Too Much Information? Information Gathering and Search Costs

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Diamondback Bicycles 2014 Overdrive Mountain Bike with 29-Inch Wheels

by Diamondback Bicycles

4.5 out of 5 stars ▾ 36 customer reviews | 22 answered questions

List Price: ~~$650.00~~

Price: $460.29 - $480.18 Prime

Size:

Select

- Butted 6061-T6 Aluminum Overdrive 29er Frame
- SR Suntour XCT 29" 100mm Fork
- 8 speed Shimano Drivetrain with Easy fire Trigger Shifters
- SL-7 Diamondback Double Wall Rims
- Tektro IO Plus Mechanical Disc Brakes with 6" rotors

Need help buying the perfect bike? Visit our Bike Buying Guide with complete information on bike types, best uses, and how to measure for the right bike size and fit.

Product Description

The Diamondback Overdrive packs a punch in terms of value and affordability and takes 29ers to a new level. The improved 2014 6061-T6 Aluminum Overdrive series frame boasts of newly formed top and down tubes, a machined headtube and forged drop outs with a replaceable derailleur hanger. hard tail, mountain bike, 29" wheel The ever so sloping top tube provides ample stand over clearance. A 71Degree head tube angle and a 73Degree seat tube angle create the perfect XC/trail geometry. The 440mm (17.3 inch) chainstays equate to an extremely snappy rig and the ability to easily get the front wheel off the ground - something that not all 29ers can boast about. hard tail, mountain bike, 29" wheel The Overdrive is a fantastic entry level 29er well balanced between value and performance. The SR Suntour XCT gives you 100mm of travel for the perfect amount of cushion up front. Add to that Disc brakes courtesy of Tektro and you have one of the best in class values for an entry level 29er. hard tail, mountain bike, 29" EF-51 Easy fire shifters and Acera rear derailleur change gears with precision while the Shimano TX50 dual pull front derailleur keeps the shifting smooth for the SR Suntour XCT crankset (22/32/42t). Add in Diamondback SL-7 double wall rims with WTB Wolverine Comp tires and you can ride this bike over pretty much anything. Hard tail, mountain bike, 29" wheel The 2014 Overdrive is an economical means of getting into a new 29er.

Research Questions

- How does the consumer search through available information
- Is there an optimal amount of information for the seller to provide? Information overload?
- Is there an optimal total amount of information for a consumer to have?
- How do these two compare? TMI?

Related Literature…

- Information overload (Jacoby, Speller and Kohn 1974, Jacoby 1977, Malhotra, Jain, and Lagakos 1982) is "*when the individual is plunged into a fast and irregularly changing situation, or a novelty-loaded context…his predictive accuracy plummets. He can no longer make the reasonably correct assessments on which rational behavior is dependent*." (Toffler 1970)

- Alternative-overload (Jacoby, Speller and Kohn 1974, Iyengar and Lepper 2000, Kamenica 2008, Kuksov and Villas-Boas 2010)

- Search for information (Hauser, Urban, and Weinberg 1993, Branco, Sun, and Villas-Boas 2012).

- Investment in R&D projects (Roberts and Weitzman 1981)

General Set-up

- Information is on attribute-fit of each attribute

- Seller decides how many attributes to have information on
- She knows the ranking of importance of attributes and gives information on most important attributes

- Consumers observe total amount of information available, and check attributes sequentially (and randomly) at a cost
- At each step of the process, decides whether to continue searching, buy, or exit

- Results hold as long as one of the two following conditions hold:
  - The order in which information is processed is not COMPLETELY controlled
  - Consumer does not know importance of an attribute prior to processing it

Illustrative Example

- Consider product with large number of attributes, only one very important, all others with importance close to zero
- If information on all attributes is provided, consumer has to spend high search costs to find out the important attribute ➔ consumer does not search and does not buy
- If information is provided only on important attribute, consumer searches that attribute and buys if good fit
- Less information is better (information overload effect)

A Two-Attribute Model

- A consumer has prior valuation v < 0, and can incur search cost c to check out each additional product attribute

- His valuation can go either up or down by z_i when checking out attribute $i \in \{A, B\}$
  - Attribute A is more important: $z_A > z_B$
  - Both attributes affect purchase: $v + z_A + z_B > 0$, $v + z_A - z_B < 0$ and $v + z_A > 0 > v + z_B$

