

# The influence of colored lighting on the experience and satisfaction with a Dutch railway station

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## Introduction

Customer satisfaction is very important for service organizations. In the Railway sector, the company's efforts are often focused on accelerating the speed or reliability of the train journey. Less attention has been paid to the customers' experience of the service environment. Color and lighting are important aspects of the environment and known for the effects they can sort on mood and behavior.

The impact of ambient factors such as color and lighting has been widely researched. Results of these studies often reveal the positive effects of short wave colors like blue on pleasure, dominance and arousal. Results on studies of lighting reveal a more diffuse vision with positive effects of bright light and negative effects of dim light and reverse effects in other studies. Literature suggests that people need a basic level of luminance and levels that go above and beneath this basic level are perceived as unpleasant.

To measure the effects of colored lighting on customers' outcomes, three studies were conducted.

## Studies

First, a field study was conducted to measure the effects of colored lighting in a real railway station. The roof of Leiden Central Station was lit with LEDs. Light intensity was adjusted to high or low in the evenings when LED lighting is more clearly visible, resulting in a 2 (color: none vs rainbow) x 2 (light intensity, high vs. low) between subjects design.

Secondly, a virtual station was developed to measure the effects of colored lighting in

relation to crowding and waiting time perception in a Virtual Reality Laboratory. A 2 (color hue: red vs blue) between subjects design was employed to measure effects on pleasure, arousal, dominance, perceptions of waiting time and station evaluation.

Finally, a virtual station was sent to the online panel of the Dutch Railway. In this online experiment, we were able to reach a large sample of respondents and a variety of variables could be manipulated resulting in a 3 (colour: blue vs yellow vs red) x 2 (light intensity: low vs high) x 2 (passenger type: must vs lust) x 2 (density: busy vs quiet) between subjects design.

## Results and discussion

The results of the three studies shed light on two aspects. First it sheds light on what color, lighting and combination of the two should be used in a railway station and with what effect. Second, the three studies can be compared to observe the differences in results between a virtual lab, an online virtual station and an actual and realistic station.

The general conclusion is that a hedonic tone and waiting experience can be influenced by the combination of color and light but that this depends on context.

The findings offer insight into the application of lighting on a platform and how the stations evaluation of passengers can be influenced. Several practical implications and suggestions will be discussed.

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