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SERVICE MANAGEMENT

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Service Productivity: Improving the Trade-Off between External and Internal Efficiency

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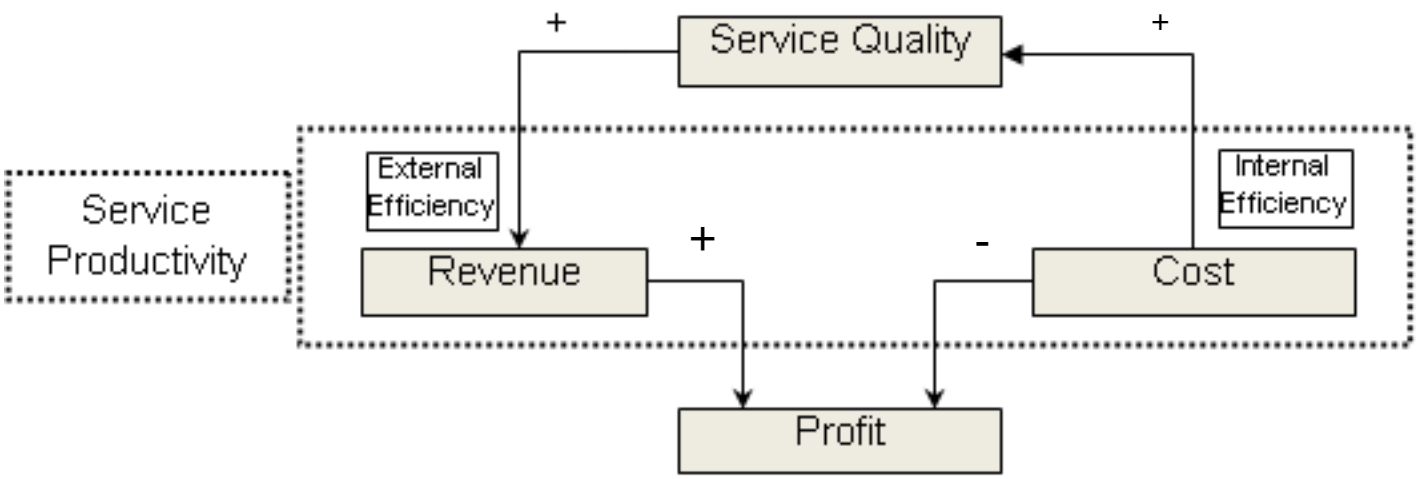
Agenda

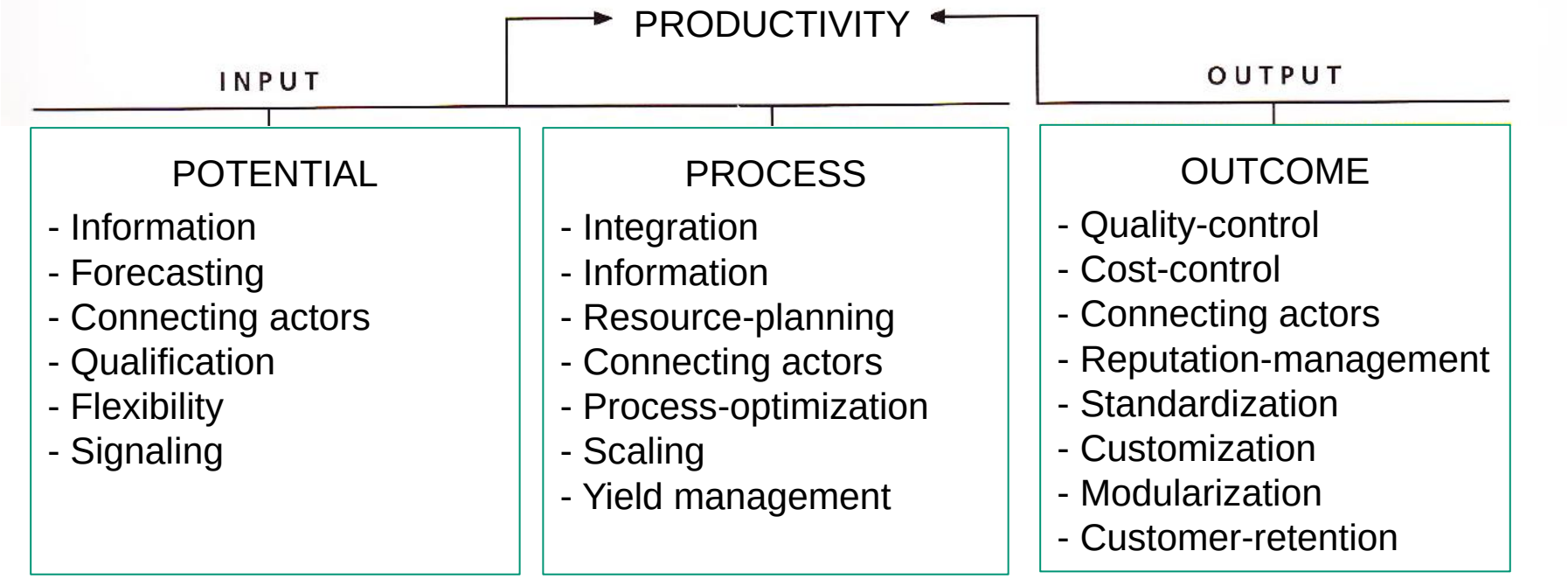
- Service productivity is different (external and internal productivity)
- Several strategies have been proposed to increase productivity
- A simple and cheap strategy: Framing (opt-in versus opt-out)
- Natural field experiment: Framing increases service productivity
- Longitudinal lab experiment: Identifying the drivers of framing