Results with Two Attributes

- If only 1 attribute is provided, consumer buys with prob ½
- When both attributes are provided
  - Consumer sees A first
    - A is positive ➔ buy if $c>(z_B-z_A-v)/2$
    - A is negative ➔ exit
  - Consumer sees B first
    - B is positive ➔ search again if $c<(v+z_A)/2$
    - B is negative ➔ exit
  - Purchase prob is $3/8<1/2$, consumer's EU also lower

A Large Number of Attributes

- One representative consumer and one seller
- The consumer's "true" utility is $U = v + \sum_{i=1}^{N} x_i,$

  where x_i is z_i or $-z_i$ with prob. 1/2; z_i is different across attributes, x_i reflects "news" from attribute i
- His utility after checking n attributes is

$$u = v + \sum_{j \in n} x_j + \sum_{j \notin n} E(x_j) = v + \sum_{j \in n} x_j.$$

Continuous process

- Divide each attribute into k sub-attributes, when k→∞, the limit of the expected utility process through search becomes now a Brownian motion
- The average informativeness of the search process decreases with the total amount of information T:

$$\overline{\sigma}_T^2 = \frac{1}{T}\int_0^T \sigma_i^2 \, di.$$

- To keep the process stationary, suppose the mass of attributes with $i \in [t_1, t_2]$ is $\varepsilon(t_2 - t_1)$, where ε is distributed with cdf $1 - e^{-\varepsilon}$ and has expected value of 1 ➔ constant hazard rate of running out of attribute 1/T

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The Consumer's Problem

- At each point of time, consumer choose among
  - Continue to search (if more info is available)
  - Stop searching, buy the product
  - Stop searching, without buying the product

- Expected utility if keep on searching:

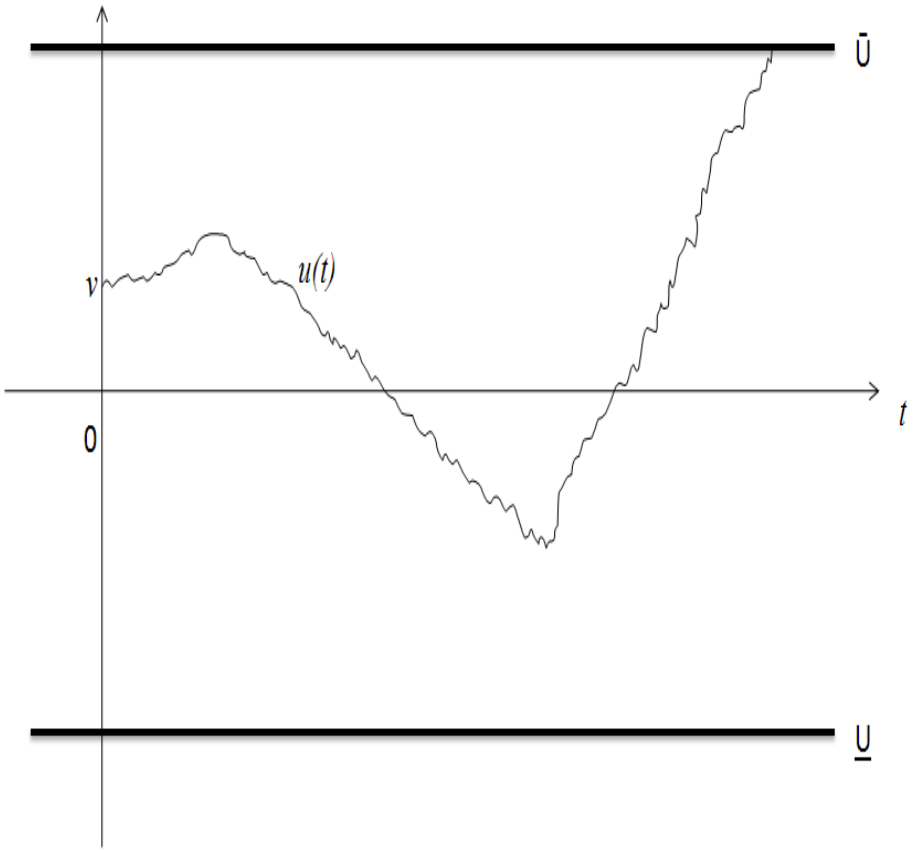
$$V(u,t) = -c\,dt + \frac{dt}{T}\max[u,0] + (1-\frac{dt}{T})EV(u+du, t+dt),$$

