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Socio-demographic differences in supermarket shopper efficiency

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ABSTRACT

Significance of the research paper: Time is one of the resources shoppers bring to a store (along with money). Enabling shoppers to complete their grocery shopping more efficiently, that is to spend less time to buy the desired number of items, could result in higher shopper satisfaction and continued patronage. This research proposes a novel way of measuring shopper efficiency by distinguishing the "fixed" vs "per item" times for a grocery trip. We then analyse the differences in shopping efficiency across different sub-groups offering insights into shopper efficiency heterogeneity and benchmarks.
Research methodology: We collected data from 1176 shoppers across three Australian supermarkets in 2014 using systematic sampling for entry/exit interviews and objectively recorded time using supermarket receipts and entry time stamps. We used linear regression to model the "fixed" and "per item" times, while ANCOVA analysis provided statistical confirmation of observed differences across the sub-groups.
Outcomes: The results revealed females were more efficient than males on a "per item" basis, while males had shorter "fixed" times associated with entry, navigation and checking out. Older shoppers were less efficient than younger shoppers. Unemployed respondents tended to spend more time in-store and were less efficient than employed shoppers. There was also a difference between part- and full-time employees. Shopping efficiency in peak and off peak periods was not significantly different. Contrary to the assumption in popular media that weekend shopping is more time consuming and hence inefficient, we found that weekend shopping is no less efficient than weekday trips.
Limitations: Our approach assumes that shopper efficiency stays constant across the trip. The data did not allow testing of interactions between factors. Future research should also consider other attributes such as shopping list use, presence of others, including children, and familiarity with the store.
Implications: We present a novel approach in measuring shopper efficiency that splits the time in-store across "fixed" and "per item" times, associated with different shopper tasks (navigating and checking out vs choosing and buying). This split allows for a deeper understanding of where and how retailers can make shopping more efficient for their consumers, thus improving the overall in-store experience and outcomes. The identified differences in efficiencies across sub-groups have important implications for benchmarking and comparison of the performance of different stores, as these will be influenced not only by different times of the day and days of the week, but also by differences in the make-up of the customer base.

CHINESE ABSTRACT

和金钱一样，时间也是购物者投入到商店中的资源之一。如果能让购物者更高效地完成购物，即花费更少的时间就能买好所需数量的物品，那么购物者的满意度将可能会提升，并可能会持续光顾。通过使用来自澳大利亚三个超市1176位购物者的数据，这项研究采用了一种全新方法来衡量购物者的效率，即区分对比一次购物行程中"固定"和"每件"的购物时间。结果表明，女性的"每件"购物效率高于男性，而男性在进入超市、寻找物品和结账离开上所花的"固定"时间更短。年长购物者的效率低于年轻购物者。没有工作的受访者和有工作的购物者相比，在店里花的时间更长且效率更低。兼职和全职工作者之间也存在差异。高峰时段与非高峰时段相比以及平日与周末相比，购物效率的差别并不明显。这些调查结果对于基准化和对比不同商店的业绩来说具有重要意义，这是因为影响它们的因素不仅包括一天内不同时间和一周内不同天，还包括顾客群体之间的差异。

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1. Introduction

Both retailers (Lambert, 2012) and the media (Alix Partners, 2011) have highlighted the importance of shopping efficiency. Store efficiency is related to total store sales; the more efficient the store, the higher the sales (Sorensen, 2009). Hence, Sorensen concluded that time and money are the two essential currencies shoppers bring to a store and they have to make a trade-off between their time and money while shopping. Popular media often talk about *shopper* efficiency, which is broadly defined as the time it takes to complete a shopping trip, divided by the number of items bought. The more items bought within a period, the more efficient the shopper is. Given that shopping, in general, and grocery shopping, in particular, are mundane tasks, being able to get in and out of the store quickly and complete shopping tasks efficiently is highly desirable (Mortimer & Clarke, 2011). However, there is little knowledge to-date on how shopper efficiency should be measured and how it varies across subgroups of shoppers. Understanding these two factors can have important implications for retailers to improve shopper efficiency, and hence, the shoppers' experience, and what benchmarks for efficiency retailers could expect, especially when comparing stores with different customer bases.

Media reports concerning shopper efficiency of different shopper groups follow a mostly anecdotal approach, comparing gender differences in brain size (Sears, 2013) and claiming that men are more productive than women, or calculating the efficiency of men's Christmas shopping trips (Tyers, 2014). Some authors provide advice to consumers to improve their shopping efficiency, claiming that going to the check-out zone shortly after picking all the required products from the shopping list, being familiar with the store and planning carefully can save a considerable amount of shopping time (Snare, 2014). Other researchers investigate how a one-line queuing system can be a plausible solution to the problem of register queuing in peak shopping hours (Barbaro, 2007). However, the vast majority of the above findings rely on a lay "expert", or methods that are not academically rigorous.

