

aversion), shown in a steeper slope. Mittal et al. found in his work regarding services and products that

> *" overall satisfaction displays diminishing sensitivity to attribute-level performance"* (Mittal et al., 1998, p.33),

later also called "satisfaction-maintaining attributes" (Anderson and Mittal, 2000, Figure 2, Panel 2). The graph of Mittal's relation seems to represent a cube root (see Figure 1(c)). Woodruff et al. proposed to modify the confirmation/disconfirmation paradigm by amongst other things adding a "zone of indifference" (see Figure 1(d)):

> *" For all practical purposes, perceived performance within some interval around a performance norm is likely to be considered equivalent to the norm."* (Woodruff et al., 1983, p.299).

In Figure 1, the graph represents a monotonically increasing cubic function. In addition to his model, Kano has also developed a method to classify the components. He proposes using two questions on a 5 point Likert scale to categorize a specific component. The one question asked is functional ("What would you say if the product has...?") and the other is dysfunctional ("What would you say if the product does not have...?").

The two answers are used to categorize the component via the two-dimensional evaluation chart (Kano, 1984, p.173). As examples for answers to those questions, high values in the functional question ("I like it if the component A is fulfilled") and mean values in the dysfunctional question ("I'm indifferent when the component A is not fulfilled") result in the component to be categorized as "attractive").

Another way of determining the character of a component was formulated by Brandt (1987) in his work on the PRCA. Brandt combines two linear functions to determine non-linear relations (see Figure 1(b)). Penalty factors have a steeper slope on the left side, where the poor performance is located and a flatter slope on the right. Tn the case of reward factors the situation is vice versa. This method is more suitable if service performance should be increased.

2.2 Categorizing Service Components Using PRCA

As already mentioned, PRCA is widely used in practical work to determine the character of a service attribute in Kano's model (Albayrak and Caber, 2013). The answers to the service fulfillment is usually queried based on a 5 point Likert scale, which has one middle option. Then for each (service) component, the PRCA fits a multiple linear regression model using dummy variables to estimate the beta coefficients for penalty and reward. The dummy variable for penalty x_p is true for all answers "worse" or "much worse than expected", the dummy variable x_r representing reward is true for all answers "better" or "much better than expected". The middle option is not considered. The regression equation is

$$\hat{y} = b_p\, x_p + b_r\, x_r + b_0 \tag{1}$$

where $\hat{y}$ is the dependent variable for the overall satisfaction, b_0 the y-intercept (constant term) and b_p and b_r are the beta coefficients for penalty and reward, synonymous with the slope.

Table 1: Overview of the different recodings used in PRCA (Albayrak and Caber (2013, p. 1291, Table 1), modified) (1/2).

Low	High	Authors	Area of Research
1, 2	4, 5	Lin et al. (2010)	Customer satisfaction with the online tax declaration services
1, 2	5	Matzler and Sauerwein (2002)	Customer satisfaction with the internal computer services of a hospital IT department
		Fuchs and Weiermair (2004)	Tourists satisfaction with destination quality
		Alegre and Garau (2011)	Tourist satisfaction at sun and sand destinations

To classify the components, Brandt (1987) proposed using the beta coefficients. A reward factor is given when the beta coefficient b_r is high and b_p is low, for a penalty factor vice versa. Fuchs and Weiermair (2004) and Lin et al. (2010) suggest using the significance of the coefficient to classify the components. They call a significant b_p and an insignificant b_r basic factor, an insignificant b_p and

a significant b_r excitement factor and add a third classification performance factor for components where both beta coefficients are significant. Gierl and Bartikowski (2003) differentiate Brandts classification into four classes. They use the strength of both beta coefficients combined to classify satisfiers (high reward, low penalty), criticals (high reward, high penalty), neutrals (low reward, low penalty) and dissatisfiers (low reward, high penalty).

Despite the different ways of defining the factors, the definition of which answers are considered to be recoded as high or low performance is also handled differently by various researchers as shown in Table 1.

