MSI Webinar: Virtual Reality Applications in Marketing Research: Measuring and Managing the Customer Experience Using Immersive Simulations

May 22, 2024 | Virtual | 12:00 pm – 12:30 pm ET

Speakers:

Raymond Burke - *E.W. Kelley Professor at Indiana University, Kelley School of Business Administration*

Overview:

Raymond Burke explores research done on three VR applications in marketing. Firstly, he discusses the most popular use: simulating retail environments to measure consumer reactions to new marketing concepts and predict shopper behavior in actual stores. He also examines using VR simulations in other environments, employing eye tracking, skin response, and heart rate measurements to gauge consumer reactions. Lastly, Burke envisions VR evolving from a marketing research tool into an e-commerce platform and incorporating augmented reality experiences.

During his presentation Burke provides key studies, including a virtual grocery shelf display for Unilever, which reveals significant influences of price promotions on consumer behavior and a General Mills project comparing traditional concept testing with VR simulations, demonstrating that VR provides additional insights into product performance. His examination of the research also shows that VR simulations can closely match real-world shopping behavior and that capturing emotional peaks in experiences can enhance consumer evaluations and promote positive word-of-mouth.

Burke notes that while VR offers benefits like realistic contexts and biometric engagement measures, it faces limitations such as restricted sensory cues and high costs. Burke points to the potential of VR and augmented reality (AR) to revolutionize digital shopping by making it more immersive and personalized, showcasing successful collaborations with Intel and city retailers.

Contents:

I. Retail Simulation, Experimentation and Prediction

Price Elasticity

- In an experiment for Unilever, using a **virtual grocery shelf display** where consumers could zoom in on products and make purchases, the aim of the research was to understand **how advertising affects consumers' price elasticities, cross elasticities and brand loyalty.**

    - **Key findings:** When no products were on promotion, consumers quickly purchased their usual brand, and competitive advertising had little impact.

        - When a competitor's product was on promotion, consumers took longer to make their purchase decisions and responded to the competitor's advertising.

    - The research indicated that **price promotions significantly influenced consumers'** advertising elasticity but **raised questions about how accurately consumer behavior in the simulation predicted** actual in-store behavior.

- In a collaborative project, a **consumer panel shopped in person at two local grocery stores and tracked shelf and promotional products for seven months, which was compared with 3D virtual shopping simulations** mirroring the physical store environment.

    - The simulation results **closely matched actual consumer behavior in the physical stores.**

Concept Testing

- A study for General Mills, using Kelley School MBA students to generate new cereal concepts, aimed to **compare virtual reality shopping applications with traditional concept testing for new product ideas.**

    - **Traditional concept testing** was conducted involved providing participants with a paragraph description of the new product idea, including a price, and asking about their likelihood to purchase it.

- o **Virtual concept tests** were conducted with product ideas and packages developed by students. The simulation allowed consumers to interact with products in 3D, including touching, picking up, spinning, and adding to a virtual shopping cart.

Comparing Concept Testing with Virtual Shopping

Kelley School MBA students generated 15 original cereal concepts (1997):

Rainforest Crisp
Honey Bar Crunch
Clif Bar Cereal
Carrrunch!
Honey Toasted Chex
Choco Cheerios
Gold'n Honey Crunch
Oatmeal Raisin Cookie

Vanilla Wafer Crunch
Tooty Fruity Cereal
Frosted X-treme Crunch
Fruity Rainforest Crunch
Cafe' Mocha Crisp
Barnum's Animal Cracker
Honey Nut Chex

- o **Findings from comparing traditional concept tests and simulated test markets:**

  - Some products, like Honey Nut Chex, scored well in both traditional and simulated tests.

  - Innovative products like Cliff Bar Cereal and Honey Bar Crunch scored well in traditional tests but not in the simulated market.

  - Conversely, some products performed better in the simulated test market than in the traditional concept test.