Service productivity

- Service productivity is hard to define because of the integration of the external factor
- Service productivity = revenue / [capacity + internal input + external input]
- Trade-off between productivity (cost-related internal efficiency) and quality (revenue-related external efficiency)



Leveraging service productivity



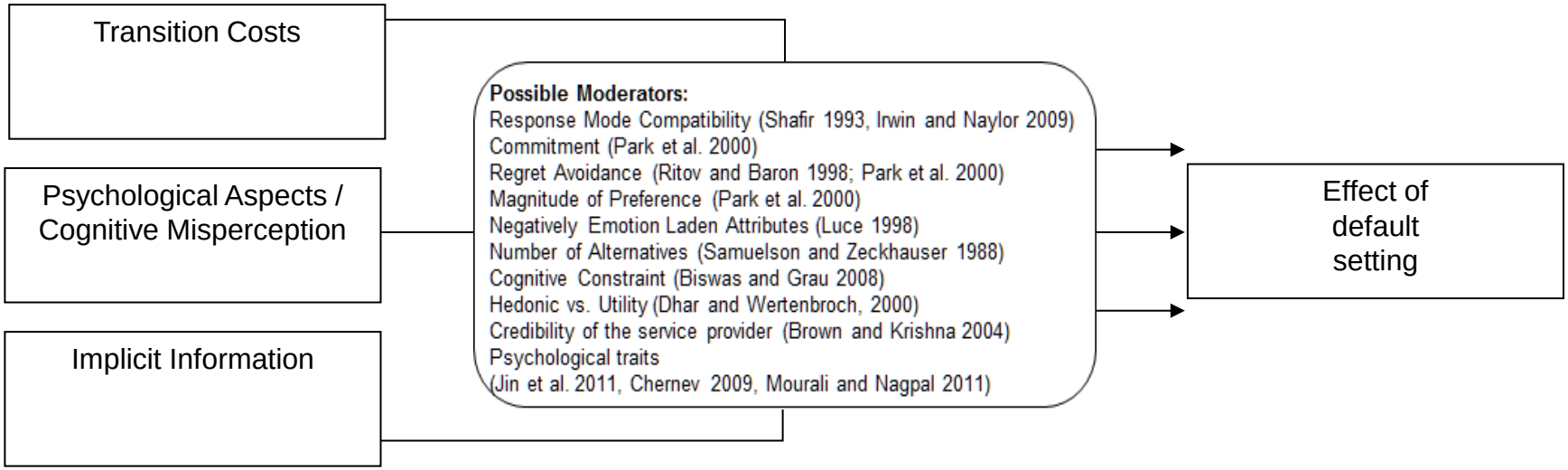
Fraunhofer IAO (2013), The strategic partnership „Productivity of services“

Power of framing

- People hardly deviate from a given default (opt-in versus opt-out)
- Famous example: organ donation (Johnson et al. 2002)
  - Germany (opt-in): **12%** participate in organ donation
  - Austria (opt-out): **99%** participate in organ donation
- Further examples: retirement savings (Carroll et al. 2009), investment decisions in the US mutual fund market (Kempf and Ruenzi 2005), participation in web surveys (Jin 2011), car configuration (Park et al. 2000) or tourist packages (Jin et al. 2012)
- Consumers may know the effect of default setting by firms. Defaults can be ill perceived or even backfired (McKenzie et al. 2006, Brown and Krishna 2004)
- Question: Does the decision architecture, e.g. opt-in versus opt-out, influence internal and external efficiency in a service process?

