Hoxell-enabled Personalization: Berna Hotel

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Introduction

This is the current report for the persalization study of *HGRM* use at the *Berna Hotel*. The report was generated on 27 April, 2015.

Basic statistics

The dataset includes **95419** reservations for **98330** hotel stays during the **01 January, 2010** to **31 December, 2014** timeframe. Of these, **13153** are personalized either physically or through myPage.

Personalization Request via Traditional Channel and myPage

```
##               mean      sd min  max
## Stays     1638.83 239.42 808 2167
## physical   34.43  19.52   2  100
## virtual   235.89  62.13 102  374
## physical    1.06   0.27   1    4
## virtual     5.94   3.18   1   32
```

The effect of Hoxell on preference elicitation: Customers

Our analysis shows that the introduction of Hoxell has a significant impact on the number of guests who personalize their stay at Berna Hotel. It also indicates that the introduciton of personalization featurs in Hoxell has a positive effect on personalization via the tradition (physical) method.

Poisson and Binomial Regression Results

```
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)           0.06       0.02    2.82        0   NA
## Methodvirtual         1.72       0.02   79.35        0   NA
## (Intercept)          -4.11       0.06  -74.37        0 0.02
## methodvirtual         1.99       0.03   75.35        0 7.28
## virtualizationTRUE     0.34       0.06    5.57        0 1.40
```

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Number of Personalized Stays
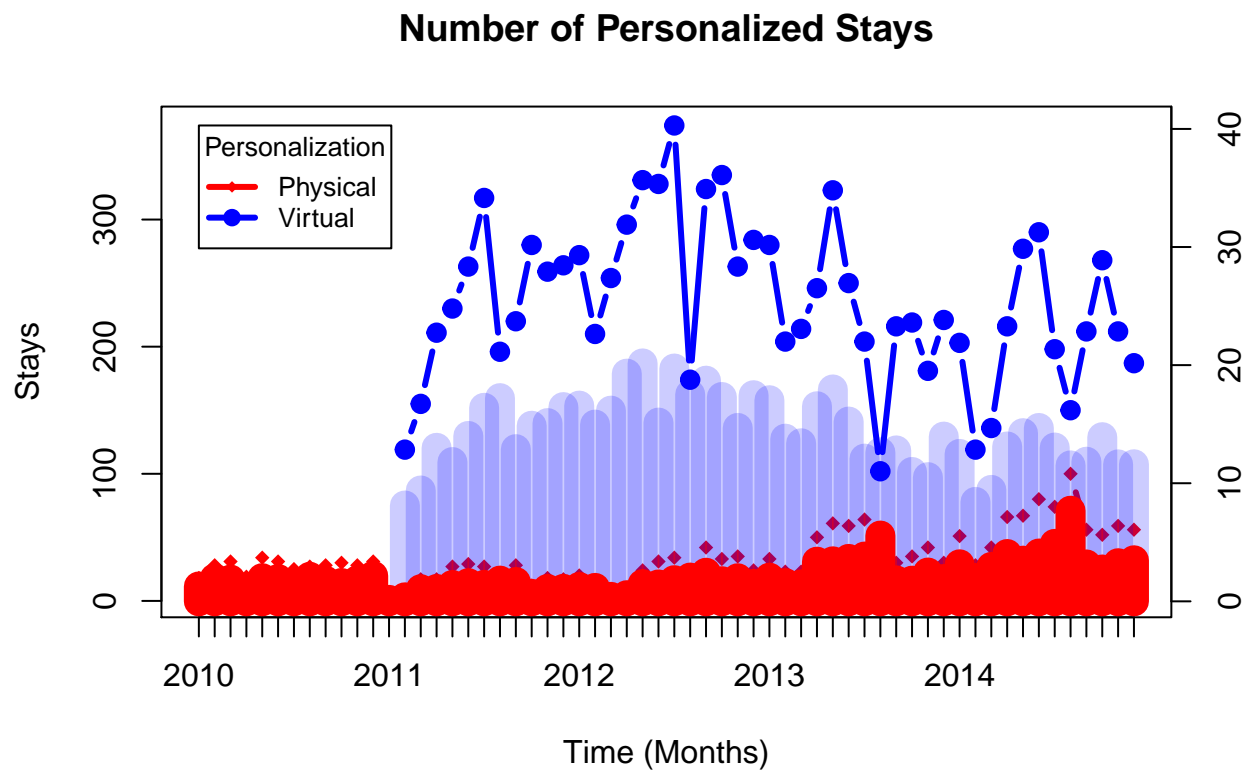
The effect of Hoxell on preference elicitation: Personalizations

This analysis focuses on the number of itmes requested by customers who personalize. We find a strong impact of Hoxell on the number of items requested by customers. Specifically when personalizing through traditional means customers chose an average of 1.06 items. Conversely, when using Hoxell they select 5.94 items.