  - Products that did best in the simulated test marketed were products that tended to leverage some existing equity either in the category or in other product categories

Cereal Results

	Concept Test (% definitely or probably would buy)	Simulated Test Market (% buyers)
Honey Nut Chex	54%	14.4%
Honey Toasted Chex	53%	13.8%
Clif Bar Cereal	50%	4.4%
Rainforest Crisp	43%	5.5%
Honey Bar Crunch	43%	2.8%
Gold'n Honey Crunch	43%	2.8%
Vanilla Wafer Crunch	32%	9.4%
Oatmeal Raisin Cookie Crisp	31%	11.6%
Choco Cheerios	23%	16.0%

Impulse Purchasing

- **A field experiment was conducted in local grocery stores where shoppers wore eye-tracking glasses to study impulse purchasing at the checkout.**
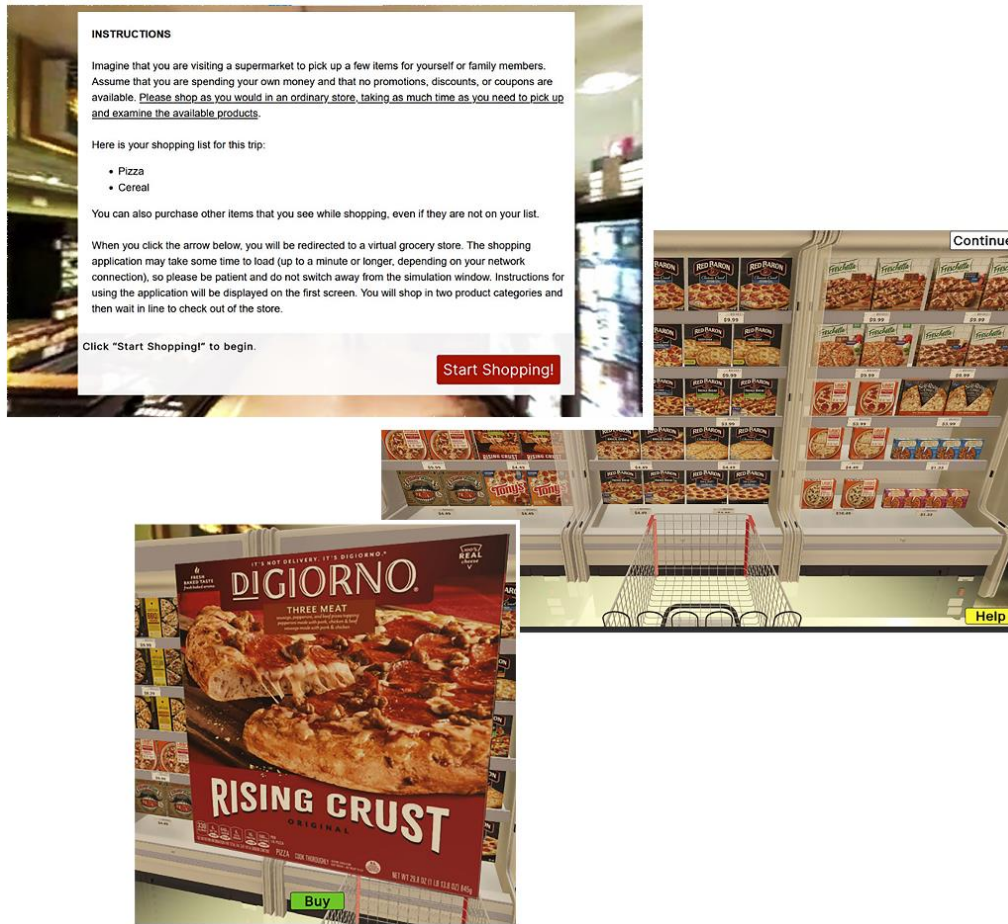
- o The **scalable simulation**, integrated with Qualtrics, **allowed product interaction and varied checkout lengths with avatars.**
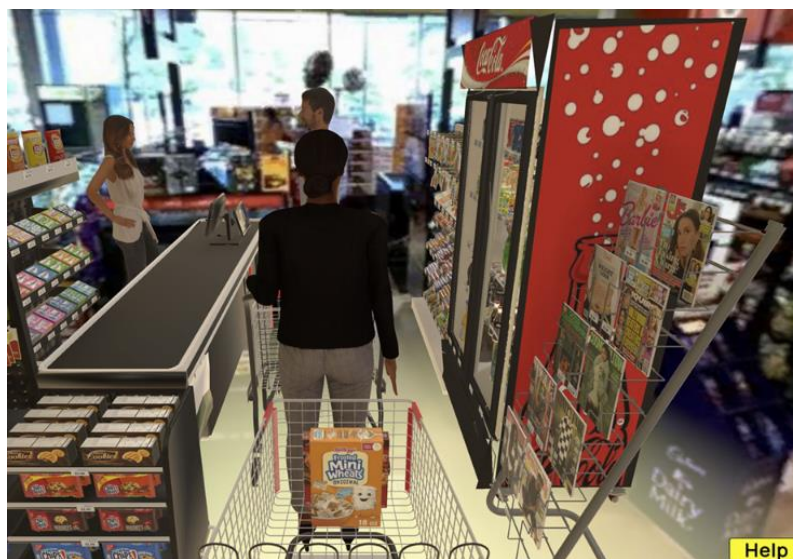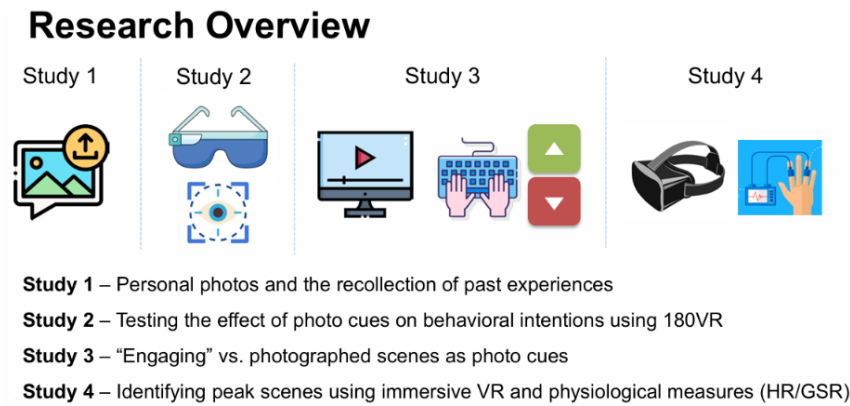

