Game Theoretic Approach for Webrooming with multiple Brick and Mortar Stores and a Giant Online Retailer

Presented by
Anirban Mitra

Index Page

- Introduction
- Relevant Literatures
- Research Gap
- Conceptual Model
- Unintegrated Scenario
- Manufacturer Online Retailer Collaborative Scenario
 - Conclusion and Future Research
- References

Introduction

- Webrooming is a phenomenon where customers search about product detailers at online shopping platforms but instead of buying them from online shopping platforms they prefers Brick and Mortar Stores.
- Scenario like *Webrooming* is very common in the case of *expensive products* such as laptop, mobile phone or any kind of expensive electronic devices.
- Due to *Webrooming*, *online shopping platforms* are facing loss in terms of revenue.

Introduction

- Customers are preferring to purchase products from *Brick and Mortar*Stores instead of online Retailers mainly because of reliability and another important reason is only *Brick and Mortar Stores* can give touch and feel experience of any product.
- To counter *Webrooming* strategic decision making should be taken by Manufacturers and Online Retailers.

• In this research we are considering a practical market scenario where there is 'N' small *Brick and Mortar Stores* and a *Giant Online Retailer* who is strategically planning to counter *Webrooming*.

Relevant Literatures

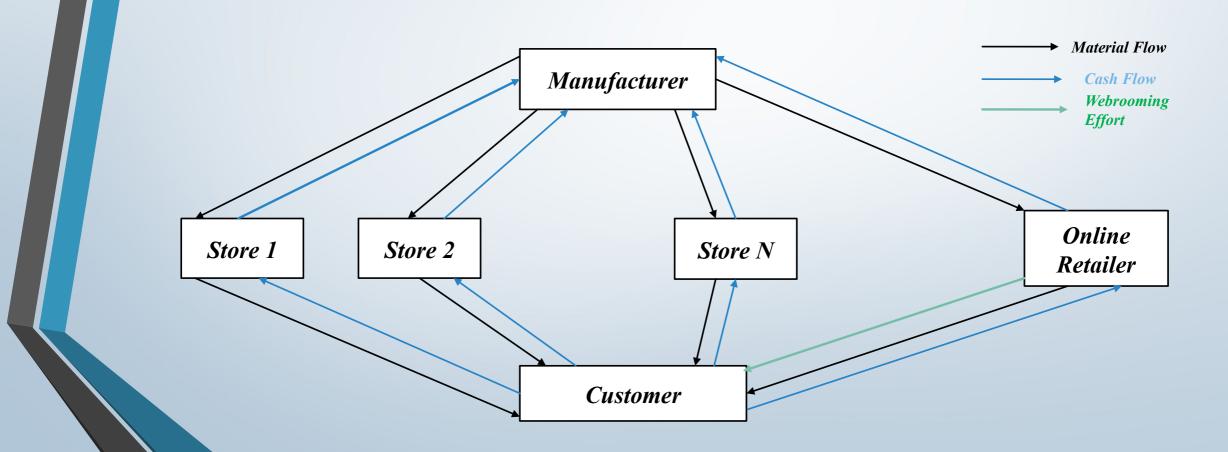
- S Basak et al. 2017 has discussed about *Game Theoretical approach* to analyze Showrooming. They have discussed about two different context in this scenario. In the first case they have assumed the traditional retailer is behaving as a *Stackelberg leader* and in the next case they have assumed that the online retailer is behaving as a Stackelberg leader. By assuming this they have calculated optimal price and optimal effort functions to counter Showrooming.
- S Basak et al. 2020 has discussed about several decision making strategies in a real life market scenario. They have discussed about unintegration, *Brick* and *Mortar Stores* and Manufacturer collaboration and decision making under discounted wholesale price with effort sharing.

Research Gap

• Previously research has performed with different decision – making scenario to counter showrooming. We will perform this research to counter webrooming by analyzing different decision – making scenario.

• Previously research has focused on one *Brick and Mortar Stores* and one Manufacturer context. We will performing research by considering 'N' *Brick and Mortar Stores* and *one Giant Online Retailer* market scenario.

Conceptual Model



Unintegrated Scenario Description

- For *Unintegrated Scenario* the Giant Online Retailer is not collaborating with any other player to counter *Webrooming*.
- For Decision Making under *Unintegrated Scenario* we will calculate Optimal price functions which will be beneficial for *Online Retailer* to set a convenient product price to counter *Webrooming*.
- Further we will graphically analyze how different parameters such as *effort*, *Webrooming impact* are influencing those optimal price functions.

Mathematical Representation Of Unintegrated Scenario

- Profit function of the *Online Retailer*, (,) = [k
- Profit function of the *Brick and Mortar Store*, () = [
- Profit function of the *Manufacturer*, () = [() b()]
- are price set by *Online Retailer, Brick and Mortar Stores*, *Manufacturer* respectively. are overall Market potential of the *Online Retailer* and *Brick and Mortar Stores respectively. b* and *c* are responsiveness of consumer demand to the price by the respective and the rival channel. is the *Webrooming impact*.

Optimal functions Of Unintegrated Scenario

- Optimal price function set by the Giant Online Retailer, +
- Optimal price function set by the Giant Online Retailer, = +
- Where, and k are constants.

Price vs Webrooming Impact

Influence Of Webrooming factor on product price



Price vs Effort

Influence of Effort on Product price



Manufacturer - Online Retailer Collaborative Scenario

- To counter *Webrooming* the Giant *Online Retailer* is collaborating with Manufacturer. Now we will be discussing about Decision Making under Collaboration or integrated channel.
- Profit function of the integrated channel, () = [+c()+(1- ζ)]()+[-b()+c+ ζ]()-k
- are price set, effort, wholesale price and margin of price set for the integrated channel respectively.

Optimal functions for the Integrated Channel

- Optimal price set by *Integrated Channel*, =
- Optimal price set by *Brick and Mortar Stores*, = + + + + + [
- and are constants.

Price vs Webrooming Impact

Influence Of Webrooming Impact on Price



Price vs Effort

Influence Of Effort on Price



Conclusion and Future Research

- We have analyzed how in different scenario Pricing decisions can be taken to counter *Webrooming*.
- Several future research can be performed. Firstly, by considering non homogeneity of *Brick and Mortar Stores*.
- Secondly, by considering non linearity of Demand Function.

References

- Basak, S., Basu, P., Avittathur, B., & Sikdar, S. (2017). A game theoretic analysis of multichannel retail in the context of "showrooming". *Decision Support Systems*, 103, 34-45.
- Basak, S., Basu, P., Avittathur, B., & Sikdar, S. (2020). Manufacturer driven strategic coordination as a response to "showrooming". *Decision Support Systems*, 133, 113305.

Thank you