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Number of Personalizations per Stay
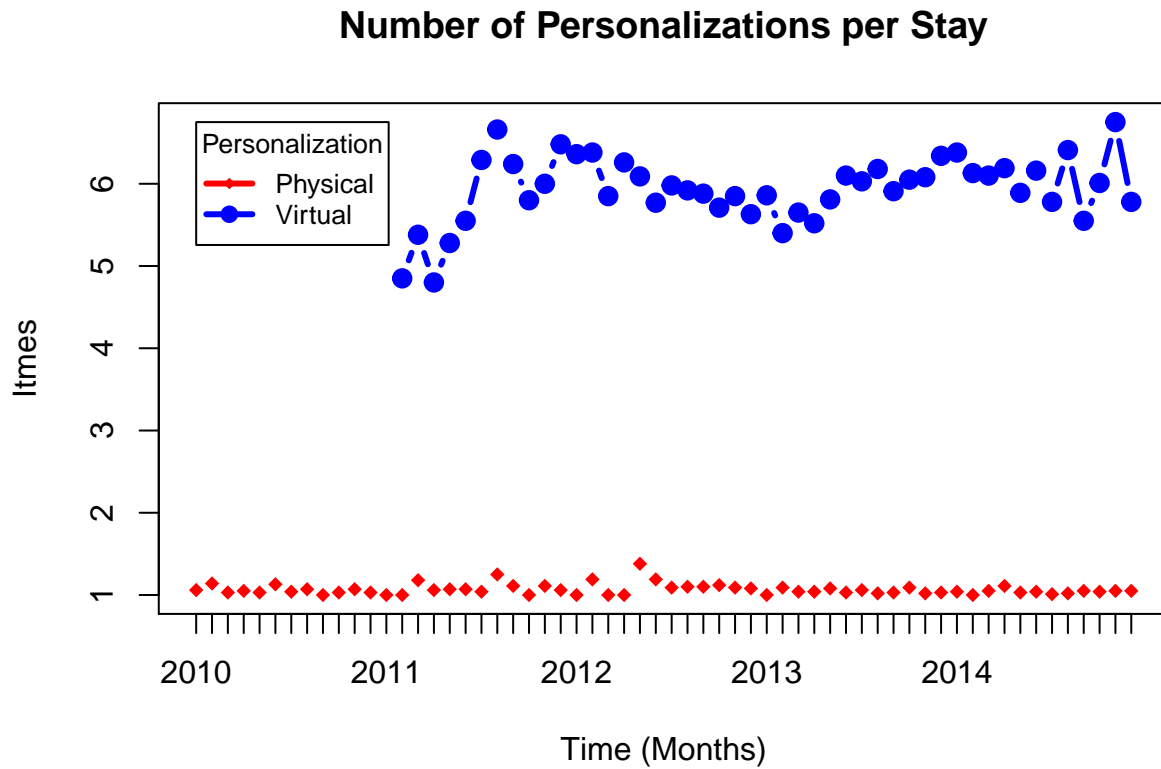
Analysis of emails

Ths section provides a monthly analysis of emails sent via the Mandrill application.