- o **The experiment emphasized that effective VR simulations need a simple, intuitive interface to put shoppers in the right mindset, reproduce physical store decision cues, and complement other research tools.**
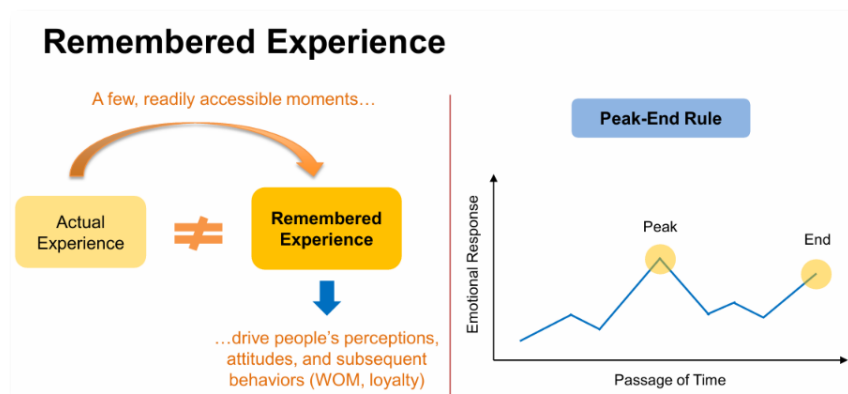
- Validation studies confirmed that these simulations accurately predict shopper behavior and effectively complement other research tools.