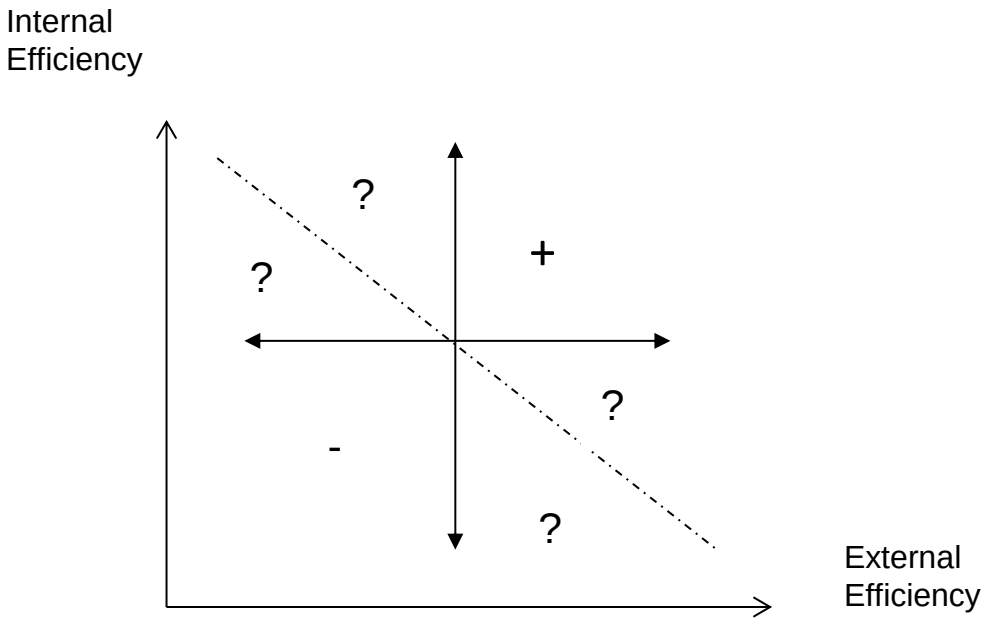
How framing works

- Transaction costs
- Prospect theory
- Loss aversion
- Anchoring
- Recommendation by the service provider
- Marketplace metacognition



Framing and service productivity

- Research question: Can framing improve service productivity?
- Hotel setting: How do hotel guests react if the cleaning is changed from opt-out to opt-in with respect to the amount of cleaning (internal efficiency) and customer satisfaction (external efficiency)?



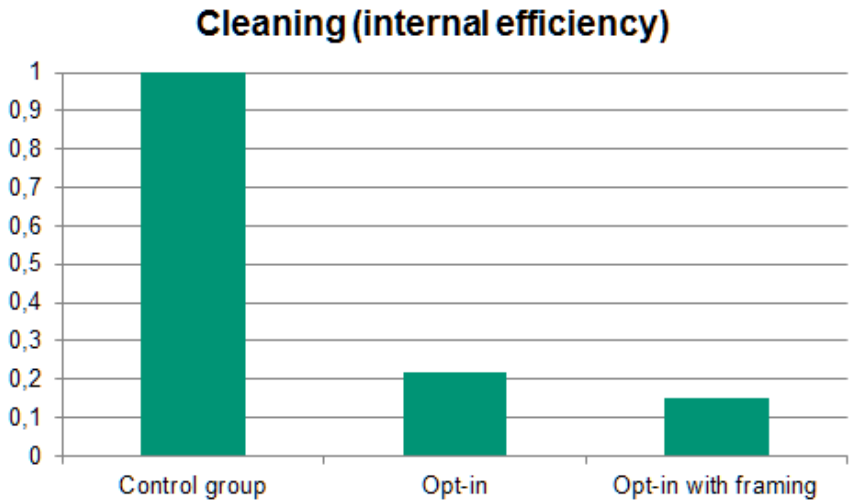
Natural field experiment

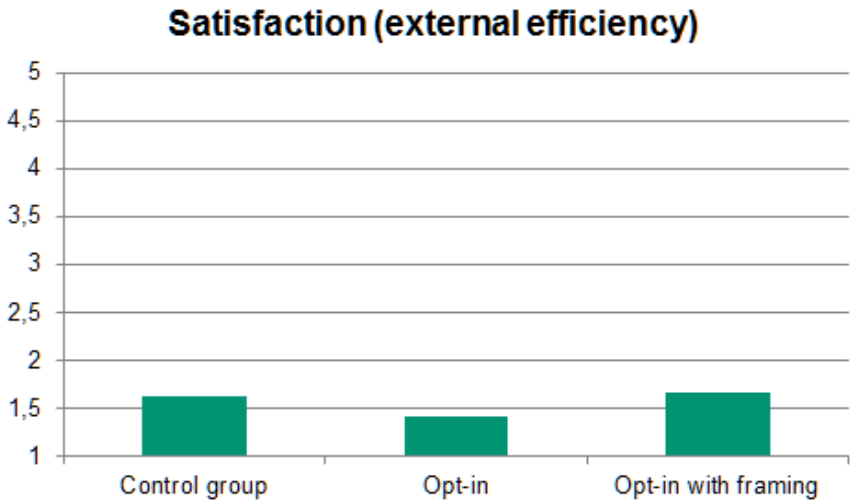
- Changing the cleaning service from opt-out to opt-in
- Conducted in a central budget hotel in Leipzig, Germany
- Three experimental groups:
  - Group 1 (control group): opt-out (N = 85)
  - Group 2: opt-in (N = 59)
  - Group 3: opt-in with framing “ecological impact/loss of privacy” (N = 79)
- Customer satisfaction based on established scales (Matzler et al. 2006)
- Amount of cleaning is measured by the number of requested cleanings relative to the number of days spent at the hotel minus one