Table 1: Overview of the different recodings used in PRCA (Albayrak and Caber (2013, p. 1291, Table 1), modified) (2/2).

Low	High	Authors	Area of Research
1	5	Mikulić and Prebežac (2008)	Passenger satisfaction with services at a major Croatian airport
		Mikulić and Prebežac (2011)	Passenger satisfaction with an international airport
		Back (2012)	Key drivers of customer satisfaction in Korean restaurants
		Coghlan (2012)	Tourists satisfaction with destination attributes

2.3 Categorizing Service Components: A New Approach

It is difficult for companies to gain a complete insights about their customers' satisfaction. In order to be able to record the cause-effect relationships according to Kano and measure them (e.g., using PRCA), data from disappointed customers is also necessary in order to be able to make valid statements for penalty factors. In practice, the answers are not equally distributed, usually satisfied customers are over represented. On the one hand, this is because successful enterprises need content customers for their economic survival, and on the other hand, because dissatisfied customers hardly react and are also – for market research purposes – no longer accessible (Goodman et al., 1987, p.169). In the TARP study of 1979 (Grainer et al., 1979) one proceeded from up to 50 % non complainers. In more recent studies (Goodman et al., 2000 and Richins, 1987)

50–80 % of non-complainers were reported and it was recognized that especially in the case of non-minor errors a supplier change is preferable to a complaint. For the service sector, Stauss (1989) also expects a higher proportion of non complainers due to the special characteristics.

3 Empirical Comparison

3.1 Data Collection

Two samples (study 1 with n=480 and study 2 with n=500) were analyzed. The qualitative data sets were collected via Computer Assisted Telephone Interview (CATI), each by using the same standardized cascaded (the respondents had to have used the service, self-assessed) questionnaire: To obtain the performance of a service component listed in Table 2, i.e., following "You said you have the goods from the assortments ... ordered by phone. How do you rate the telephone ordering process?", the response options were:

(1) "Much worse than expected",

(2) "Worse than expected",

(3) "Neither good or bad",

(4) "Better than expected", or

(5) "Much better than expected".

Table 2: Service components queried in the two surveys (1/2).

Phase	**Component**
Presales	Info Delivery Options Online Shop
	Info Delivery Options Catalogue
	Info Payment Methods Online Shop
	Info Payment Methods Catalogue
	Service Information at the Article in the Online Shop
	Service Information at the Article in the Catalogue
	Accuracy of Delivery Time Online Shop
	Accuracy of Delivery Time Catalogue
	Info Returns in the Online Shop
	Info Returns in the Catalogue

To receive the overall service satisfaction, i.e., “When you think of all the services we have discussed so far, how satisfied are you with them overall?”, the response options were scaled from (1) “very dissatisfied” to (5) “very satisfied”.

Table 2: Service components queried in the two surveys (2/2).

Phase	**Component**
Ordering	Telephone Order Process
	Order Process Online Shop
Fulfillment	Delivery Time
	Reliability of Delivery Information
	Delivery to your Home
	Delivery to Another Address
	24-hour Delivery
	Delivery at the Desired Date
	Order Tracking and Tracing
	Delivery to the Parcel-Shop
	Delivery 2-man Team
	Simplicity of Bank Transfer
	Processing of the Instalment Purchase
	Satisfaction with the Telephone Complaint
	Satisfaction with the E-mail Complaint
Returning	Processing of the Return Shipment
	Return in the Parcel Shop
	Speed of the Credit Memo

3.2 Categorizing Service Components Using PRCA

To show the differing results, we calculated the multiple linear regression for all three popular PRCA classification approaches for the question “[...] How do you rate the telephone ordering process?” (independent variable) and “[...] How satisfied are you with them overall?” (dependent variable) for all people who used this service (n=319, Table 3). All results can later on be found in Table 5 and Table 6 on page 14. When both ends of the response scale are taken into account (12-45), i.e., for penalty

(1) “Much worse than expected” and

(2) “Worse than expected”,

and for reward, i.e.,

(4) "Better than expected" and

(5) "Much better than expected",

we find that both beta coefficients are significant and have the same strength, therefore they are classified as one-dimensional. If we omit in addition the response option (4) by recoding (12-5) we see that two beta coefficients are significant and have the same strength, again One-dimensional. For the last approach where just the ends of the rating scales enter into the dummy regression (1-5), we get a different picture: Only the reward beta coefficient is significant, then classified as attractive. The poor adj. R^2 are also caused by the distinctive left skewed distribution in both variables (dependent and independent).

