

Prominence in Queuing: Queue Length versus Basket Size

ABSTRACT

Choosing checkouts in a supermarket is a common consumer decision that has been largely overlooked in previous research. In this paper, we investigate the relative impact of queue length and average basket size on consumers' waiting time expectations and checkout choice. Four studies highlight the importance of basket content, leading to a preference for longer queues where consumers have little loaded shopping baskets than shorter queues with fully loaded baskets. However, queuing perceptions change when focusing consumers' attention on the time cost of payment at the checkout.

EXTENDED ABSTRACT

Time spent waiting in a queue may affect consumers' satisfaction with a shopping trip. Previous research has found that perceived waiting time is negatively correlated with overall satisfaction in diverse settings, including supermarkets (e.g., Tom & Lucey, 1997). Given its influence on satisfaction, it is important to know how consumers perceive different queues and their corresponding waiting times.

In many situations, consumers assign themselves to a particular queue. Line speeds may differ due to a number of unpredictable circumstances (Groth & Gilliland, 2001). In this research, we focus on the relative impact of queue length and average basket size on consumers' estimated waiting time in the queue.

Both the queue length and the average basket size have a different effect on the total waiting time in the queue. To understand this, note that the service time for any given customer consists of a variable, basket content-related and a fixed, payment-related time cost (e.g., Bell et al., 1998). We propose that, because the time to pay is a fixed cost from the perspective of a *single* customer, consumers may tend to overlook this aspect when choosing between different queues. In other words, consumers may fail to realize that for queues of different length, the total time to pay also varies. As a result, we expect that average basket size will be more prominent in checkout choice than queue length (cf. prominence effect, Fisher et al., 1999). As a result, when consumers are confronted with two queues for which the objective total waiting time is equivalent, the queue with lower average basket size will appear more attractive.

To identify two queues that differ in length and average basket size but are equal in total waiting time, we conducted a timing study in a local supermarket. This indicated that the total time spent waiting in a line is the same for a queue of 2 customers with many products in their baskets as for a queue of 5 customers with few products in their baskets ($t(48)=.657$, $p=.514$, $M_{\text{shortqueue}}=445,12\text{sec}$, $M_{\text{longqueue}}=464,60\text{sec}$). Although the total waiting time was equivalent, the total time to scan the basket content was higher in the short queue ($t(48)=2.623$, $p=.013$, $M_{\text{shortqueue}}=336,80\text{sec}$, $M_{\text{longqueue}}=277,80\text{sec}$), whereas the total time to pay at the checkout was higher in the long queue ($t(48)=5.367$, $p<.001$, $M_{\text{shortqueue}}=108,32\text{sec}$, $M_{\text{longqueue}}=186,80\text{sec}$). If consumers make accurate decisions, then, they should be indifferent

between these two options. If they ignore the payment time, they should prefer the longer queue. Several studies investigated whether this is the case.

In study 1, 40 undergraduates were exposed to two photographs depicting the two above described queues. The pictures represent the same people and were counterbalanced across participants to avoid order effects. Results revealed that participants do not perceive both queues as identical since subjects significantly preferred the long queue where consumers have little loaded shopping baskets (due to lower waiting time expectations, $M_{\text{long queue}}=7,33\text{min}$, $M_{\text{short queue}}=9,26\text{min}$, $p=.001$). It appears, then, that basket content is a much prominent attribute (cf. prominence effect, Fisher et al., 1999) when people decide on a checkout queue than queue length (due to larger mean differences in waiting time expectations, $MeanDifference_{\text{short/longqueue}}=2,97\text{min}$, $MeanDifference_{\text{little/fullyloadedbaskets}}=4,90\text{min}$).

We believe that consumers fail to take the total time to pay into account, as a result of which they focus on the average basket size. Two studies test this idea more thoroughly by manipulating the salience and the extent of the time to pay. In studies 2 and 3, participants were exposed to the same pictures of the long and short queue and had to indicate their preferred queue. Again, participants favored the long queue due to the impact of basket content ($t(30)=-2,17$, $p=.038$; $t(32)=-5,64$, $p<.001$, respectively). After respondents had made their choice, we indicated that the electronic payment system had been upgraded and was extremely fast (study 2) or was experiencing severe connection difficulty, resulting in slow payments (study 3). Participants were asked to indicate for this ‘new’ situation what their preferred queue was. When the payment was fast (study 2), subjects still favored the longer queue ($t(30)=-2,38$, $p=.024$). In contrast, when the payment was slow (study 3), participants significantly switched to the shorter queue in which consumers have many products in their baskets ($t(32)=4,60$, $p<.001$).

Study 4 aimed to increase the generalizability of our findings in a real-life setting, while drawing upon a different age sample. The two queues under study were constructed outside a local supermarket with the same total amount of products in both waiting lines. Shoppers were asked to indicate which queue they would choose. After their choice, they received information on the payment system (fast vs. slow). The results of this field study supported our previous findings with a significant preference for the longer queue when the payment system was not yet made salient ($p=.001$). However, when it was mentioned that the payment system was slow, shoppers switched to the shorter queue ($p<.001$). Finally, the total amount of products in the two fully loaded baskets of the short queue was significantly overestimated by consumers ($t(24)=7,573$, $p<.001$, $M=12$), indicating that the “whole” (fully loaded basket) looks bigger than “the sum of the parts” (little loaded baskets).

In four studies, we demonstrate that the two queues with identical waiting times are not perceived as identical by consumers. We find that while consumers prefer longer queues, this preference disappears when attention is focused on the time to pay at the checkout. To the best of our knowledge, prior studies concerning queuing perceptions only made references with regard to e.g. queue length (e.g., Bateson & Hui, 1990). Consequently, our results fill a literature gap by proving that the average basket size appears to have a bigger impact on checkout choices than queue length. However, when customers are reminded of the time to pay, queue length gains in prominence in the checkout choice.

References

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