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**ANALYSING CONSUMER'S SEARCH COST
IN E-COMMERCE**



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Analysing Consumer's Search Cost in E-commerce

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Abstract

This paper seeks to analyse the impact of e-commerce on consumer's search cost. Initially, we provide an overview of the existing literature on search cost and define search cost in order to undertake further analysis. Using an in-depth analysis of the existing research, we discuss consumer search strategy in a directed search model and also analyse certain aspects of consumer behaviour on online platforms. Further, we analyse the impact of the variables affecting search cost, namely time, mental effort and physical effort, and discuss their overall impact. We have tried to explore the time and mental efforts that consumers spend on e-commerce websites. For this, we have undertaken an online survey, in which we identified certain factors to assess the perceptions of people regarding the above-mentioned variables.

Keywords: E-commerce, Search Cost, Optimal Strategy, Perceptions.

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1. Introduction and Literature

E-commerce, given its powerful initiation as the changing force of business, has seen significant research and literature is widely available on the same. Given its specific nature, search cost is fairly well-researched upon but is far from saturation. Specific quantifications of search cost are inherently difficult and are thus, rarely carried out. In the intersection, while there is literature pertaining to specific elements such as the impact of product reviews on search costs, research about the overall impact of e-commerce on search costs is quite limited. This paper aims at filling this gap.

There are different dependent and independent factors which influence search costs, and distinct studies have catered to the research of non-identical factors and hence, their result also differs. Dinerstein et al. (2018) illustrated how search friction gets reduced by the platform design and navigation tools, even though there is a high volume of products and sellers in the online market. Jolivet and Turon (2014) analysed how consumer search and purchase decisions vary with respect to advertisements and that consumers have to incur search costs to scrutinize all adverts' prices. Bakos (2001) demonstrated how consumer search costs can differentiate digital markets from conventional markets. Wu, Ray, et al. (2004) constituted that a decrease in search cost can both adversely and favourably impact social welfare. Amblee et al. (2017) examined how online customer and editorial reviews influence search costs and consumer confidence. Thus, there is indispensable work on consumer search costs with different bases of study.

Mazon and Pereira (2001) developed a model where e-commerce reduces consumer search costs. Harrington, Jr. (2001) developed an innovative model to separately influence search costs for price and product information in case of electronic goods. Brown and Goolsbee (2000) conveyed that by engaging customers in low-cost price comparisons online, search costs can be considerably reduced with the help of the internet. Seiler (2011) proposed a structural model and explained the vital role played by search costs in influencing consumer behaviour and also showed how promotion for a given product increases the consumers' incentives to search.

In this paper, we try to factor in multiple elements and thereby, evaluate the net effect of e-commerce on search costs. We first seek to define search cost and then analyse all the variables of the search cost function. Even within the e-commerce sector, there are various factors which affect time. We first describe the optimal search strategy in case of directed search and analyse consumer behaviour in that case. Then, we establish the definition of search cost and evaluate it. To evaluate the time and mental effort that consumers spend on e-commerce websites, we have undertaken a survey to know people's perception. We go on to explore findings from this survey and try to analyse the impact of these variables on search cost.

2. Definition of Search Cost

Search costs, concerning the current framework, represent the time, mental effort, physical effort and the associated monetary costs of searching and accessing markets to find an ideal product. They greatly influence the purchase and sale decisions of market entities. Search costs are of immense importance to sellers since they greatly determine the volume of orders they receive and hence, innovations and novel work methods are being continuously conceived so as to reduce search costs for customers as much as possible. Decreased search costs greatly enhance transactional efficiencies, making all stakeholders better-off. However, the diverse range of factors that influence search costs makes it extremely difficult to measure search costs. When we look into search costs associated with the e-commerce sector, what immediately comes to mind is that e-commerce has made it easier for buyers to access a wide variety of products and ultimately finalise their purchases .

Electronic marketplaces providing price information are believed to reduce the incremental cost of obtaining information about additional sellers and may also reduce the ability of sellers to obscure their quoted prices (e.g. by including or excluding transportation costs, incentives, special promotions, financing costs, etc.)