Impressions

Results

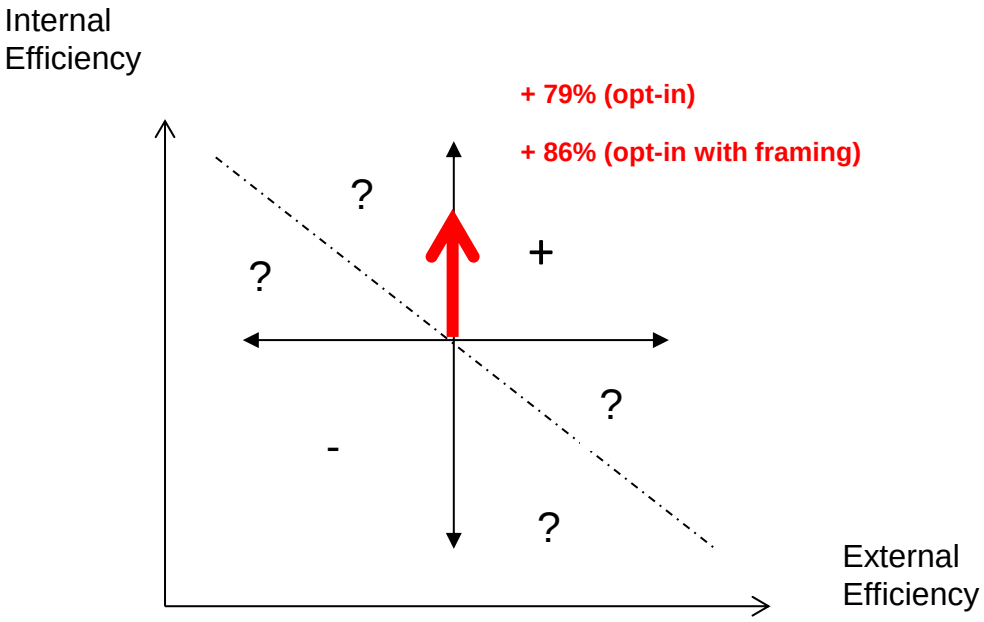
- Relative amount of cleaning (requested cleanings / overnight stays) decreases
- Control group: Opt-out = 0.99 cleanings/overnight
- Opt-in = 0.22 cleanings/overnight, opt-in with framing = 0.15 cleanings/overnight
- No impact on customer satisfaction (overall, service, rooms, price perception)
- Control group = 1.62 on a 5-likert scale; opt-in = 1.42; opt-in with framing = 1.67





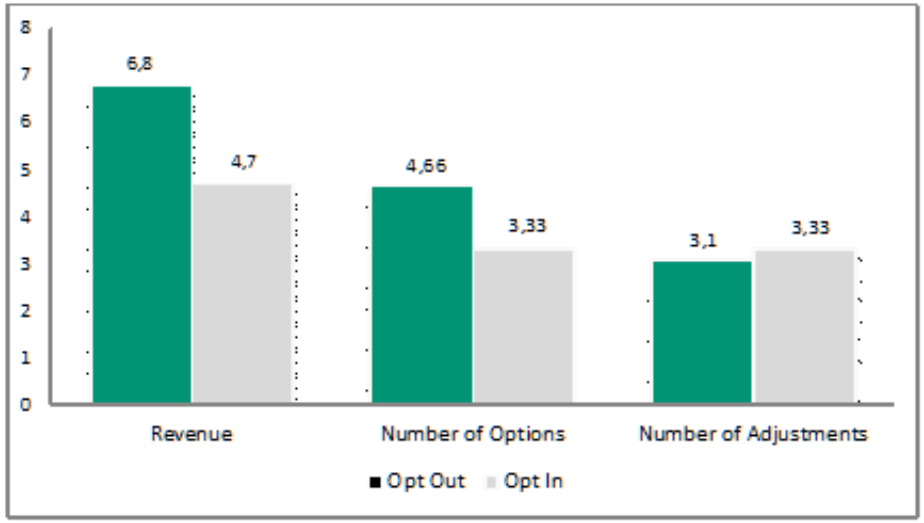
Framing and service productivity

- Research question: Can framing improve service productivity?
- Yes! Internal efficiency improves and external efficiency remains stable, hence service productivity increases