Table 3: Results of the three different PRCA approaches w.r.t. the service component "Telephone Order Process" in study 1. Referring to Table 1: 12-45 = recoding answers, 1-2 as dummy variable for penalty and 4-5 for reward, 12-5 = recoding just 1-2 and 5, 1-5 recoding only 1 and 5. O = One-dimensional, A = Attractive.

Abbr.	Low	High	R^2	Adj. R^2	Beta Penalty	Sig.	Beta Reward	Sig.	Class
12-45	1, 2	4, 5	0.058	0.052	−0.685	0.044	0.333	0.000	O
12-5	1, 2	5	0.056	0.050	−0.776	0.022	0.328	0.001	O
1-5	1	5	0.047	0.041	−1.260	0.124	0.344	0.000	A

3.3 Categorizing Service Components Using the New Approach

In order to find an equation other than the one used in the PRCA that can reproduce the curves described in Section 2.1, there are basically only two possibilities: Using a piecewise function or a 3rd degree polynomial. For piecewise functions, a positive or negative quadratic term is added to a linear term. In order to use this procedure correctly, the exact position of the joint of the functions must first be determined for each component. In our practical work we have found out that the point at which the non-linear changes into the linear context (inflection point) is not always to be found in the middle of the scale (see Figure 2). We, therefore, propose the use of a 3rd degree polynomial aka

cubic term (CT), which can take on all three forms (Must-be, One-dimensional and Attractive) for the domain and is not limited to a fixed inflection point at the same time.

In our opinion, a characterization of a service component using a matrix in analogy to Kano's evaluation chart is out of question, as this would first require scaling of the data. Especially in the case of skewed distributions, these would first have to be centered. The curve can be determined much more easily by the slope of the individual data points relatively in space. A high gradient indicates a high significance for the overall satisfaction, a gradient close to zero, on the other hand, indicates a low influence, also referred to as indifference. In this context, it is not possible to determine the quality of fit using R^2, for example. Using the example of a must-be component, a positive correlation can be determined for the left hand side, but not for the right hand side, since here no correlation can be found. This is at the expense of the R^2, which represents the goodness of fit for all values. Therefore, the highest R^2 would be found for a one-dimensional component, the lowest for an indifferent component. The interpretation of the cubic terms can be done graphically as well as via a table of values. In a direct comparison to PRCA, there is no need to recode the data into dummy variables or define high and low (see Table 1).

A 3rd degree polynomial regression fits a non-linear relation between the independent variables (service performance) denoted as x and the dependent variable (overall customer satisfaction) denoted as y using the method of least squares. The beta values (b_3, b_2, b_1, b_0) increase or decrease the conditional expectation of y:

$$\hat{y} = b_3\,x^3 + b_2\,x^2 + b_1\,x + b_0\,. \tag{2}$$

As in the PRCA, we calculate the cubic regression for each service component, only including answers by people, who have used the service. Using the example above we arrive at the equation

$$\hat{y} = 0.03\,x^3 - 0.384\,x^2 + 1.807\,x + 1.399 \tag{3}$$

with adj. R^2: .068. If you compare the graph (see Figure 2(a)) with Kano's chart, you would categorize it as a must-be and not as one-dimensional or even attractive as the PRCA has shown in Table 3.

