

Using Serious Games to Integrate the Potential of Mass Customization into the Fuzzy Front-End of New Product Development

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Abstract : Mass customization is the idea of offering custom products or services to satisfy the needs of each individual customer while maintaining the efficiency of mass production. Technologies like 3D printing and artificial intelligence have many start-ups hoping to capitalize on this dream of creating personalized products at an affordable price, and well established companies scrambling to innovate and maintain their market share. However, the majority of them are failing as they struggle to understand one key question - where does customization make sense? Customization and personalization only make sense where the value of the perceived benefit outweighs the cost to implement it. In other words, will people pay for it? Looking at the Kano Model makes it clear that it depends on the product. In products where customization is an inherent need, like prosthetics, mass customization technologies can be highly beneficial. However, for products that already sell as a standard, like headphones, offering customization is likely only an added bonus, and so the product development team must figure out if the customers' perception of the added value of this feature will outweigh its premium price tag. This can be done through the use of a 'serious game,' whereby potential customers are given a limited budget to collaboratively buy and bid on potential features of the product before it is developed. If the group choose to buy customization over other features, then the product development team should implement it into their design. If not, the team should prioritize the features on which the customers have spent their budget. The level of customization purchased can also be translated to an appropriate production method, for example, the most expensive type of customization would likely be free-form design and could be achieved through digital fabrication, while a lower level could be achieved through short batch production. Twenty-five teams of final year students from design, engineering, construction and technology tested this methodology when bringing a product from concept through to production specification, and found that it allowed them to confidently decide what level of customization, if any, would be worth offering for their product, and what would be the best method of producing it. They also found that the discussion and negotiations between players during the game led to invaluable insights, and often decided to play a second game where they offered customers the option to buy the various customization ideas that had been discussed during the first game.

Keywords : Kano model, mass customization, new product development, serious game

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