Future research: Drivers of framing

- Longitudinal lab experiment, balanced within-subject design
- The same students participated in two time periods (N = 86):
  - t=1: opt-in questionnaire; t=2: opt-out questionnaire
- Temporal, proximal, and psychological separation
- A number of psychological constructs were collected for every participant
- Participants had to configure a salad (incentive aligned):
  - “Opt-in salad”: 3.60 Euro; “opt-out salad”: 14.60 Euro



Future research: Drivers of framing

		Opt out Optionen	Opt out Umsatz	Opt in Optionen	Opt in Umsatz	Bias Optionen	Bias Umsatz
Price Equals Quality	P	.042	.080	.576	.454	.109	.269
	Mann WhitneyU	65.500	70.000			74.500	
	Median and below	4.5000	4.6500			1.5000	
	Above Median	6.0000	8.8000			0.0000	
Perfectionist	P	.002	.004	.022	.029	.104	.345
	Mann WhitneyU	334.500	336.500	107.000	110.000	60.000	73.500
	Median and below	4.500	4.800	3.000	2.100	1.000	
	Above Median	5.500	8.050	5.000	6.850	.000	
Involvement Decision Making	P	.066	.069	.851	.939	.771	.511
	Mann WhitneyU	65.000	63.500				
	Median and below	4.000	4.650				
	Above Median	6.000	8.200				
Risk Aversion	P	.282	.474	.036	.062	.057	.213
	Mann WhitneyU			82.500	88.500	42.500	
	Median and below			3.000	3.000	1.000	1.400
	Above Median			5.000	7.250	.000	1.000
Self confidence in decision making	P	.644	.818	.771	.844	.042	.051
	Mann WhitneyU					50.500	51.000
	Median and below					2.000	1.400
	Above Median					.000	.550
Locus of Control (external)	P	.825	.961	.032	.036	.068	.450
	Mann WhitneyU			122.000	123.000	62.000	
	Median and below			3.000	3.000	1.000	
	Above Median			5.000	6.300	.000	
Extroversion	P	.062	.052	.137	.170	.197	.801
	Mann WhitneyU	439.500	426.500				
	Median and below	5.000	6.000				
	Above Median	5.500	8.150				
Openness	P	.051	.093	.063	.068	.012	.019
	Mann WhitneyU	452.000	468.000	155.500	156.000	50.000	53.000
	Median and below	5.000		3.000	2.100	3.000	3.600
	Above Median	6.000		4.500	6.100	.000	1.000
p < .05 (two tailed)							
p < .05 (one tailed)							

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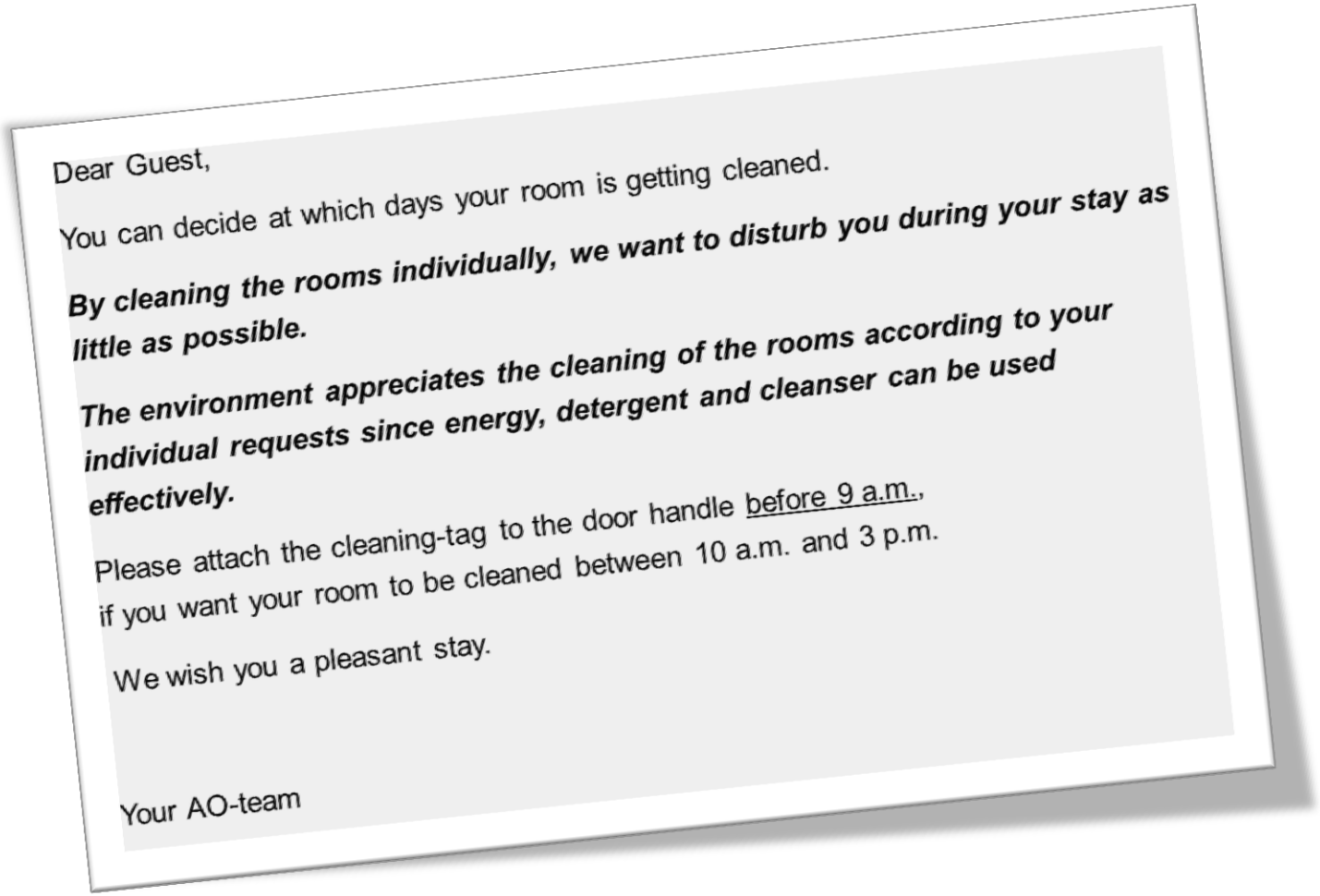
BACKUP