While purchasing some product, a buyer usually determines a maximum price threshold and keeps searching until he finally finds a satisfactory product within his predefined price range. Customers with access to electronic marketplaces become more demanding and are willing to make fewer compromises concerning their ideal product (Y. Bakos, 2001). This desire to get the ideal product may make a person go through a lot more options before finalising a product. An important point to note here is that, even though a consumer might spend more time looking for a product on online platforms, he is, in most cases, also able to get a better product than what he would have bought from a physical retail shop. The consumer will continue to look for a better alternative of a product as long as the perceived benefit is greater than the time and effort put in for searching for a product. In other words, a rational consumer will continue to search for a better product or service until the marginal cost of searching exceeds the expected marginal benefit.

3. Consumers' Optimal Search Strategy

The model described here is largely based on Jolivet and Turon (2014).

Let $j \geq 1$ be the number of listings for a certain product currently visible on the platform. Each listing $j \in \{1, \dots, n\}$ consists of price p_j and a vector of characteristics x_j . The vector 'x' is a vector of characteristics, say, sellers' reputation, sellers' status and so on. Here, we assume that

out of all listings, one is always bought; the consumers scroll through the options available on an e-commerce platform with the end objective of purchasing some product and not just for information. Further, as elaborated in the seminal paper, the aim here is to analyse consumer behaviour and not the market in general. We also retain the “sequential” character of search, which says that the consumer decides to draw adverts one after the other.

Further, let us assume a parametric vector ‘ l ’, that describes preferences for a certain characteristic set ‘ x ’. Therefore, a simple utility function for a heterogeneous product represented by (p, x) , is as follows,

$$U(p, x, l) = lx - p$$

Let us assume that drawing listings incur a search cost of $s \geq 0$, which is constant across all draws.

Now, let “reservation utility (r)” be defined as the least amount of utility that can make a consumer indifferent between sampling and stopping. Let reservation utility be determined by the price (p), search cost (s) and parametric vector of preference (l).

The optimal sequential search and purchase strategy is as follows (Weitzman,1979):

A consumer with personal characteristics (s, l) and beliefs about the given product should compute reservation utilities of n listings presented to him and sort them in decreasing order of r_j . He should then start by drawing listings with highest r_j and proceed as:

- Let \bar{u} either be the highest utility offered by listings sampled so far or the value of the outside option if no listing has yet been sampled.
- If \bar{u} is strictly lower than the highest r among listings not yet sampled so far, then sample another listing (one with highest r among listings not sampled)
- If \bar{u} is larger than the highest r among listings not yet sampled, then stop sampling and purchase the least listing drawn so far (one that offers utility \bar{u}).

Mathematically,

$$\bar{u} = \max_{j \in S \cup \{0\}} u_j(p, x, l)$$

where u_0 is the utility before beginning to search.

Let S be the set of sampled listings while S' be the set of non-sampled listings.

Therefore,

$$S \cup S' = \{1, \dots, n\} \text{ and } S \cap S' = \Phi$$

1. So, if $\bar{u} < \max_{j \in S'} r_j$, then *sample*
2. If $\bar{u} \geq \max_{j \in S'} r_j$, then *stop*

In case of ties, the following way be followed

1. If several listings have the same reservation utility r_i , consumers sample in random order (here, $i \in \{1, \dots, n\}$).
2. If several listings are drawn offering the same maximum level of utility, the consumer chooses randomly.
3. When indifferent between sampling and stopping i.e. $\bar{u} = \max_{j \in S'} u_j$, then consumer stops.

The following case provides an interesting outcome:

$$u_i \geq \max_{j \in S} u_j \text{ \& } u_i < r_{j \in S'}$$

Therefore,

$$\max_{j \in S'} u_j \leq u_i < r_{j \in S'}$$

Now if,

$$\max_{j \in S'} u_j < u_i$$

Then,

$$\max_{j \in S} u_j, \max_{j \in S'} u_j \leq u_i$$

So,

$$\max_{j \in \{1, \dots, n\}} u_j \leq u_i < r_{j \in S'}$$

In this case, the consumer will search for other adverts and eventually go back to i.

4. Search Cost on the Internet - A Theoretical Approach

It is largely believed that with the advent of e-commerce, the search cost of consumers has declined. Various factors like online advertisements, online ratings and reviews, product recommendations (eg. Amazon's Choice), easier access to product information, exclusive online special offers etc. are believed to be largely responsible for reduced search costs. Sellers' search costs are also believed to have been reduced with the advent of e-commerce, since it offers sellers new ways of reaching customers through targeted advertisements and personalised marketing. However, the current study is restricted to analysing consumers' search costs and the impact of e-commerce on it.