Men appear to be 32% more productive in terms of the time allocated to perform regular work tasks (Low, 2010). Focusing specifically on shopping, Chebat et al. (2008) found that females are more proficient in shopping mall navigation than men; men finish shopping faster, purchase less items, but spend more dollars per item (hence appearing less efficient). Lumpkin (1984) found a significant difference in time spent navigating the store between young and old consumers. However, their results require further validation, as the difference in consumer perceptions of the enjoyable (or otherwise) nature of shopping considerably mediated the overall results (Chebat et al., 2008).

To summarize, while the media demonstrates interest from the public in the question of which consumers are more efficient shoppers, previously conducted academic research provides little insight. Understanding and accounting for the heterogeneity in shopper efficiency remains a notable gap in the academic literature (Hui, Fader, & Bradlow, 2009a). The current research aims to address this gap and extend previous knowledge on the topic by analysing the differences in shopper efficiency within the following socio-demographic and shopping trip characteristics: gender, age, occupation, time, and day of shopping. We do so by proposing and applying a novel approach in measuring grocery shopper efficiency that separates out the in-store activities not associated with purchasing, such as entering the store, taking a basket or trolley, then queuing and checking out, from the time directly devoted to choosing and purchasing items.

We examine data collected in 2014 from three suburban Australian supermarkets (n = 1176) through intercept interviews before and after shopping. We used questionnaires to collect information about socio-demographic characteristics and shopping trip information, while time stamps (given at entry to the store, and from shopper receipts to eliminate the inclusion of time spent queuing to complete the questionnaire) recorded the shopping trip duration.

2. Conceptual development

2.1. The role of time in shopper behaviour

Initial studies regarding time efficiency examined time allocation between work and non-work activities (Ben-Porath, 1967). Becker (1965) was first to consider the costs of goods in terms of the time spent to acquire the product. Consumer choice and price evaluation studies also include consideration of the time available: when shoppers had more time, they browsed more (Beatty & Smith, 1987); and when shoppers perceived time pressure, they failed to purchase products for which they visited the store (Park, Iyer, & Smith, 1989). The longer shoppers spent in front of a shelf, the greater their ability to recall price (Dickson & Sawyer, 1990; Hoyer, 1984).

Established traditions, norms, and the individual behaviour of shoppers influences the subjective perception of time spent shopping (Graham, 1981). Hornik (1984) demonstrated the difference between perceived and actual time in register queuing, suggesting both measurable characteristics and consumer evaluations of time need to be considered. Subsequent research expanded on this, concentrating on the impact of various shopping trip attributes, such as service and location, on perceptions of shopping efficiency. Atmosphere, service, and store convenience significantly affect shoppers' perception of time (Kim & Park, 1997). Time efficiency itself is important for the evaluation of shopping mall experience/satisfaction (Kim, 2002). Further research on the topic showed the importance for retail outlets to provide opportunities for shoppers to finish shopping not only with the lowest monetary spend, but also in a short amount of time (Davis & Hodges, 2012). The above studies clearly demonstrate the important role that time, as a finite shopper resource, plays in shopper behaviour.

2.2. Measures of shopper efficiency

Prior literature uses varying approaches to understand shopper efficiency. Davies and Bell (1991) examined efficiency (without referring to the term) through average expenditure per minute and the average number of items purchased per minute over the entire trip. They found that basket size influenced these relationships. Chebat et al. (2008) used the term "efficiency" in the meaning of the time it takes to find a way (towards a given destination) in a mall. Sorensen (2010) defined grocery shopper efficiency as the number of seconds per one dollar spent on the shopping trip. This measure was intended for the comparison of store profitability and performance, hence focused on dollars rather than items spent. His measure considered the shopping trip in its entirety (as with all previous authors), without distinguishing any distinct parts of the trip, areas of the store or tasks the shoppers perform.

Hui et al. (2009), however, approached a shopping trip as consisting of a series of zones or steps where a shopper can perform different activities (such as purchasing or passing through). These authors also noted that shoppers allocate different times to different zones; and found that entrance and check out see consumers spending more time compared to zones of the same size within the aisles.

These observations led us to consider that shopper efficiency should be considered from the perspective of two distinct activities a shopper performs on a grocery trip. The first is related to "fixed time" tasks, those not associated with the actual purchases. These include entering the store, picking a basket/trolley, register queuing, and interaction with staff. It is anticipated that this time should not