Framing treatments



Dear Guest,

You can decide at which days your room is getting cleaned.

By cleaning the rooms individually, we want to disturb you during your stay as little as possible.

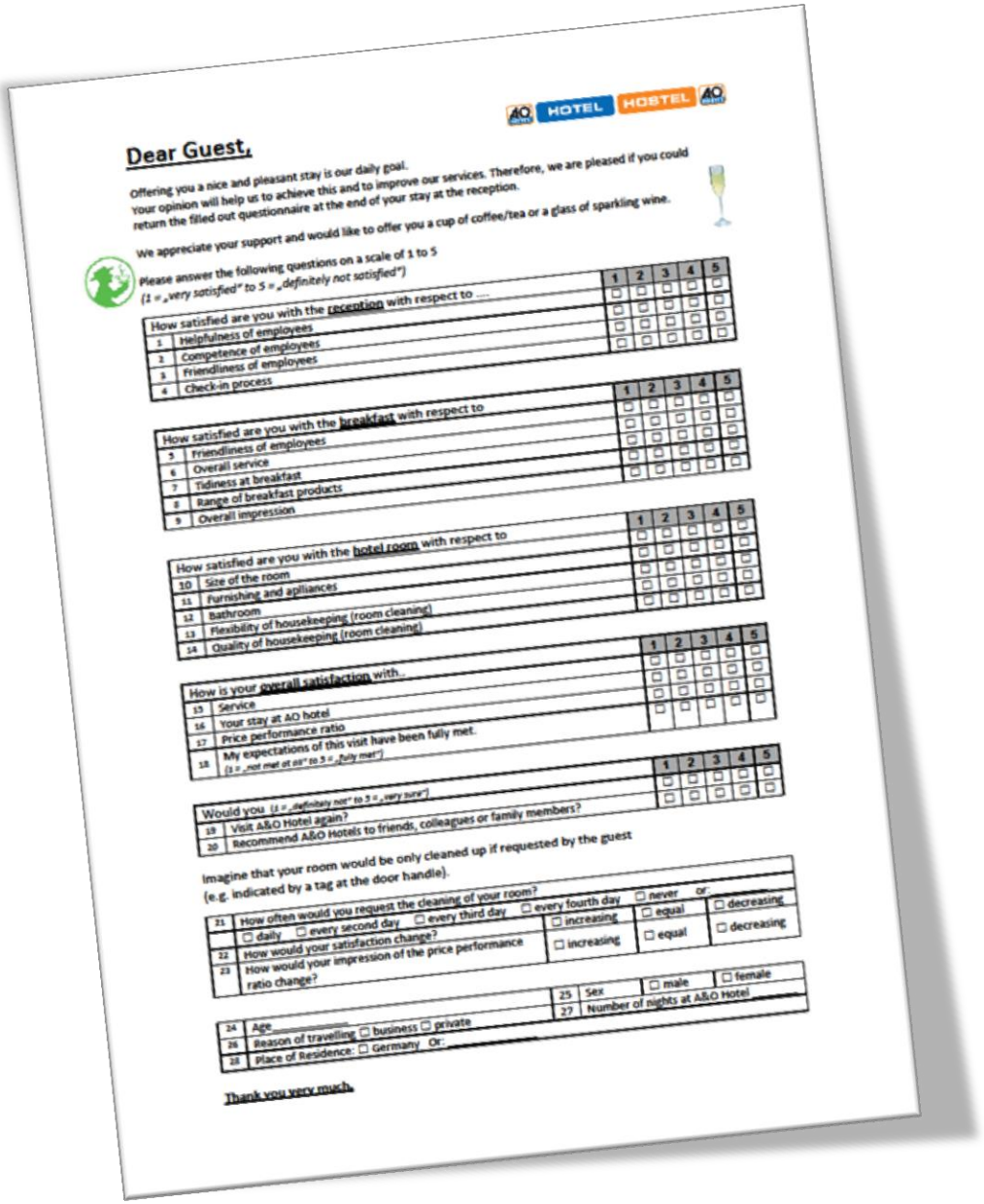
The environment appreciates the cleaning of the rooms according to your individual requests since energy, detergent and cleanser can be used effectively.

