

Customer Discovery is Necessary for the Development of Artificial Intelligence-based Solutions in Orthopedic Surgery

Alireza Ebrahimi¹, Soheil Ashkani-Esfahani²

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ABSTRACT

The applications of artificial intelligence (AI) in both clinical practice and biomedical research have been expanding remarkably during the past few decades. Although billions of dollars have been spent on AI technologies, human is still dealing with the hype of AI and have relatively failed to realize the real uses of this technology and utilize it in the most cost-effective pathway. Customer discovery helps developers make hypotheses about potential customers, update and change their value propositions, find possible revenue streams, and make a draft of their business plan.

Keywords: Artificial, Customer, Discovery, Intelligence.

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Dear Editor,

The applications of AI in both clinical practice and biomedical research have been expanding remarkably during the past few decades. Several AI-based technologies were commercialized to be used by patients, physicians, and other potential consumers and stakeholders, claiming that they can increase the efficacy of humans in different clinical aspects including but not limited to diagnostic, therapeutic, and preventive methods. AI has been incorporated in different fields of medicine including, radiology, pathology, dermatology, ophthalmology, cardiology, gastroenterology, psychiatry, and orthopedics.¹ Furthermore, AI algorithms were used to improve the administrative and management processes of hospitals and clinics, electronic healthcare databases, monitoring the outcomes, and safety controls.²

Spending billions of dollars on AI technologies, human is still dealing with the hype of AI and has relatively failed to realize the real uses of this technology and utilize it in the most cost-effective pathway.^{3,4} The value of AI-based solutions should be assessed based on several factors including the indications of developing the algorithm, potential users, value propositions, safety and risks, barriers towards deployment into the current methods, quality and validity, generalizability, and ethical considerations.^{5,6} For AI solutions, the users are commonly different from the payers, and to provide a revenue stream, developers should distinguish them. While the users can be patients or clinicians, the payers might be hospitals, pharmaceutical companies, insurance companies, societies, or the public sectors.⁷ Information on the market and alterations in demands and needs must be collected constantly, and adjustments in the business model canvas and business plan must be made accordingly.⁷ Customer discovery helps developers make hypotheses about potential customers, and test those hypotheses by coming out of their comfort zones and discovering the needs and demands of their potential customers. As a result, they might figure out that their hypotheses were correct or they might decide to pivot and change their target population. During the customer discovery, developers and entrepreneurs might also be able to update and change their value propositions, find possible revenue streams, and make a draft of their business plan.⁸ Various methods have been introduced for customer discovery and no one has given

¹Department of Surgery, Massachusetts General Hospital, Boston, Massachusetts, United States

²Department of Orthopedic Surgery, Foot & Ankle Research and Innovation Lab (FARIL), FARIL-SORG Collaborative, Massachusetts General Hospital, Harvard Medical School, Boston, United States

Corresponding Author: Alireza Ebrahimi, Department of Surgery, Massachusetts General Hospital, Boston, Massachusetts, United States, Phone: +17818744215, e-mail: md.alirezaebrahimi@gmail.com

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any superiority for one over another, however, the essence of all these methods is to realize if the solution can become sustainable through the financial support by the potential customers. For some solutions, the ecosystem might be complicated and customer discovery will help developers have a better understanding about the ecosystem that their solution wants to enter.

In the 21st century, where “data is the new oil,” AI-driven technologies have already challenged many status quo across various industries from farming to manufacturing and retailing.⁹ We believe that AI-based solutions have the potential to substantially change the way that medicine is practiced in all specialties including orthopedic surgery if the customer discovery had been done correctly and initially before spending valuable resources.

ORCID

Alireza Ebrahimi  <https://orcid.org/0000-0001-5820-5656>

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