Search costs

Exogenous termination

Continuation of search

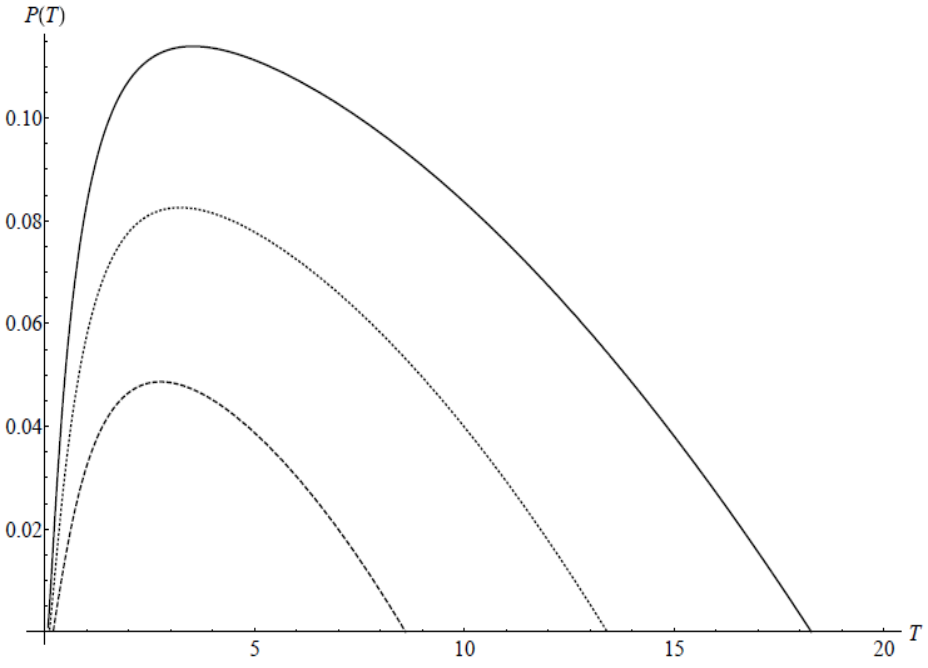
The Optimal Stopping Rule



- The two bounds are symmetric around 0
- Starting point *v* does not affect the boundaries
- Bell shaped in T and decrease with c

Purchase Likelihood

In this figure, we use $\sigma_i^2 = e^{-i}$ and $c = .01$. The solid line corresponds to $v = -1.0$, the dotted line $v = -1.2$, and the dashed line $v = -1.5$.



- For v<0, higher likelihood with higher v and lower c
- For v<0, purchase likelihood increases with purchase threshold
- If v<0 and not too negative, optimal T is interior