Please attach the cleaning-tag to the door handle before 9 a.m., if you want your room to be cleaned between 10 a.m. and 3 p.m.

We wish you a pleasant stay.

Your AO-team

Questionnaire



HOTEL HOSTEL

Dear Guest,

Offering you a nice and pleasant stay is our daily goal.
Your opinion will help us to achieve this and to improve our services. Therefore, we are pleased if you could return the filled out questionnaire at the end of your stay at the reception.

We appreciate your support and would like to offer you a cup of coffee/tea or a glass of sparkling wine.

Please answer the following questions on a scale of 1 to 5
(1 = „very satisfied" to 5 = „definitely not satisfied")

How satisfied are you with the reception with respect to	1	2	3	4	5
1 Helpfulness of employees	☐	☐	☐	☐	☐
2 Competence of employees	☐	☐	☐	☐	☐
3 Friendliness of employees	☐	☐	☐	☐	☐
4 Check-in process	☐	☐	☐	☐	☐

How satisfied are you with the breakfast with respect to	1	2	3	4	5
5 Friendliness of employees	☐	☐	☐	☐	☐
6 Overall service	☐	☐	☐	☐	☐
7 Tidiness at breakfast	☐	☐	☐	☐	☐
8 Range of breakfast products	☐	☐	☐	☐	☐
9 Overall impression	☐	☐	☐	☐	☐

How satisfied are you with the hotel room with respect to	1	2	3	4	5
10 Size of the room	☐	☐	☐	☐	☐
11 Furnishing and appliances	☐	☐	☐	☐	☐
12 Bathroom	☐	☐	☐	☐	☐
13 Flexibility of housekeeping (room cleaning)	☐	☐	☐	☐	☐
14 Quality of housekeeping (room cleaning)	☐	☐	☐	☐	☐

How is your overall satisfaction with...	1	2	3	4	5
15 Service	☐	☐	☐	☐	☐
16 Your stay at AO hotel	☐	☐	☐	☐	☐
17 Price performance ratio	☐	☐	☐	☐	☐
18 My expectations of this visit have been fully met. *(1 = „not met at all" to 5 = „fully met")*	☐	☐	☐	☐	☐

Would you *(1 = „definitely not" to 5 = „very sure")*	1	2	3	4	5
19 Visit A&O Hotel again?	☐	☐	☐	☐	☐
20 Recommend A&O Hotels to friends, colleagues or family members?	☐	☐	☐	☐	☐

Imagine that your room would be only cleaned up if requested by the guest
(e.g. indicated by a tag at the door handle).

21	How often would you request the cleaning of your room? ☐ daily ☐ every second day ☐ every third day ☐ every fourth day ☐ never or:			
22	How would your satisfaction change?	☐ increasing	☐ equal	☐ decreasing
23	How would your impression of the price performance ratio change?	☐ increasing	☐ equal	☐ decreasing

24	Age _____	25	Sex	☐ male ☐ female
26	Reason of travelling ☐ business ☐ private	27	Number of nights at A&O Hotel	
28	Place of Residence: ☐ Germany Or:			

Thank you very much.