Analysis of Emails: Number of messages and actions
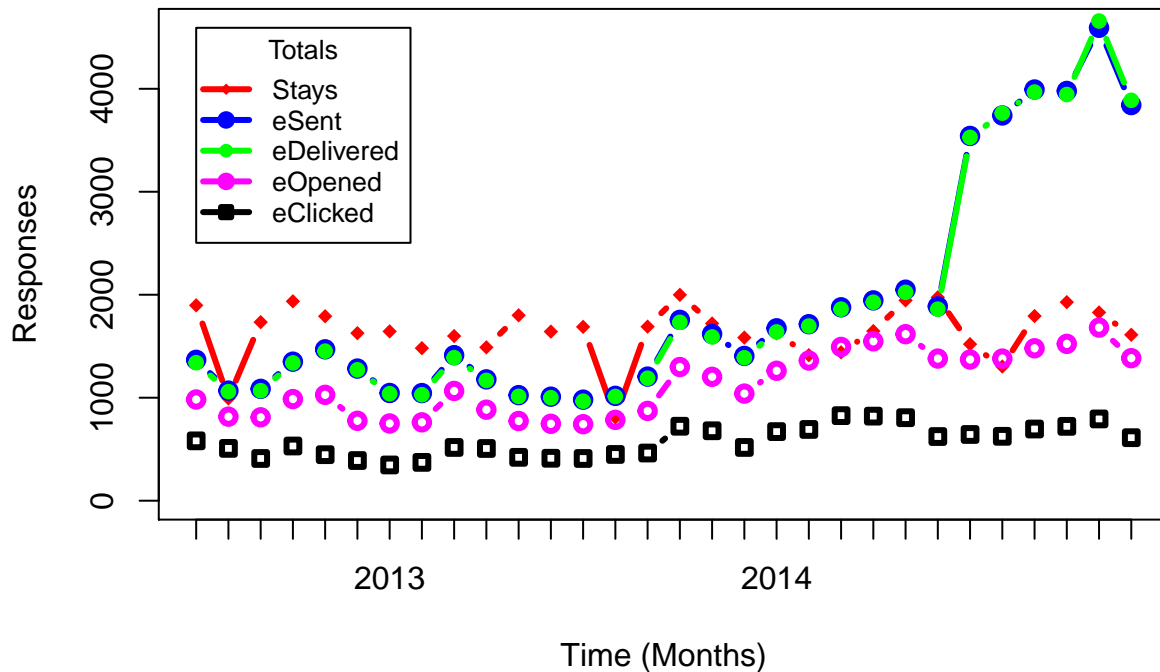
Analysis of Emails: Percentage of Personalizations

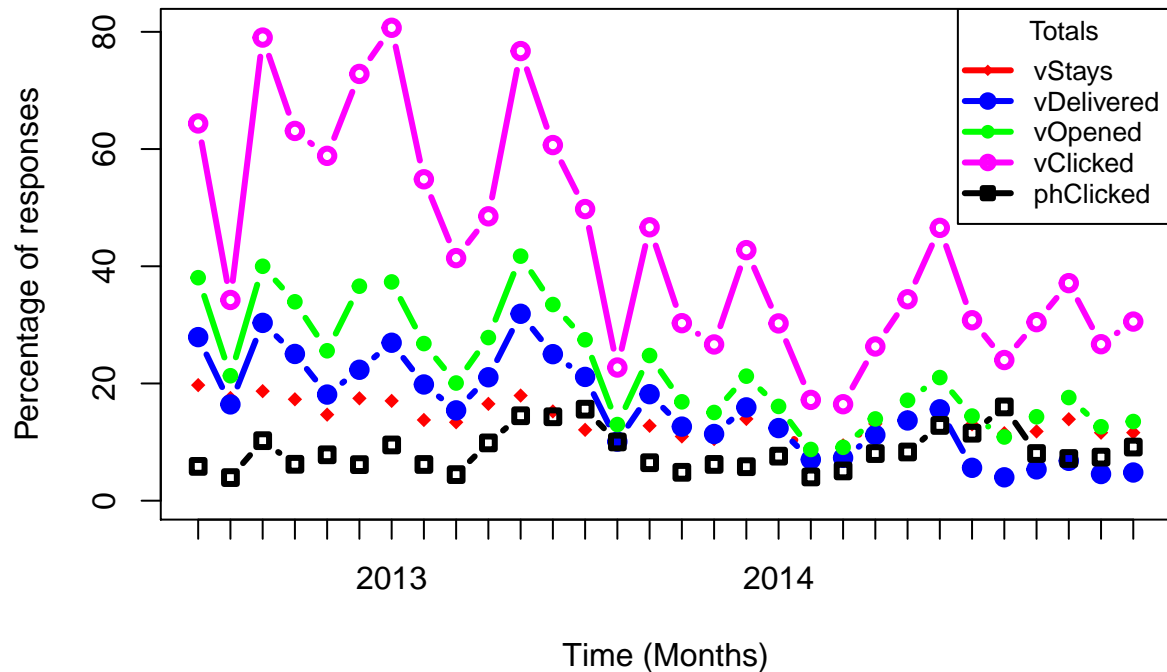# The Effect of Personalization on Service and Value Hotel Ratings

We test the effect of personalizations on hotel service and value ratings using 4706 reviews posted to Booking.com merged with reservation data.