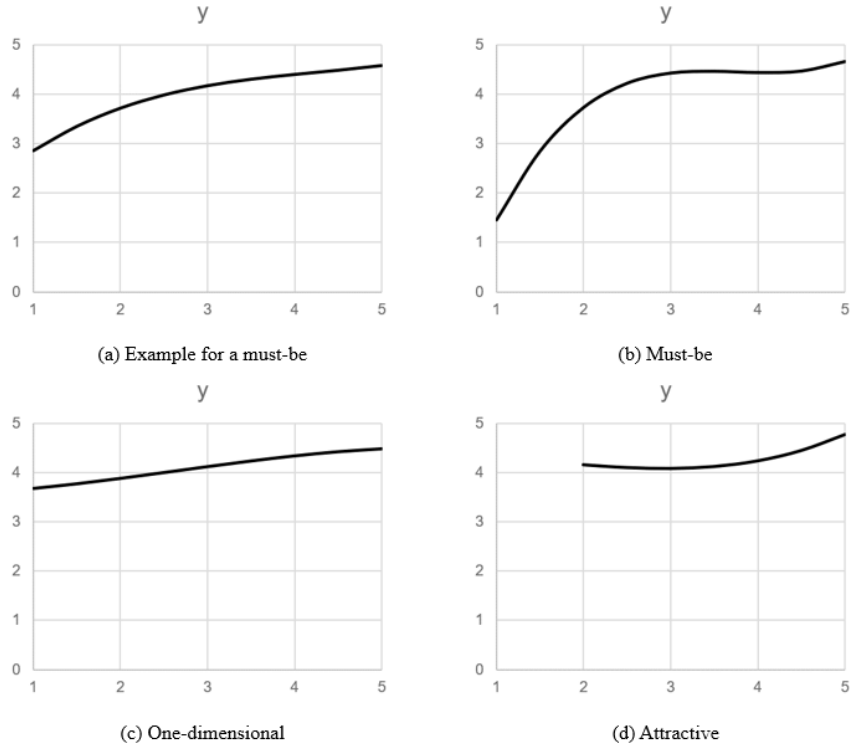

Figure 2: Plots of the different cubic terms.

We recommend going through these steps to apply a CT properly:

1. Define the range for which values the cubic equation applies (domain). In some cases you will not find values for your independent variable on the lower or upper end of the rating scale. In this instance the cubic regression can only speak for the given values
2. Calculate the first derivative of Equation (3) to get the slope:

$$\hat{y}' = 0.09x^2 - 0.768x + 1.807 \tag{4}$$

3. Calculate a table of values

x	1	2	3	4	5
$\hat{y}'$	1.13	0.63	0.31	0.18	0.22

A good example for a must-be factor can be seen in the component: “Accuracy of delivery time online shop” (n=96, study 1) due to the non-linear change in the slope on the left hand side (see Table 4, Figure 2(b)):

$$\hat{y} = 0.149\,x^3 - 1.683\,x^2 + 6.279\,x - 3.282\,. \tag{5}$$

For One-dimensional the component “Delivery to your home” (n=511, study 1) is a good object of study. The slope remains constant through the whole domain shown in the graph and table of values (see Table 4, Figure 2(c)):

$$\hat{y} = -0.009\,x^3 + 0.071\,x^2 + 0.052\,x + 3.569\,. \tag{6}$$

Finally, the component “Order process online shop” (n=275, study 2) represents an attractive factor. The slope changes non-linear on the right hand side (see Table 4, Figure 2(d)). Another indicator for an attractive factor is that you find no values for “much worse than expected” (here: 1) which strengthens the findings of Rust and Oliver (2000):

$$\hat{y} = 0.025\,x^3 - 0.11\,x^2 + 0\,x + 4.399\,. \tag{7}$$

Table 4: Table of values showing the slopes for the three ideal-typical examples.

x	1	2	3	4	5
Must-Be	3.4	1.3	0.2	0.0	0.6
One-dimensional	0.2	0.2	0.2	0.2	0.1
Attractive	N/A	-0.1	0.0	0.3	0.8

3.4 Comparisons

As can be seen in Tables 5 and 6, the results within the different applications of the PRCA are very different (e.g. Table 5: “Speed of Credit Memo”) or congruent (Table 5: “Processing of the Return Shipment”).

