

SUPPLEMENTARY INFORMATION

Entrepreneurship

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Diffusion of innovations

Categories of adopters include innovators, early adopters, early and late majority, and laggards.¹ Technology enthusiasts are the earliest adapters of a new technology and they are strongly motivated by being a change agent. They are willing to α/β test the device and help develop the glitches by providing marketers, their size is limited. However, the technology enthusiasts play a pivotal role in involving the next group of make-shift solutions. While this group provides early revenue for adopters. Early adopters of a technology are willing to take high-risk/high-reward technologies, and push the boundaries in their industry. While the early adopters are not price sensitive, they tend to demand customized products and services as well as intensive technical support. Establishing reputation by providing customized high quality support is the key in moving to the next customer base.

The chasm is the gap between the early market and mainstream market, and this period should be kept at minimum. At this stage, the visionary market is saturated; however, the mainstream market has not yet accepted the product. Before moving to the next stage the company should limit the custom projects and seek new strategies to enter the mainstream market. As the market becomes saturated, the revenue growth declines. Now a new marketing strategy is needed to penetrate into the mainstream market. One approach that might be taken is having a single target market with a specific application. Before penetration into the mainstream market, the company should build interfaces with legacy systems and build an improved service network. If the chasm stage is overcome, the

company experiences a dramatic increase in sales. However, many startups fail to ever cross the chasm.

The early majority, also known as pragmatists, are risk averse in running their businesses to avoid disruptions in their operations. They are often willing to adopt new technologies to increase their productivity. In contrast to the early adopters, early majority demands proven technologies and reliable services that can meet the demand. Selling a product to the early majority can only be achieved through a reference from their collaborators or competitors and meet the industry standards. At this stage, the vendor should supply a complete product that offers an end-to-end solution that includes hardware, software, connectivity options, training and support to run the system, as well as diagnostic solutions. The company should strive to develop industry standards² and quality management systems such as ISO 9001:2008,³ and establish compatibility with existing technologies. Additionally, the complex product features should be simplified.

Another criterion to move to mainstream market is brand management. The company should establish a reputation and legitimacy for the technology, and should work with partners to round out the product offering. The early majority can be targeted if word of mouth effects are low and if the innovation is in consumer products. The late majority, also known as conservatives, are completely risk averse in adopting new technologies. They often wait for the early adopters to embrace the technology, verify it, and let the price drop. The late majority demands pre-assembled solutions, and they are motivated only by the need to keep up with the competitors. Marketing technology to conservatives requires a simple, reliable (life time and guarantee), convenience (minimum effort to change) at a competitive cost. Laggards are skeptics that are at the end of the technology diffusion curve, and they are not willing to change the status quo. They adopt a technology only if their existing solutions become worsen and they start losing their market position.

The marketing of new high-tech products is an important aspect of commercialization strategy. Ideally, a high-tech company should focus on one or two segments of the market. While it is important to generate revenues, the resources should be directed to having a market focus. High-tech equipment requires learning costs on the end user and generally adapted to use for a long time. Hence, this requires the customers to get used to the technology and recover the investment in the high-tech product. Therefore, rapid introduction of improved versions of a device or service can make the customer regret the purchase and delay the new purchases. Hence, the company should introduce the new products in a timely manner and avoid excessive pace of product development. The inventor and the customer view a product is a different way. For example, while the inventors mainly consider selling products on the basis of price and technical features, the customers consider tangible factors such as company reputation, product support, and training in using the product. For this, a common misconception is the role of the price in market transformation. It is generally considered that if the price of the product is low, it would be widely used or adopted. However, price reduction alone does not guarantee mainstream market acceptance. Hence, having a feature rich product on its own is not enough to sell a product. Another critical factor in marketing a product directly depends on the products qualities such as function, time utility, place utility, as well as price and perception. Therefore, new businesses should differentiate their products from all other products on the markets. When the product is ready to be sold, the company should

effectively manage the distribution channels. For example, the company should be able to guide account or market development, and introduce dealers to key buyers. Additionally, conservative buyers in the market tend to purchase standard products from leading suppliers. Hence, the company needs to consider many distribution channels such as direct sales, dealers, manufacturer reps or agents, original equipment manufacturers (OEMs), alliance partners, and inside sales. Another significant concept in marketing is advertising the product. Advertising on its own cannot establish credibility or create a position in the market, but it can only reinforce positive differentials that already exist.