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Results

Dependent Variable	ANOVA Results	Group 1 Opt out	Group 2 Opt in	Group 3 Opt in Framing	Contrast Group 1 vs. Group 2&3	Contrast Group 2 vs. Group 3
Overall Satisfaction with Service	F(2, 220) = 2.423 r = .15	1.62 (0.707) n = 85	1.42 (0.622) n = 59	1.67 (0.693) n = 79	t(220) = -0.809 r = .05.	t(220) = 2.112* r = .14
Overall satisfaction with the stay	F(2, 221) = 2.423 r = .01	1.64 (0.722) n = 84	1.57 (0.670) n = 61	1.67 (0.593) n = 79	t(221)= -0.223 r = .01	t(221) = 0.857 r = .06
Overall Satisfaction Price	F(2, 220) = 1.989 r = .13	1.67 (0.841) n = 84	1.47 (0.623) n = 60	1.71 (0.719) n = 79	t(220) = -0.764 r = .05	t(220) = 1.9 r = .13
Intention to Revisit [a]	F(2,171) = 0.193 r = .05	4.39 (0.786) n = 70	4.46 (0.683) n= 48	4.38 (0.728) n = 56	t(171) = 0.27 r = .02	t(171) = -1.1332 r = .08
Intention to Recommend [a]	F (2,170) = 0.647 r = .09	4.26 (0.863) n = 70	4.38 (0.866) n = 48	4.18 (0.863) n = 55	t(170) = 0.159 r = .01	t(170) = -1.132 r = .09
Amount of Cleaning [c]	F(2,204) = 56.701*** r = .85	1 (0) [b] n = 85	0.217 (0.366) n = 43	0.148 (0.321) n = 79	t(77.249) = - 24.568*** r = .94	t(77.249) = -1.045 r = .12
Amount of Cleaning [c] (self report)	F(2,196) = 45.509*** r = .56.	0.5988 (0.252) n = 76 (Self report)[d]	0.217 (0.366) n = 43	0.148 (0.321) n = 79	t(153.566) = - 9.436*** r = .61	t(80.007) = - 1.155 r = .13

Results

ONEWAY deskriptive Statistiken

Gesamtzufriedenheit Service

	N	Mittelwert	Standardabweichung	Standardfehler	95%-Konfidenzintervall für den Mittelwert		Minimum	Maximum
					Untergrenze	Obergrenze		
Kontrollgruppe	85	1,62	,707	,077	1,47	1,78	1	4
opt in	59	1,42	,622	,081	1,26	1,59	1	4
opt in Frame	79	1,67	,693	,078	1,52	1,83	1	4
Gesamt	223	1,59	,685	,046	1,50	1,68	1	4

Test der Homogenität der Varianzen

Gesamtzufriedenheit Service

Levene-Statistik	df1	df2	Signifikanz
,810	2	220	,446

ONEWAY ANOVA

Gesamtzufriedenheit Service

	Quadratsumme	df	Mittel der Quadrate	F	Signifikanz
Zwischen den Gruppen	2,242	2	1,121	2,423	,091
Innerhalb der Gruppen	101,803	220	,463		
Gesamt	104,045	222			

Results

Kontrast-Koeffizienten

Kontrast	Nummer der Exper.gruppe		
	Kontrollgruppe	opt in	opt in Frame
1	-2	1	1
2	0	-1	1

Kontrast-Tests

		Kontrast	Kontrastwert	Standardfehler	T	df	Signifikanz (2-seitig)
Gesamtzufriedenheit Service	Varianzen sind gleich	1	-,15	,188	-,809	220	,419
		2	,25	,117	2,112	220	,036
	Varianzen sind nicht gleich	1	-,15	,190	-,802	167,574	,424
		2	,25	,112	2,200	131,432	,030

Results

ONEWAY deskriptive Statistiken

relative_Häufig_ZR_Gruppen_tatsächlich

	N	Mittelwert	Standardabweichung	Standardfehler	95%-Konfidenzintervall für den Mittelwert		Minimum	Maximum
					Untergrenze	Obergrenze		
Kontrollgruppe	85	1,0000	,00000	,00000	1,0000	1,0000	1,00	1,00
opt in	43	,2171	,36648	,05589	,1043	,3298	,00	1,00
opt in Frame	79	,1475	,32146	,03617	,0755	,2195	,00	1,00
Gesamt	207	,5120	,48362	,03361	,4457	,5783	,00	1,00

Test der Homogenität der Varianzen

relative_Häufig_ZR_Gruppen_tatsächlich

Levene-Statistik	df1	df2	Signifikanz
66,078	2	204	,000

ONEWAY ANOVA

relative_Häufig_ZR_Gruppen_tatsächlich

	Quadratsumme	df	Mittel der Quadrate	F	Signifikanz
Zwischen den Gruppen	34,481	2	17,240	256,701	,000
Innerhalb der Gruppen	13,701	204	,067		
Gesamt	48,182	206			

A significant impact of the process on the amount of cleaning can be observed, $F(2, 204) = 256.701$, $p < .001$.

Kontrast-Tests

		Kontrast	Kontrastwert	Standardfehler	T	df	Signifikanz (2-seitig)
relative_Häufig_ZR_Gruppen_tatsächlich	Varianzen sind gleich	1	-1,6355	,07465	-21,909	204	,000
		2	-,0696	,04911	-1,417	204	,158
	Varianzen sind nicht gleich	1	-1,6355	,06657	-24,568	77,249	,000
		2	-,0696	,06657	-1,045	77,249	,299