Personalization Effect on Service

```
##                         Estimate Std. Error z value Pr(>|z|)
## 2.5|5                     -4.417      0.244 -18.081    0.000    NA
## 5|7.5                     -2.326      0.181 -12.888    0.000    NA
## 7.5|10                     0.140      0.172   0.815    0.415    NA
## Personalization           0.192      0.070   2.718    0.007 1.211
## ADR                      -0.172      0.036  -4.777    0.000 0.842
## LoS                       0.025      0.023   1.060    0.289 1.025
## ROOM_TYPEQUALITY          0.170      0.091   1.872    0.061 1.186
## ROOM_TYPESUPERIOR         0.330      0.115   2.861    0.004 1.391
## ROOM_TYPESINGOLA (BASIC)  0.047      0.105   0.445    0.656 1.048
## ADULTS                    0.225      0.085   2.635    0.008 1.252
## CHILDREN                  0.127      0.124   1.021    0.307 1.135
## PrefPrice                -0.006      0.011  -0.556    0.578 0.994
```

Personalization Effect on Value

```
##                         Estimate Std. Error z value Pr(>|z|)
## 2.5|5                     -3.467      0.197 -17.614    0.000    NA
## 5|7.5                     -1.618      0.169  -9.589    0.000    NA
## 7.5|10                     0.560      0.166   3.378    0.001    NA
## Personalization           0.181      0.067   2.680    0.007 1.198
## ADR                      -0.389      0.035 -10.944    0.000 0.678
## LoS                      -0.034      0.022  -1.570    0.117 0.966
## ROOM_TYPEQUALITY          0.268      0.087   3.065    0.002 1.307
## ROOM_TYPESUPERIOR         0.471      0.110   4.283    0.000 1.602
## ROOM_TYPESINGOLA (BASIC)  0.068      0.101   0.667    0.505 1.070
## ADULTS                    0.328      0.082   4.000    0.000 1.389
## CHILDREN                 -0.062      0.118  -0.528    0.598 0.940
## PrefPrice                -0.005      0.010  -0.439    0.661 0.995
```

The Effect of Number of Personalization on Service

```
##                                   Estimate Std. Error z value Pr(>|z|)
## 2.5|5                               -4.491      0.512  -8.766    0.000
## 5|7.5                               -2.447      0.373  -6.557    0.000
## 7.5|10                               0.117      0.353   0.331    0.741
## Count.of.Personalization.Items.Used  0.032      0.019   1.689    0.091
## ADR                                 -0.135      0.071  -1.893    0.058
## LoS                                 -0.004      0.045  -0.094    0.925
## ROOM_TYPEQUALITY                     0.112      0.171   0.654    0.513
## ROOM_TYPESUPERIOR                    0.384      0.224   1.716    0.086
## ROOM_TYPESINGOLA (BASIC)             0.323      0.217   1.487    0.137
## ADULTS                               0.213      0.171   1.243    0.214
## CHILDREN                             0.646      0.334   1.934    0.053
## PrefPrice                           -0.011      0.011  -0.943    0.346
##
## 2.5|5                                   NA
## 5|7.5                                   NA
## 7.5|10                                  NA
## Count.of.Personalization.Items.Used 1.033
## ADR                                 0.874
## LoS                                 0.996
## ROOM_TYPEQUALITY                    1.119
## ROOM_TYPESUPERIOR                   1.468
## ROOM_TYPESINGOLA (BASIC)            1.382
## ADULTS                              1.237
## CHILDREN                            1.907
## PrefPrice                           0.989
```

The Effect of Number of Personalization on Value

```
##                                   Estimate Std. Error z value Pr(>|z|)
## 2.5|5                               -3.970      0.441  -9.008    0.000
## 5|7.5                               -1.874      0.350  -5.353    0.000
## 7.5|10                               0.480      0.341   1.408    0.159
## Count.of.Personalization.Items.Used  0.018      0.018   1.009    0.313
## ADR                                 -0.294      0.073  -4.047    0.000
## LoS                                 -0.084      0.042  -1.979    0.048
## ROOM_TYPEQUALITY                     0.195      0.165   1.181    0.238
## ROOM_TYPESUPERIOR                    0.293      0.211   1.390    0.165
## ROOM_TYPESINGOLA (BASIC)             0.169      0.209   0.807    0.420
## ADULTS                               0.376      0.164   2.288    0.022
## CHILDREN                             0.292      0.265   1.102    0.270
## PrefPrice                           -0.007      0.011  -0.619    0.536
##
## 2.5|5                                  NA
## 5|7.5                                  NA
## 7.5|10                                 NA
## Count.of.Personalization.Items.Used 1.018
## ADR                                 0.746
## LoS                                 0.920
## ROOM_TYPEQUALITY                    1.215
## ROOM_TYPESUPERIOR                   1.340
## ROOM_TYPESINGOLA (BASIC)            1.184
## ADULTS                              1.456
## CHILDREN                            1.339
## PrefPrice                           0.993
```

Hoxell Impact on Positive Share-Shift

This analysis focuses on the effect of personalization on the creation of a direct relationship with the customers that leads to share-shift from intermediated (high-cost) to direct (low-cost) distribution channels.