II. Measuring and Managing the Customer Experience

- **An experiment with four studies**, conducted in collaboration with Dr. Nara Yoon (University of Northern Colorado), aimed to **understand consumer behavior in various industries where creating engaging experiences is crucial.**

  o Using a theme park setting, the research explored the use of immersive virtual reality (VR) to measure consumers' emotional responses to experiences and **the impact of photos on their enjoyment and future purchase intentions.**

Research Overview

Study 1   Study 2   Study 3   Study 4

Study 1 – Personal photos and the recollection of past experiences
Study 2 – Testing the effect of photo cues on behavioral intentions using 180VR
Study 3 – "Engaging" vs. photographed scenes as photo cues
Study 4 – Identifying peak scenes using immersive VR and physiological measures (HR/GSR)

  o **Key findings from the studies:** Consumer memories of their past experiences are often incomplete and their evaluations are based on a few, readily accessible moments.

    - **Photos capturing the emotional peaks** of the experience can boost consumers' evaluations and encourage repurchase and positive word-of-mouth.

Remembered Experience

A few, readily accessible moments…

Actual Experience ≠ **Remembered Experience**

…drive people's perceptions, attitudes, and subsequent behaviors (WOM, loyalty)

Peak-End Rule

Emotional Response

Peak

End

Passage of Time

    - **Cueing the right moment is important.** If negative memories are cued, it will detract from remembered enjoyment.

## III. Benefits and Limitations of VR in Research

- **Benefits of VR Research:**
  - Realistic competitive context allows measurement of shopping dynamics beyond outcomes.
  - Biometric measures of engagement (eye tracking, heart rate, skin conductivity) provide deeper insights into consumer behavior.
  - Time compression enables efficient repeated measures designs, e.g., studying how purchases change with new product/package introductions.
 - Scalability allows for broader studies and larger sample sizes.
- **VR Limitations can include:** Only visual and auditory cues, limited product Interaction, no social interaction, whole-store simulation can be expensive and HMD concerns.