Table 5: Results of the different PRCA approaches and the cubic term (approach study 1). M = Must-be, O = One-dimensional, A = Attractive, I = Indifferent.

Component	N	12-45	12-5	1-5	CT
Info Delivery Options Online Shop	113	M	O	O	M
Info Delivery Options Catalogue	129	I	A	O	M
Info Payment Methods Online Shop	92	I	I	M	M
Info Payment Methods Catalogue	120	A	A	O	I
Service Information at the Article in the Online Shop	80	I	A	O	I
Service Information at the Article in the Catalogue	102	I	A	O	I
Accuracy of Delivery Time Online Shop	96	M	M	M	M
Accuracy of Delivery Time Catalogue	84	O	M	M	M
Info Returns in the Online Shop	62	I	I	M	I
Info Returns in the Catalogue	85	I	I	M	A
Telephone Order Process	323	O	O	A	O
Order Process Online Shop	219	A	A	O	M
Delivery Time	521	O	O	O	M
Reliability of Delivery information	503	O	O	O	M
Delivery to your Home	510	O	O	A	O
Delivery to Another Address	31	I	I	I	I
24-hour Delivery	40	M	M	M	M
Delivery at the Desired Date	35	I	I	M	I
Simplicity of Bank Transfer	388	A	A	O	A
Processing of the Instalment Purchase	103	A	A	A	O
Processing of the Return Shipment	283	A	A	A	A
Speed of the Credit Memo	81	A	I	M	M

The categorization according to the CT is similar in some cases to the PRCA (12-45), probably also because the CT includes all response options in the regression. Depending on the recoding approach, the variance is more or less lost in the PRCA approach, so that only the ends of the scale are used in the PRCA approach (1-5). This leads to problems especially when only a few answers fall into this range anyway (skewed distribution due to non complainers, among other things). In addition, the PRCA tacitly assumes that inflection points are always to be found in the middle of the scale. Figure 2 shows that this assumption is not always true. In the evaluation of all answers we have often encountered inflection points outside the center of the scale which are not sufficiently recognized by the PRCA. All in all, we are of the opinion that a determination of Kano's model should preferably be done with the CT, because

no dummy variables are formed, all responses are included in the regression, and any inflection points that may occur can lie outside the center of the scale. The CT can be evaluated graphically or with a table of values.

Table 6: Results of the different PRCA approaches and cubic term (approach study 2). M = Must-be, O = One-dimensional, A = Attractive, I = Indifferent.

Component	N	12-45	12-5	1-5	CT
Info Delivery Options Online Shop	128	I	A	O	A
Info Delivery Options Catalogue	118	A	I	I	I
Info Payment Methods Online Shop	109	I	I	M	M
Info Payment Methods Catalogue	107	A	I	M	M
Service Information at the Article in the Online Shop	103	M	O	O	O
Service Information at the Article in the Catalogue	76	A	I	M	O
Accuracy of Delivery Time Online Shop	131	A	O	A	M
Accuracy of Delivery Time Catalogue	69	I	I	I	M
Info Returns in the Online Shop	78	I	A	A	O
Info Returns in the Catalogue	57	I	I	M	M
Telephone Order Process	319	O	O	A	M
Order Process Online Shop	274	A	A	O	A
Delivery Time	570	O	O	O	O
Reliability of Delivery information	557	O	O	O	M
Delivery to your Home	545	O	O	A	M
Delivery to Another Address	19				
24-hour Delivery	35	I	I	I	O
Delivery at the Desired Date	14				
Simplicity of Bank Transfer	425	O	O	O	M
Processing of the Instalment Purchase	118	I	I	M	O
Processing of the Return Shipment	283	A	A	O	A
Speed of the Credit Memo	124	A	A	O	A

In addition, we were also able to determine a lifecycle in the component categorization (Kano, 2001; Fundin, 2005). For example, the character of "Telephone Order Process" changed from one-dimensional (study 1) to must-be (study 2) or "Simplicity of Bank Transfer" from attractive to must-be. But also opposite effects were observed in "Order Process Online Shop" from must-be (study 1) to attractive (study 2), "Delivery Time" must-be to one-dimensional or "Speed of the Credit Memo" must-be to attractive, which

indicate that the company has actively worked on service quality or that customer expectations have changed.