E-commerce allows consumers to draw comparisons for various sellers in a limited time frame, thereby allowing consumers to make informed and more efficient decisions. This may further lead to increased price competition amongst sellers. However, this price competition can be avoided through product differentiation. This availability of varied products across an e-commerce platform, therefore, leads to reduced monopoly power of a particular seller and enhances market efficiency, since instead of competing through price, sellers can now focus on product development, thereby benefiting the consumers. Easy accessibility to information further leads to customisation through a superior user interface. Customer profile and data on past purchases can be used to provide customers with better and personalised services (Y. Bakos, 2001).

As per our definition above, search cost is a function of time, mental effort and physical effort (here, we assume that the associated monetary costs of finding and accessing the offline market are subsumed under physical effort). Hence, $S = S(T, E_m, E_p)$, where T is time, E_m is mental effort and E_p is physical effort. In all cases, time, mental effort and physical effort are positively related to search cost, that is, an increase in any one of them leads to an increase in the search costs, keeping the other two constant.

Let us compare online and offline platforms on the basis of each of these three factors. As discussed earlier, e-commerce platforms provide information about different products on a single window. Thus, with very less time, we can compare various products on the basis of price as well as other attributes. Additionally, factors like advertisements, product reviews and ratings, and special offers etc. make our choices easier. But as will be discussed below, there exists a common perception that the availability of a large variety of products and easy access to their information might lead to an increase in time taken by buyers to finalise a product, due to greater confusion among buyers arising from an increase in the number of options available. Let us take an example: person X decides to buy a product from the offline market while person Y decides

to buy a product online. (It is assumed online and offline market are exclusive of each other from consumers' point of view, that is, a consumer can't access both offline and online markets for the same purchase decision) X, being physically limited to sample only a certain number of sellers before purchasing a product, is prompted to purchase a product without sampling all the sellers. Now, consider Y. He is able to sample a higher number of sellers, since he has easy access to them through an online platform. Yet, it is possible that Y, due to easier access to a greater number of sellers and not being physically bound, as in the case of X, samples quite a large number of sellers. This might further delay the decision of Y, since he has to choose among a large number of sellers.

Although this is just a case, a large number of consumers perceive their time to have increased with the advent of e-commerce. It is possible that these consumers may not factor in the time required to access the market and might have considered only the in-market time. But since the latter can't be ruled out, the impact of e-commerce on time remains largely ambiguous.

Moving to another factor - the mental effort (E_m); the advent of e-commerce has allowed the consumers to access information about different products quite easily, as compared to the offline platforms. This has further helped them in drawing easy comparisons between the products. But a larger variety of products might increase the mental effort required due to an increased need for comparison. Further, the existence of online advertisements might cause greater confusion. Striving to provide better products in order to increase their customer base, sellers try to portray their products better than the others through advertisements and other media. This competition further leads to the betterment in the attributes of their products. The 'choosing between the best' causes greater mental effort. Thus, here again, due to both increase and decrease in mental efforts in specific cases, it becomes largely difficult to conclude whether the aggregate mental efforts have increased or decreased. Thus, there exists ambiguity in the impact on mental effort as well.

Finally, consider physical efforts (E_p). This factor can be said to have reduced since the advent of e-commerce. Accessing the offline market and physically viewing, comparing and purchasing products surely takes much more physical effort than just searching and purchasing a product online. Hence, the physical effort required to purchase a product online is almost negligible; clearly lower than that in the offline market. Hence, we can conclude that E_p has surely reduced since the introduction of e-commerce.

Thus, aggregating T , E_m and E_p we conclude that the impact of e-commerce on time and mental effort is ambiguous, while that on physical effort is negative (reduction in physical effort). Therefore, the impact on search cost remains theoretically ambiguous. If the aggregated impact on time and mental effort turns out to be positive, then the magnitude of reduction in physical effort determines whether the search cost has reduced or not. But if the aggregated impact on

time and mental effort turns out to be negative, then the search cost has surely declined. As will be shown in the section on the survey about perceptions of people regarding time and effort, changes due to the advent of e-commerce, this ambiguity can also be reflected in the perceptions of people.

