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Virtual Reality: A Game Changer In Accurately Predicting Sales for New Product Launches

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Problem of Practice: *The future of a company rides on the success of new products. Not only are sales and marketing teams on the hook for topline numbers, but production capacity, supply chain and working capital requirements also need to line up. However, every major new product launch faces uncertainty, as it is hard to accurately forecast customer adoption by using traditional marketing research. But now research by Harz and team[1] recommends a novel solution: having potential customers interact with the planned product using virtual reality (VR). Combined with the right statistical models, VR-based interactions yield more reliable data for product analytics and improvement than traditional methods*

Virtual reality – a game changer

A lot is at stake when a new product is being launched. For instance, a large automaker has plans to launch a new car but such large-scale production requires huge investment. There is also fear of failure if the consumers don't like the new model. To get accurate estimates of sales, the company would ideally like to test how customers respond to the car. But producing even a small fleet of cars for trials is cost prohibitive. The company can use the traditional marketing research predictive models such as conjoint analysis and incorporating some multimedia visualizations of the new product. But these are not as reliable when it comes to predicting sales over time. A more innovative solution is to use virtual reality (VR) – a simulated environment in which consumers can interact with the product virtually – and use the data generated to predict real-world sales.

The recent research by Harz and team – on two real-world new products (a new kitchen appliance and an innovative gardening tool) – examined how consumers responded to the pre-launch prototype in VR compared with actual post-launch sales. When the VR data was combined with a

[1] Featured in the May 2022 issue of the Journal of Marketing, authors Nathalie Harz, Sebastian Hohenberg, and Christian Homburg in their article: "Virtual Reality in New Product Development: Insights from Prelaunch Sales Forecasting for Durables." – show how virtual reality can improve pre-launch forecasts.

Now, with the use of VR, users can walk through a virtual space, exploring new products, viewing them from 360 degrees, and even making a purchase decision. These interactions enable companies to collect customer data for more accurate forecasting

statistical model called 'macro-flow', it delivered better predictions on how the products eventually performed in the market. The research was focused on consumer durable goods as it is more expensive to carry out trials and research for such goods. However, implications of this insight for other products and services are strong. The new VR technique can help a company better configure supply chains, reduce marketing and distribution costs and fine tune other aspects of commercialization prior to a big product launch. In the worst case – if consumers don't like the hypothetical new car – the company can save time and money which can then be invested to refine product development before the actual launch.

VR and product testing

Opting for VR product testing is better as VR makes use of computer simulation which lets the future users interact with three-dimensional displays of the product in an immersive way. The users have to wear a VR headset through which they can interact with a computer generated model or virtual prototype. Such immersive models work better as the users are able interact with the product the way they would in real life.

From its early adoption in the entertainment market, VR has now evolved in affordability and in sophistication, and has usages across sectors — from retail shopping tests,[2] to healthcare facility design[3] to corporate training.[4] The effectiveness of VR depends on two attributes — visualisation and automated data capture. Earlier, to help customers visualize new products, traditional marketing research would use graphics and multimedia and, sometimes, include competitor products. The basic multimedia visualization would give the customers a canned animation or video of the product, while more sophisticated versions allowed some interaction with computer-generated product graphics. But traditional multimedia simulations are less immersive and can observe only some users' interactions with the product, and are unable to capture users' interactions with the shopping environment.

Now, with the use of VR, users can walk through a virtual store, explore and interact with different products by picking them up, viewing them from 360 degrees, and even make a purchase decision. Companies can also use automated data capture with VR — the ability to directly collect data of consumers' interactions with the product using motion-tracking sensors built into the equipment. This data is collected without breaking the flow of interaction between the user customer and products and includes information from operating the product to purchase decision, tracking the duration of each interaction. This data can then be input into sophisticated models like the 'extended macro-flow' model (used by Harz and team) to better predict sales over time.