4 Conclusions and Outlook

The study confirms a non-linear relationship between service performance and satisfaction. To classify the non-linear relations according to Kano's Model The CT should be considered rather than any variation of the PRCA. The CT does not share the same limitations as the PRCA, outperforming the PRCA approach and delivering sometimes diametrically different interpretations. Choosing the PRCA results instead of the CT ones can lead to wrong business decisions with far-reaching consequences. If a must-be component is misinterpreted as attractive a completely different strategy is applied. Also a validation on other data is desirable.

The two surveys needed to perform the PRCA and the CT approaches are based on respondents who had used one or more specific services. Customer journeys usually have many different touchpoints and are unique, so it is impossible to fit a regression which includes all or even some important service components to the overall customer satisfaction. In addition, every touchpoint can have a different influence on satisfaction and critical incidents are recognized more often than for example a good performance in a must-be setting. As a result, there are no datapoints for a poor service performance because the company is managing these services very well. In this case, the PRCA and the CT can only speak for the given values in the surveys. Referring to point 2.3 respondents who are willing to take part in a survey are more likely to be loyal customers. To obtain more variance and get a more valid result you need answers from non complainers and lost customers as well.

References

Albayrak T, Caber M (2013) PenaltyReward-Contrast Analysis: A Review of Its Application in Customer Satisfaction Research. Total Quality Management & Business Excellence 24(11-12):1288–1300. DOI: 10.1080/14783363.2013.776757.

Alegre J, Garau J (2011) The Factor Structure of Tourist Satisfaction at Sun and Sand Destinations. Journal of Travel Research 50(1):78–86. DOI: 10.1177/0047287509349270.

Anderson EW, Mittal V (2000) Strengthening the Satisfaction-Profit Chain. Journal of Service Research 3(2):107–120. DOI: 10.1177/109467050032001.

Anderson EW, Sullivan MW (1993) The Antecedents and Consequences of Customer Satisfaction for Firms. Marketing Science 12(2):125–143. DOI: 10.1287/mksc.12.2.125.

Anderson EW, Fornell C, Lehmann DR (1994) Customer Satisfaction, Market Share, and Profitability: Findings From Sweden. Journal of Marketing 58(3):53–66. DOI: 10.2307/1252310.

Back KJ (2012) Impact-Range Performance Analysis and Asymmetry Analysis for Improving Quality of Korean Food Attributes. International Journal of Hospitality Management 31(2):535–543. DOI: 10.1016/j.ijhm.2011.07.013.

Baier D, Rese A, Roeglinger M (2018) Conversational User Interfaces for Online Shops? A Categorization of Use Cases. International Conference on Information Systems 39. URL: http://publica.fraunhofer.de/dokumente/N-534788.html.

Baier D, Rese A, Nonenmacher N, Treybig S, Bressem B (2019) Digital Technologies for Ordering and Delivering Fashion: How Baur Integrates the Customers Point of View. In: Urbach N, Röglinger M (eds.), Digitalization Cases, Management for Professionals. Springer, Cham (Switzerland), pp. 59–77. DOI: 10.1007/978-3-319-95273-4_4.

Berger C (1993) Kano's Methods for Understanding Customer-Defined Quality. Center for Quality Management Journal 2(4):3–36. URL: https://walden-family.com/public/cqm-journal/2-4-Whole-Issue.pdf.

Bernhardt KL, Donthu N, Kennett PA (2000) A Longitudinal Analysis of Satisfaction and Profitability. Journal of Business Research 47(2):161–171. DOI: 10.1016/S0148-2963(98)00042-3.

Bolton RN (1998) A Dynamic Model of the Duration of the Customer's Relationship With a Continuous Service Provider: The Role of Satisfaction. Marketing Science 17(1):45–65. DOI: 10.1287/mksc.17.1.45.