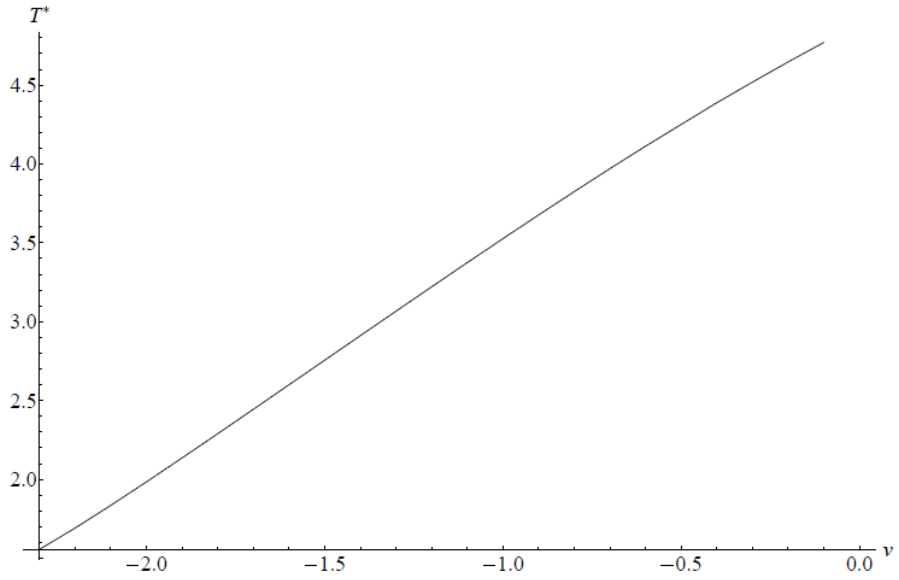
Information Overload Result

- Optimal amount information for seller is interior/finite (assume v<0).
  - If T is too small, not enough attributes to check ➔ exit
  - If T is too large, average informativeness of each attribute is low ➔ unlikely to get sufficient number of positive attributes to want to purchase ➔ no search and no purchase ➔ Too Much Information!

Optimal Amount of Information Increases with v

Intuition: when v is higher, consumer is more likely to search, and seller worries less about overloading and puts more info out there to make u positive

In this figure, we use $\sigma_i^2 = e^{-i}$, and $c = .01$.



Seller vs. Consumer

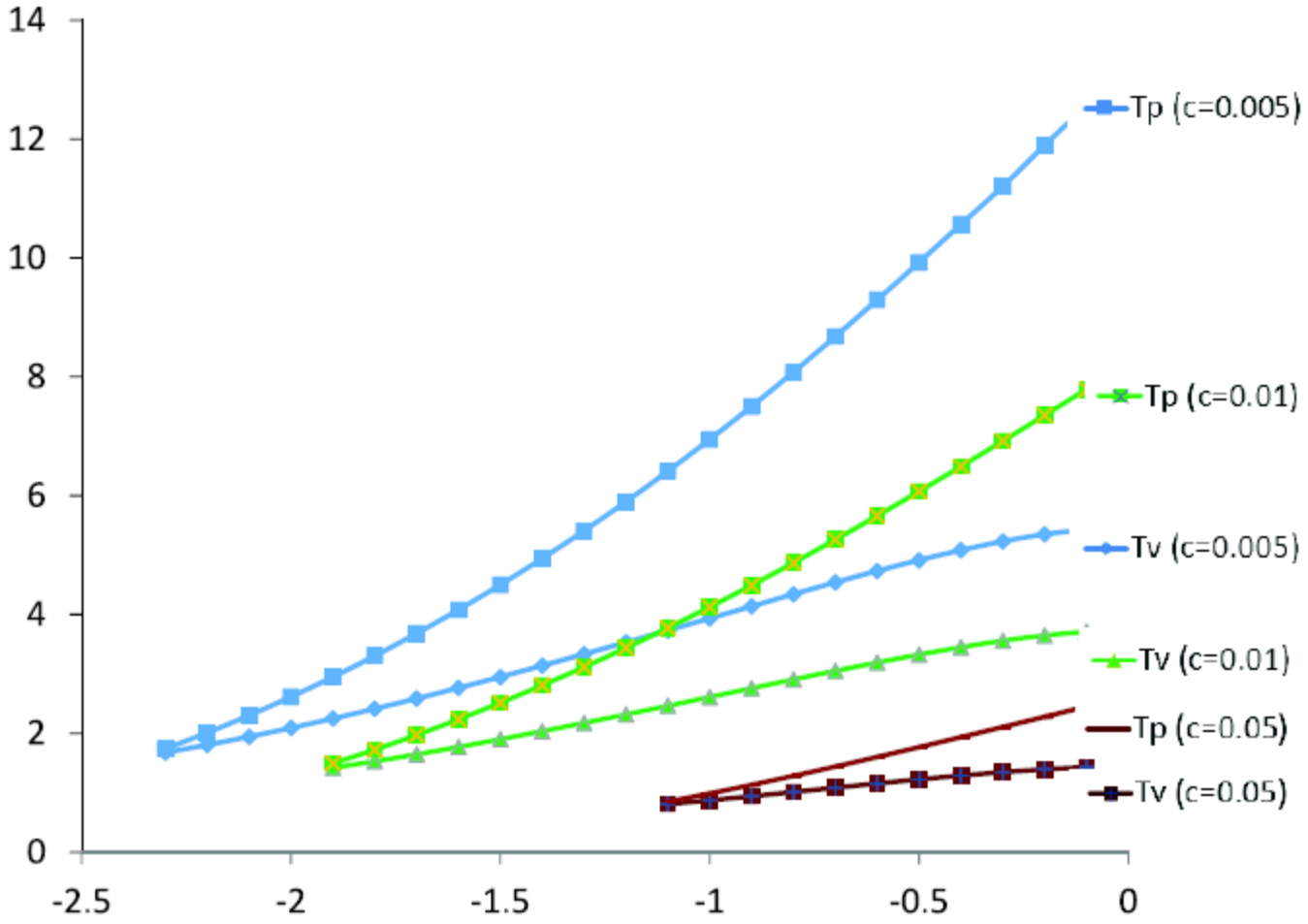
Result:

$$argmax_T V(v,T) < argmax_T P(v,T).$$

Intuition:

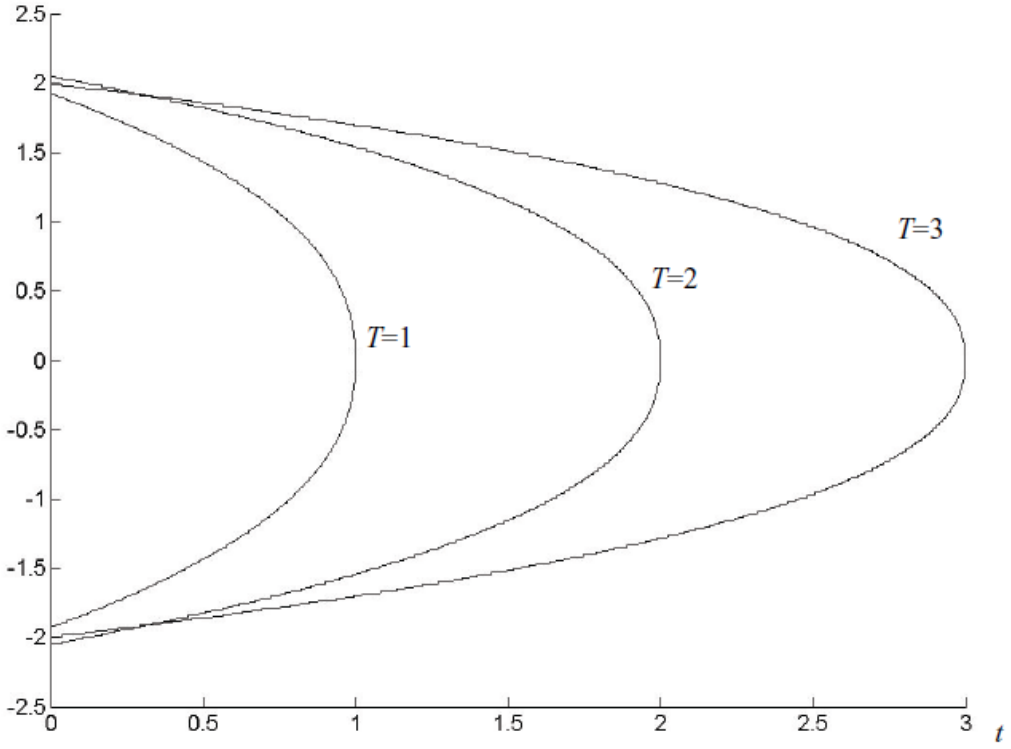
- Seller only wants that the consumer buys, even if EU is small
- Consumer prefers to buy when EU is high
- EU is higher when T is lower: less search costs and a more effective search process

Optimal T for Consumer and Seller



Deterministic Termination of Search

- Result: The optimal amount of information that maximizes the probability of purchase is (still) interior.



$\sigma_i^2 = e^{-i}$ and $c = .01$

Conclusions

- There is an optimal amount of information to make available:
  - If too little information, consumers run out of attributes to check.
  - If too much information, average informativeness of attributes checked is low ➔ less search and less purchase (information overload effect)
  - Results hold even after incorporating price
- Seller gives more information than what the consumer wishes for ➔ Too Much Information!

Thank You!