IV. Extended Reality (XR) Shopping

- VR and AR have great potential to revolutionize the digital shopping experience by making it **more immersive, interactive, and personalized.** These technologies offer opportunities for gamification and personalization in augmented reality environments.
  - In a collaboration with Intel, the speaker's team worked with Intel to create a **virtual shopping environment tailored for home shopping.**
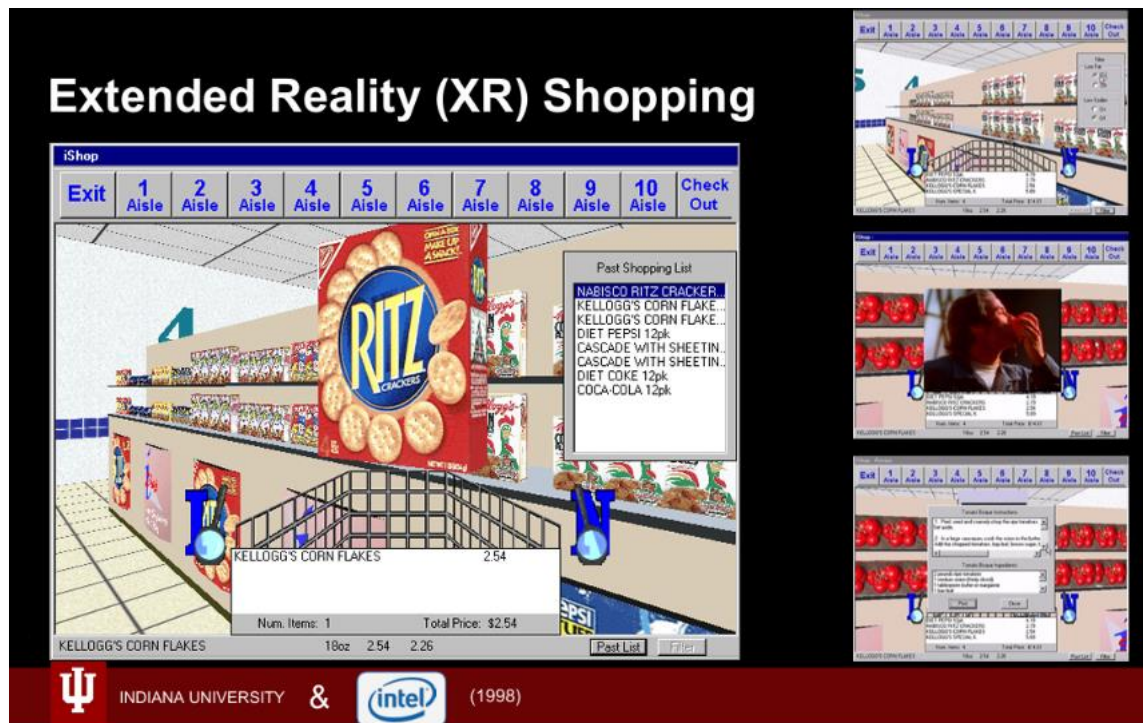
- **City Retailer Simulation:** Another project involved creating a similar VR simulation for a city retailer, indicating the flexibility and application of VR in different retail scenarios.
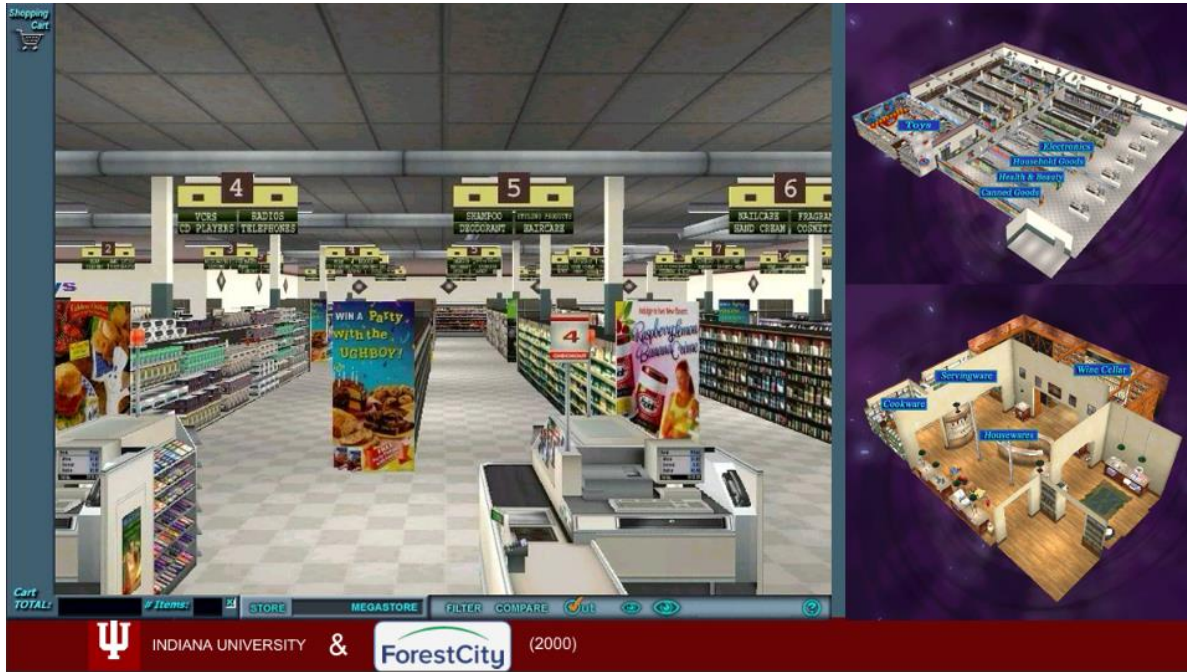
V.   Selected Sources:

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