The analysis is based on a sample of 7265 reservations by guests who visited the hotel more than once during the timeframe of our analysis. Of these returning customers 1164 engaged in personalization during their first visit to the Berna Hotel.

Beneficial Share-Shift

```
##                              Estimate Std. Error z value Pr(>|z|)
## (Intercept)                    -1.208      0.208  -5.821    0.000
## I(Method.0 == "Virtual")TRUE    0.478      0.113   4.236    0.000
## ADR.1                           0.035      0.051   0.678    0.498
## ROOM_TYPE.1QUALITY              0.570      0.152   3.759    0.000
## ROOM_TYPE.1SUPERIOR             0.503      0.155   3.248    0.001
## ROOM_TYPE.1SINGOLA (BASIC)      0.065      0.131   0.491    0.623
## ADULTS.1                       -0.450      0.115  -3.911    0.000
## CHILDREN.1                     -0.216      0.222  -0.976    0.329
##                              Odds.Ratio
## (Intercept)                       0.299
## I(Method.0 == "Virtual")TRUE      1.613
## ADR.1                             1.035
## ROOM_TYPE.1QUALITY                1.767
## ROOM_TYPE.1SUPERIOR               1.654
## ROOM_TYPE.1SINGOLA (BASIC)        1.067
## ADULTS.1                          0.637
## CHILDREN.1                        0.805
## [1] 0.4212752
```

Detrimental Share-Shift

```
##                              Estimate Std. Error z value Pr(>|z|)
## (Intercept)                    -1.203      0.291  -4.133    0.000
## I(Method.0 == "Virtual")TRUE   -0.388      0.156  -2.493    0.013
## ADR.1                           0.217      0.071   3.046    0.002
## ROOM_TYPE.1QUALITY             -0.672      0.254  -2.647    0.008
## ROOM_TYPE.1SUPERIOR            -0.588      0.213  -2.755    0.006
## ROOM_TYPE.1SINGOLA (BASIC)      0.521      0.180   2.903    0.004
## ADULTS.1                        0.022      0.169   0.133    0.894
## CHILDREN.1                      0.160      0.264   0.606    0.544
##                              Odds.Ratio
## (Intercept)                       0.300
## I(Method.0 == "Virtual")TRUE      0.678
## ADR.1                             1.242
## ROOM_TYPE.1QUALITY                0.511
## ROOM_TYPE.1SUPERIOR               0.555
## ROOM_TYPE.1SINGOLA (BASIC)        1.684
## ADULTS.1                          1.023
## CHILDREN.1                        1.174
## [1] -0.3328155
```

Extra analysis of Traces and Personaization Items

Analysis of Traces - Items Requested through Physical Personalization

This analysis is performed on 1827 reservations with traces that express personalization items. The list of items, ordered by highest percentage of requests is:

```r
round(cumsum(sort(prop.table(rez), decreasing = TRUE)), 3)
```

```
##         Extra.Bed  Special.Occasion          Baby.cot           Bathroom
##             0.418             0.545             0.635              0.721
##            Pillow          Flooring              Diet  In.room.amenities
##             0.794             0.835             0.871              0.900
##               Pet   Bedding.matress           Minibar             Others
##             0.927             0.949             0.967              0.981
##    Transportation   Towels.bathrobe       Temperature
##             0.989             0.995             1.000
```

Analysis of Items Requested through Hoxell

The list of items, ordered by highest percentage of requests is:

```r
round(cumsum(sort(prop.table(rez), decreasing = TRUE)), 3)
```

```
##             Drink         PillowType       Temperature
##             0.322             0.488             0.633
##           BedType       PillowsExtra            Towels
##             0.760             0.847             0.924
##        ToiletPaper ClothingManagement      KidsAmenities
##             0.960             0.974             0.983
##       WelcomeBasket         Newspaper       BathAmenities
##             0.990             0.996             0.998
##       RoomAmenities              Food             Other
##             0.999             0.999             1.000
##            Floors
##             1.000
```