Hurdles to implementation

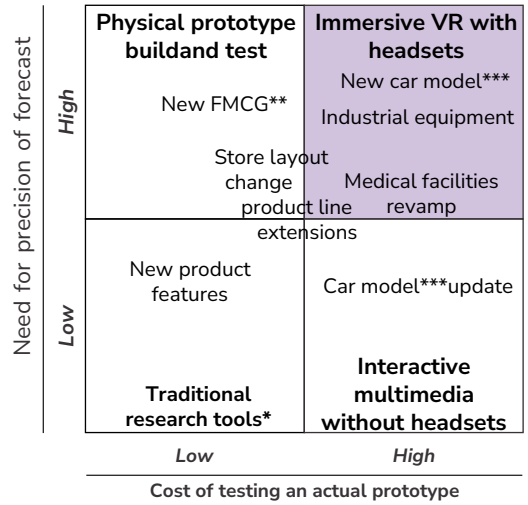
Though using VR for product testing sounds like an ideal solution, the biggest roadblock is the cost. Depending on the degree of immersiveness, the cost can rise exponentially — a three dimensional, 360-degree VR can cost[5] as much as $10,000 per minute to develop but a less immersive VR costs a fraction of that. The price for popular VR equipment ranges from $10 displays[6] that can be integrated with smartphones to a few hundred US dollars for more sophisticated,[7] standalone headsets. Chances are the cost of custom development as well as sophisticated equipment will continue to fall, with increased adoption as well as development artificial intelligence.

Though the cost may be a roadblock, the benefits accrued are immense. The spotlighted research tested the head-mounted and other VR display equipment such as a remote, online VR using just a computer, mouse and keyboard. These scenarios were benchmarked against the gold standard in traditional research: a physical, mock-up of the real product in a studio-created version. The outcome was that the VR-based scenarios outperformed the studio tests in predicting actual sales – by more than 50%. The researchers found that VR tests, driven by better vividness and immersive presence, delivered better consistency of the shopping experience — the more immersive, lab-based VR did better than the remote online version. The error in projecting post-launch sales was only 2% for aggregate one-year sales, and 18% for seasonal sales. These numbers should be considered against the new market product failures that range from 40% to 90% for consumer durables.

When and how to use which VR

But using VR testing before an actual launch may not work every time. There are scenarios when a company should not use VR tests. For instance, if your new product launch allows you to run an actual product trial, as in the case of some fast moving consumer goods (aka CPG), then it is better to evaluate the product with real end-users in a test market. Actual consumer behaviour during testing is the best estimate sales projections at scale. Take the example of Proctor & Gamble where the product development process[8] makes extensive use of the test-and-learn approach. On the other hand, opt for VR to test new products and services when cost of setting up production lines or a service facility for a pilot is exorbitant. Some sectors where a company should opt for VR testing are cars, home appliances, medical facilities, and industrial equipment. There are many cases where opting for VR testing would have prevented failures after product launch such as Tata Nano[9] (the world's cheapest car at launch), Apple's Newton[10] (a personal digital assistant) and Google Glass[11] (an Augmented Reality wearable device). These products were launched when VR technology was non-existent and/or too expensive for mass testing. But times have changed, and VR technology is now within reach of consumers, and so of course, also within reach of corporates. The following exhibit explains when a company should opt for VR to test new product strategies.

Product Development: When To Use Which VR



* Such as surveys designed to identify optimal price-feature configurations

** Fast moving consumer goods aka consumer packaged goods include products such as toiletries, cosmetics, and packaged foods

*** As well as other consumer durable products such as home appliances, electronics, household tools and sports equipment

Conceptual representation of research findings; examples are only illustrative, based on subjective accounts in news media and are not intended to represent effective or ineffective management

The final consideration for a company to use VR technology is the three key 'how's. The first is 'how' to forecast sales over time. Companies can use the VR testing along with a statistical approach such as the extended macro-flow model which examines the purchase process as a 'flow' of the buyer's decision journey. This option scores over use of more traditional approaches such as conjoint analysis which has limited ability to predict sales over time and diffusion models which need post-launch data to work.

The next is 'how' to find a fit between the need for precision, speed and cost. If the company just requires a quick estimate on a budget and can live with some imprecision, then the best option is remote online VR which requires no special equipment. Recruiting respondents for the research is also more efficient and rapid. However, if precision is the need of the hour, then a controlled environment, with more immersive VR equipment such as headsets, power walls, and sensory input gloves should be used. This approach needs respondents to come to centralized locations, and hence increases expenses and slows down the process. The expectations should be set based on the method chosen and once the range of accuracy is explained, the internal stakeholders will be more willing to accept sales forecasts, and set up production capacity, sourcing, financing and marketing plans accordingly.

The last is 'how' to be aware of the fit between the company's target customers and VR sample. If the VR subjects were from Canada, using the data to build sales forecasts for Indonesia will not work. In-country limitations related to age, gender, income, and region should also be taken into consideration.

As VR and the related Augmented Reality technology evolve, the product development process will benefit further. In future use of VR will not be limited to improving the reliability of sales forecast. It can also be used for testing different product and service configurations even during the product development cycle or the design phase.

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If you have used VR or have some inputs you would like to share, you can also reach out to us at ***mpi@spjimr.org.***

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