Since physical effort has declined due to the advent of e-commerce, our further analysis resorts to investigating mental effort and time. Mental effort mostly encompasses beliefs and perceptions that consumers withhold. Consumers' beliefs regarding a particular product have an impact on their decision and thus, their search cost. These beliefs vary from person to person and are ambiguous, as stated earlier. A consumer might have a certain preference for a brand and may go for it without sampling/comparing it with other products. This brand loyalty is mostly present in high-priced goods. The loss resulting from a fraudulent deal in case of luxury goods far exceeds the loss that consumers could incur from the purchase of low-priced goods, most consumers would tend to resort to brands that have a good name in the market. Thus, brand images might as well reduce the mental effort of consumers. However, while the above theory applies to most of the consumers, it cannot be generalised. Myriad other personal factors or external efforts by new brands on e-commerce platforms might help persuade consumers into purchasing even the highly-priced, luxury items from them with the help of special offers and advertisements. Thus, there is no certainty about the same. Some risk-averse people might as well buy products only from trusted brands (low mental efforts and time) while on the other hand, risk-seeking people might buy products from newer brands and may compare it with other products (high mental effort and time).

5. People's Perception Regarding Time and Mental Effort

While theories provide particular results based on certain assumptions regarding the behaviour of the people, it is also necessary to verify what people perceive the outcomes to be. We can't deny the fact that people might perceive entirely different outcomes than those suggested in theories. In the current case, we have undertaken a survey in order to assess people's perceptions about the impact that the advent of e-commerce has on time and mental effort.

We have previously established that physical effort has surely reduced on the internet, in comparison to the offline markets. We have also established that the aggregated impact on time and mental effort is ambiguous. But as we will discuss later, the perceptions of people may be different from these outcomes. Since ambiguity lies in the variables - time and mental effort, we consider people's perceptions only in these aspects.

In a survey (conducted online), we have tried to analyse the impact of e-commerce on time as well as mental effort and the direction of perceptions in comparison to the established ambiguity.

We had identified 6 factors affecting search cost within the e-commerce sector namely advertisements, customer ratings and reviews, availability of a large number of product options, easier access to product information, exclusive online special offers and product recommendations, all of which impact the time and mental effort of consumers. Based on these six factors, we have assessed whether people believe that their time and mental effort requirements have gone down due to each of these factors taken independently, or instead, have increased.

5.1 Identification of Factors affecting Time and Mental Effort

Various factors impact time on e-commerce platforms. While it may not be clear as to whether they may increase or reduce search costs in e-commerce, the factors identified and discussed below surely have some magnitude of impact. Also, the factors identified below may not be an exhaustive list of such factors.

5.1.1 Advertisements

The idea that advertisements have a substantial influence on consumer psychology and can influence shopping decisions is well-documented, established by various studies, and has significant literature to itself. Especially with the advent of e-commerce, advertisements have assumed a larger role for businesses, since brick-and-mortar based avenues of promoting sales are no longer relevant to this new digital world. With regards to the impact of advertisements on the time of consumers, there are multiple theoretical understandings of the same. One view on advertisements would be that they help the buyer by providing easier access to information about a product, subsequently reducing the time which would have been incurred in looking for new and diverse products for a particular need. According to this point of view, advertisements act as a mechanism to reduce the time taken to finalize a sample. Another view on advertisements would be that they incite and motivate a person to increase the scope of their research about a product they want to purchase. Advertisements may act as a medium to introduce new products to buyers, which would lead to a higher degree of time to be put in by the buyer in comparing and finding the best option out of the available products. In this case, it increases time.

Several personal factors also have a bearing on this answer. For instance, a person with an inherent distrust of advertisements might be motivated to spend more time verifying the authenticity and details of a product, simply because they saw an advertisement for it. Also, in the day and age of big data, frameworks cannot operate assuming advertisements to be random or generic. For accuracy, the nature of advertisements has to be expanded to those that are highly targeted, with advertisers using algorithmic analysis to predict who has a need or interest in the product. Given that the theoretical framework is insufficient to generate a clear picture of the

impact on search costs, the impact on the welfare of the consumer is also ambiguous. This is also difficult to generalise, given priorities vary widely. Someone may value a more efficient searching process while someone may disregard that to focus on accuracy in terms of optimal product selection.