Brandt RD (1987) A Procedure for Identifying Value-Enhancing Service Components Using Customer Satisfaction Survey Data. Add Value to Your Service, Chicago: American Marketing Association, pp. 61–65.

Cheung CM, Lee MK (2005) The Asymmetric Effect of Website Attribute Performance on Satisfaction: An Empirical Study. In: Proceedings of the 38th Annual Hawaii International Conference on System Sciences, Institute of Electrical and Electronics Engineers (IEEE), Piscataway (USA), pp. 175c–175c. DOI: 10.1109/HICSS.2005.585.

Cheung CM, Lee MK (2009) User Satisfaction With an Internet-Based Portal: An Asymmetric and Nonlinear Approach. Journal of the American Society for Information Science and Technology 60(1):111–122, Wiley Online Library. DOI: 10.1002/asi.20946.

Coghlan A (2012) Facilitating Reef Tourism Management Through an Innovative Importance-Performance Analysis Method. Tourism Management 33(4):767–775. DOI: 10.1016/j.tourman.2011.08.010.

Finn A (2011) Investigating the Non-Linear Effects of E-Service Quality Dimensions on Customer Satisfaction. Journal of Retailing and Consumer services 18(1):27–37. DOI: 10.1016/j.jretconser.2010.09.002.

Fuchs M, Weiermair K (2004) Destination Benchmarking: An Indicator-Systems Potential for Exploring Guest Satisfaction. Journal of Travel Research 42(3):212–225. DOI: 10.1177/0047287503258827.

Fundin A (2005) Dynamics of Quality Attributes Over Life Cycles of Goods and Services. PhD thesis, Chalmers University of Technology, Gothenburg (Sweden). Doktorsavhandlingar vid Chalmers Tekniska Hogskola. Doktorsavhandlingar vid Chalmers Tekniska Hogskola.

Gierl H, Bartikowski B (2003) Ermittlung von Satisfiers, Dissatisfiers und Criticals in der Zufriedenheitsforschung. Der Markt 42(1):14–34. DOI: 10.1007/BF03032231.

Gomez MI, McLaughlin EW, Wittink DR (2004) Customer Satisfaction and Retail Sales Performance: An Empirical Investigation. Journal of Retailing 80(4):265–278. DOI: 10.1016/j.jretai.2004.10.003.

Goodman J, OBrien P, Segal E (2000) Turning CFOs Into Quality Champions. Quality Progress 33(3):47–54.

Goodman JA, Malech AR, Marra TR (1987) Beschwerdepolitik unter Kosten/Nutzen-Gesichtspunkten-Lernmöglichkeiten aus den USA. In: Hansen U, Schoenheit I (eds.), Verbraucherzufriedenheit und Beschwerdeverhalten, Frankfurt/New York, pp. 165–202.

Grainer MA, McEvoy KA, King DW (1979) Consumer Problems and Complaints: A National View. NA – Advances in Consumer Research (ACR) 6:494–500.

Herzberg F, Mausner B, Snyderman B (1959) The Motivation to Work. Wiley, New York (USA).

Högström C (2011) The Theory of Attractive Quality and Experience Offerings. The TQM Journal 23(2):111–127. DOI: 10.1108/17542731111110195.

Kahneman D, Tversky A (1979) Prospect Theory: An Analysis of Decision Under Risk. Econometrica 47(2):263–291.

Kano N (1968) Concept of TQC and Its Introduction. Kuei 35(4):20–29.

Kano N (1984) Attractive Quality and Must-Be Quality. Hinshitsu (Quality, The Journal of Japanese Society for Quality Control) 14:39–48.

Kano N (1987) Total Quality Creation. ICQCC Tokyo Proceeding.

Kano N (1995) Upsizing the Organization by Attractive Quality Creation. In: Kanji G (ed.), Total Quality Management. Springer, Dordrecht (The Netherlands), pp. 60–72. DOI: 10.1007/978-94-011-0539-2_6.