Early Stage Marketing Tactics

Early stage marketing tactics include performing search engine optimization of the company website for free inbound traffic, using keyword-based advertisements in Google's search results on a low cost per click basis, leveraging the power of social media, and creating cross marketing relationships with complementary businesses.⁴ A cross marketing relationship could be created by offering incentives to a complementary company if they recommend the product to their regular customers. A core keyword list should be generated based on the company's value proposition for use on the company's main website, blog, webinars, newsletters, and social media.⁵ These keywords should be run through software such as Google's Keyword Planner which analyzes the best keywords as those identified by high traffic (a large number of people search for them) and low competition (few results are displayed).⁶

Facebook, Twitter, LinkedIn, VKontakte (Russia), and Tencent QQ (China) are popular social networks. Identifying the networks that fit the target market and are frequented by the target customer base is key to successful social media marketing. For example, Facebook is generally successful for existing customers who enjoy visual posts as updated on company products, while Twitter is often influential for potential customers who respond well to blog links. Rather than devoting resources in many different areas, startups should focus on the two or three social media networks that are likely to have the most impact to the market of interest.

While there is no ideal time to post a Facebook update or tweet a blog link on Twitter, studies have shown that one post on Facebook every two days is an optimum frequency and 12PM EST represents the best time to share, while between one and four link tweets on Twitter per hour is a good frequency with tweets at 5PM EST being more likely to get a retweet.⁷ However, a startup must be able to respond quickly to tweets. 42% of customers are willing to praise or recommend the brand through social media as long as the company's response time is less than 2 h.⁸ Being able to quickly respond to customer comments and inquiries is representative of good customer service, and thus also of good marketing.

Online advertisers utilize HTTP cookies (memorized previous activity) track the user and build statistics about his/her behavior about purchasing decisions. For example, if the user does not complete a purchase, the advertiser retargets the user by reiterating the advertisement. The advertisers often collect information about the user's online activity through multiple websites, and tailor the advertisements to the user's specific interest, known as behavioral targeting.⁹ Additionally, the potential customers can be targeted

through contextual and semantic advertising. For example, if the user browses a website that provides information about high-throughput and polymerase chain reaction (PCR), the user can be targeted with lab-on-a-chip products that perform PCR. Another online advertising strategy involves delivering messages based on the geographic location of the user determined by his/her Internet Protocol (IP) address, also known as geotargeting.¹⁰ In mobile devices, advertisers often collect information about the user's location through Global Positioning System (GPS) or mobile towers. The performance of the geotargeting can be optimized through cookies and other persistent data. Display advertisements can be delivered to the user in many different forms including banners, pop-ups, and floating, expanding, trick, interstitial, and text (hyperlinks) formats.

Online marketing has pros and cons. The cost of online advertising is often lower than other advertising formats. It also provides measurable parameters such as collection of data to assess the effectiveness of the advertisement, the number of clicks, and the route to reach to the advertisement. Online advertising also has the ability to convey interactive information that involves video, audio, links, allowing users to input queries, or share information on social media, or utilize games to draw attention. Another major advantage of online marketing is the ability to customize the advertisement targeting a market segment, and customize the information based on previous user behavior, geo-tagging, and controlling the adjustment of number of exposures and time gaps to the advertisement. Additionally, internet marketing has the ability to reach global markets instantly; hence its coverage is significantly higher than offline advertisement. However, online advertising has also disadvantages such as banner blindness due to ignoring the web page zones that contain display advertisements, using ad-blocking software, and fraud through artificially increasing the number of clicks.

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