5.1.2 Customer Ratings & Reviews

All product reviews can be divided into two categories: Product Reviews and Editorial Reviews. The reason we have taken this as a factor in our study of the time variable is that it has the potential to take both a positive or a negative value pertaining to the time variable. The most common perception is that a greater amount of consumer reviews helps in making the purchase decision of the buyer faster by reducing the need to check all the details about the product in order to ensure its suitability for the intended use. Consumer reviews help the buyer make a decision after hearing from someone in a similar position as the buyer and an expert review offer an unbiased opinion about the product. However, it is possible that the presence of multiple and conflicting customer/expert reviews might result in an increase in time. A person who has not yet decided will be heavily swayed in different directions due to the conflicting reviews and may end up putting in greater effort to make a decision. Similarly, a large number of reviews, even if not conflicting can increase the time by inducing the customer to surf through all of them in order to check every possible detail about the product.

5.1.3 Product Options

E-commerce has completely changed the way in which we shop. Earlier, we were bound by certain restrictions which limited the variety of options and choices available to a consumer. Searching and comparing options physically was indeed very cumbersome and in many cases, people started looking for the product they liked best at a store, rather than the product that they were initially looking for. In other words, they were willing to compromise on the quality of the product in order to save time.

Now, naturally, the advent of e-commerce changed the way in which we shop. Shoppers are able to buy products simply by scrolling through the list of products available. The number of options available to them are surreal. Whenever you open an e-commerce site, you are flooded with options to choose from. Not only that, you also have a vast variety of e-commerce websites available to you. Now, since most people in the earlier setting used to visit only a few stores before making a buying decision just to save time, one would logically deduce that they start spending less time searching while also getting more options to choose from through the online medium. Though, in some instances, there is also a possibility of increased search costs through the online mode. This is where human psychology comes into play. Within the comforts of their homes, people tend to look for the best products that they can get. Even when they find a product

that they like, there is a tendency that they dig deeper to find an even better product. Same is the case with the pricing aspect. Even if people find the ideal product for them, they might want to look for a similar product at a cheaper price. The flexibility that the online mode allows has a lot to do with the possibility of increased search costs. People can look for products at any time and at any place allowing customers a great degree of flexibility and thereby, the chances of higher search costs increase.

Ideally speaking, the myriad options that e-commerce provides to the prospective customers looking for a particular product along with adequate information to compare the relative prices quoted by various brands selling that product, might induce a rational consumer to spend more time scrolling through the web, in order to secure herself/himself the best deal.

5.1.4 Easier Access to Product Information

Sitting at the comfort of home, consumers are able to compare their product with other substitutes in the market. Product information is one of the fundamentals of purchase and thus, it has been featured as one of the factors. Its availability without a salesman proves that time may have increased as people now take more time to assess the utilities they are gaining from the product. However, there is also a possibility that the consumer might take less time in the sense that now they have easier access to information.

5.1.5 Exclusive Online Special Offers

Special deals and promotions are an efficient way of attracting new customers as well as ensuring the retention of the existing customers for an online retailer. Such exclusive offers are also often used by online retailers to induce customers into buying more than they would have usually bought in the absence of such deals. These exclusive offers take the shape of membership discounts, loyalty discounts, promotional discounts, seasonal discounts, volume discounts and buy-one-get-one-free and similar deals. As consumers may become more conscious about their expenses due to offers, an exclusive discount or offer can be often their primary criterion for choosing e-commerce over brick-and-mortar shops. Excluding the convenience of products being delivered at home (in cases where physical visits to a store are a cause of inconvenience), the customers usually face a trade-off between sacrificing their shopping experiences as well as the extra waiting time to receive their products and the exclusive discounts and lucrative deals that an e-commerce aggregator offers them. Such promotion-based marketing often helps online retailers attract and retain customers.

5.1.6 Product Recommendations

Product recommendations are a part of an e-commerce personalization strategy in which the consumer is displayed various alternative or supplementary products along with the product which he/she is currently viewing. There are usually two kinds of product recommendations. The first category is that of substitute products in which the customer is offered alternatives to the product he is viewing. In the second category, the customer is offered products that enhance the utility.

The motive behind such recommendations is to directly reduce search costs by making available goods for viewing to the customer without taking the effort of searching for them explicitly. Yet, the consumers may perceive this as a confusing feature, since coming across additional and related products while viewing a particular product adds to their time and effort. Thus, this factor surely impacts search cost on the internet, yet whether the impact is positive or negative, it is difficult to determine.