Kano N (2001) Life Cycle and Creation of Attractive Quality. In: Proceedings of the 4th International Quality Management and Organisational Development Conference (QMOD'01), pp. 18–36. URL: https://www.scirp.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=1750974.

Lee MC, Newcomb JF (1997) Applying the Kano Methodology to Meet Customer Requirements: Nasa's Microgravity Science Program. Quality Management Journal 4(3):95–106. DOI: 10.1080/10686967.1997.11918805.

Lin SP, Yang CL, Chan Yh, Sheu C (2010) Refining Kano's Quality Attributes–SatisfactionModel: A Moderated Regression Approach. International Journal of Production Economics 126(2):255–263. DOI: 10.1016/j.ijpe.2010.03.015.

Löfgren M, Witell L (2005) Kano's Theory of Attractive Quality and Packaging. Quality Management Journal 12(3):7–20. DOI: 10.1080/10686967.2005.11919257.

Matzler K, Sauerwein E (2002) The Factor Structure of Customer Satisfaction: An Empirical Test of the Importance Grid and the Penalty-Reward-Contrast Analysis. International Journal of Service Industry Management 13(4):314–332. DOI: 10.1108/09564230210445078.

Matzler K, Bailom F, Hinterhuber HH, Renzl B, Pichler J (2004) The Asymmetric Relationship Between Attribute-Level Performance and Overall Customer Satisfaction: A Reconsideration of the Importance–Performance Analysis. Industrial Marketing Management 33(4):271–277. DOI: 10.1016/S0019-8501(03)00055-5.

Mikulić J, Prebežac D (2008) Prioritizing Improvement of Service Attributes Using Impact Range-Performance Analysis and Impact-Asymmetry Analysis. Managing Service Quality: An International Journal 18(6):559–576. DOI: 10.1108/09604520810920068.

Mikulić J, Prebežac D (2011) Rethinking the Importance Grid as a Research Tool for Quality Managers. Total Quality Management & Business Excellence 22(9):993–1006. DOI: 10.1080/14783363.2011.593857.

Mittal V, Ross Jr WT, Baldasare PM (1998) The Asymmetric Impact of Negative and Positive Attribute-Level Performance on Overall Satisfaction and Repurchase Intentions. Journal of Marketing 62(1):33–47. DOI: 10.2307/1251801.

Oliver RL, Rust RT, Varki S (1997) Customer Delight: Foundations, Findings, and Managerial Insight. Journal of Retailing 73(3):311–336. DOI: 10.1016/S0022-4359(97)90021-X.

Richins ML (1987) A Multivariate Analysis of Responses to Dissatisfaction. Journal of the Academy of Marketing Science 15(3):24–31. DOI: 10.1007/BF02722168.

Rust RT, Oliver RL (2000) Should We Delight the Customer? Journal of the Academy of Marketing Science 28(1):86. DOI: 10.1177/0092070300281008.

Sauerwein E (2000) Das Kano-Modell der Kundenzufriedenheit. In: Das Kano-Modell der Kundenzufriedenheit: Reliabilität und Validität einer Methode zur Klassifizierung von Produkteigenschaften. Deutscher Universitätsverlag, Wiesbaden (Germany), pp. 27–55. DOI: 10.1007/978-3-322-90890-2_3.

Stauss B (1989) Beschwerdepolitik als Instrument des Dienstleistungsmarketing. Jahrbuch der Absatz-und Verbrauchsforschung 35(1):41–62.

Szymanski DM, Henard DH (2001) Customer Satisfaction: A Meta-Analysis of the Empirical Evidence. Journal of the Academy of Marketing Science 29(1):16–35. DOI: 10.1177/0092070301291002.

Ting SC, Chen CN (2002) The Asymmetrical and Non-Linear Effects of Store Quality Attributes on Customer Satisfaction. Total Quality Management & Business Excellence 13:547–569. DOI: 10.1080/09544120220149331.

Woodruff RB, Cadotte ER, Jenkins RL (1983) Modeling Consumer Satisfaction Processes Using Experience-Based Norms. Journal of Marketing Research 20(3):296–304. DOI: 10.2307/3151833.