5.2 Methodology of the Survey

To analyse the impact of e-commerce on time and mental efforts, we have taken into consideration 6 factors as described above. The study is based on the result of primary data which was collected through an online survey. The survey contained six questions each of which meant to analyse the impact of each variable that was considered by us in our study. Each factor was to be evaluated by the respondents on the basis of perceived impact on time and mental effort, on a 5-point scale starting from 'strongly increase' and ending with 'strongly decrease'. We have assigned numeric values to them, where 'strongly increase' is assigned +2 and 'strongly decrease' is assigned -2. After that, we have taken up an average rating for each factor which we have used to determine the necessary perceptions, as will be discussed below. These average ratings are derived by dividing the total ratings by the number of respondents i.e. by 205. This would tell us about the magnitude of impact each of the factors has on time and mental effort.

5.3 Findings¹

Following are the factor-wise average ratings of time and mental effort perceived by people as well as the average rating for the overall perception :

¹ See Appendix for factor-wise and overall responses.

Table-1: Average Ratings of Factors

Factors	Strongly Increase	Increase	No Change	Decrease	Strongly Decrease	Total Rating	Average Rating
Advertisement	48	73	0	-41	-34	46	0.224390243
Customer Ratings	90	67	0	-42	-30	85	0.414634146
Larger Variety of Product Options	126	80	0	-25	-26	155	0.764705882
Easier Access to Product Information	120	57	0	-43	-40	94	0.458536585
Exclusive Online Special Offers	124	58	0	-37	-34	111	0.541463415
Product Recommendations	68	50	0	-39	-26	53	0.258536585

Table-2: Average Rating of the Overall Response²

Overall	Strongly Increase	Increase	No Change	Decrease	Strongly Decrease	Total Rating	Average Rating
Ratings	24	95	0	-63	-44	12	0.058536585

As can be observed in the tables above, all the factors show positive average values, which means that, on an average, people feel that there is an increase in the time and mental effort due to each factor. The highest impact is of 'large variety of product options', which means that most of the consumers get overwhelmed due to the presence of a large variety of products. Whereas, 'advertisements' seem to have the least impact on the perception of increased time and mental effort on e-commerce. Advertisements reduce the time and mental effort spent on searching for a considerable number of consumers. The magnitude of each factor is self-explanatory from the table. Each individual mean rating lies between 0 to 1, which shows that on an average, people perceive their time and mental effort to have increased (due to the factors identified above), yet they feel that such an increase is very low.

If we look at the data of responses on the overall impact of e-commerce, then we can surely say that the result is severely diversified. This is also evident from the table where the average rating

² "Overall" here means the perceptions of people about their overall time and mental effort on e-commerce, and not the average of the other factors recognised. In order to evaluate overall impact, we asked a separate question about the overall perceptions of the people.

of the 'overall' impact is coming out to be just about 0.05. Around 46 per cent of people believe that their time has increased, however the number for strongly increasing stands only at around 5 per cent. Another 43 per cent of people believe that their time has decreased or strongly decreased, thus explaining the reason for a low mean rating. This makes our hypothesis of mental efforts and time being an ambiguous variable true, it is something that will differ with every individual and will depend upon a number of parameters, including individuals' own perceptions about mental effort and time, trade-off between better quality product and more time spent, etc.. Thus, the overall impact of search cost is also ambiguous

6. Conclusion

In the above discussion, it is clear that the consumers' physical effort has surely gone down, and it is the magnitude and direction of time and mental effort on which the search cost depends. The consumer will go on to sample products until the cost of additional searching is equal to the expected marginal benefit. This additional searching depends upon various factors, as stated above.

This highlights an important question - if people feel that e-commerce increases the time and mental effort, why do they still use it? Even though e-commerce platforms may result in an increase in time and mental effort while looking for a product, they have surely reduced the physical effort in comparison to the offline markets. Hence, there is a possibility that one variable may push down the entire cost significantly. Consumer expectation is growing at the same pace at which e-commerce is growing. This rising demand for better service has driven more analysis on the part of sellers who now provide incentives to customers according to their individual preference. Thus, the distinct benefits available to the customers ultimately may reduce the net effect of negative utility arising out of increased search cost due to time and mental effort. Also, it is quite possible that people fail to consider the travel time and other associated costs. Thus, it is a possibility that e-commerce is reducing the search cost, but as time, mental effort and physical effort are not quantifiable, the overall impact cannot be assessed with surety in our analysis. Although various studies have concluded that search cost has reduced due to the advent of e-commerce, in the current analysis, the scope of an increased search cost due to the same is also explored, thereby opening grounds for reforming conclusions in this regard.

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Appendix

The following are the responses to the survey:

