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Experientially diverse customers and organizational adaptation in changing demand landscapes: A study of US cannabis markets, 2014–2016

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Abstract

Research Summary: In this study, we contribute to strategy and organizational theories of organizational adaptation by developing theory about the kinds of customers that facilitate an organization's ability to adapt to changing demand-side conditions. We propose that customers who have previously interacted with diverse types of organizations in the market convey informationally rich feedback that better enables organizations to understand and adapt to change—particularly in more rapidly changing contexts. We further expect that organizations that position themselves congruently with market preferences will be stronger market competitors. We test and find support for our arguments using a unique dataset of over 8,000 cannabis dispensaries operating in seven states that were listed on Weedmaps.com between July 2014 and June 2016.

Managerial Summary: Performance of organizations in changing markets depends on their ability to adapt to evolving customer preferences. Such adaptation requires understanding how preferences evolve—not only among existing customers, but also in the broader market in which the organization competes. We propose that feedback from customers who have previously interacted with diverse types of organizations in the market enables organizations to understand customer expectations and adapt to changing demand landscapes by positioning themselves accordingly. We find support for these arguments in legalized cannabis markets within seven U.S. states. Dispensaries

that get more feedback from experientially diverse customers position themselves in ways that are more congruent with the preferences of customers in their market. Furthermore, dispensaries who are more congruent with market preferences survive longer, bring in a greater number of new consumers, and are generally more appealing to those consumers.

1 | INTRODUCTION

In recent years, an increasing number of states have sanctioned the sale and consumption of cannabis, inviting new funding, producers, and customers to enter the legal U.S. cannabis market. As is typical in rapidly growing markets, producers are witnessing substantial change in customers' preferences. A cultural shift is also occurring, as public opinion increasingly supports the legalization of cannabis not only for medical but also recreational purposes (Ingraham, 2016). The result is a market landscape rife with changing expectations around its core offering.

We explore the adaptive responses of cannabis dispensaries to this changing landscape. Strategy and organizational theorists have long considered how organizations adapt in response to changing environmental conditions (Dobrev, Kim, & Carroll, 2003; Henderson & Clark, 1990; Levinthal, 1997; Meyer, Gaba, & Colwell, 2005; Tushman & Anderson, 1986), including shifts in customer tastes (Abernathy & Clark, 1985; Siggelkow, 2001). Customer preferences evolve as audiences encounter new products and information that shape their understandings and expectations of market offerings (Le Mens, Hannan, & Pólos, 2014; Rosa, Judson, & Porac, 2005). External technological, economic, and cultural forces also impact preferences, along with producer actions that shape the demand landscape in interaction with such forces (Adner, 2002; Benner & Tripsas, 2012; Tripsas, 2008). The market can thus be seen as an interactive space where shifts in demand conditions prompt new competitive developments and vice-versa (Adner & Levinthal, 2001; Adner & Snow, 2010; Adner & Zemsky, 2006; Priem, 2007). Within this space, a central challenge for dispensaries is to learn how customer preferences are changing in a timely fashion.

We propose that understanding how organizations cope with demand-side change (and why different organizations show differential abilities to cope) requires systematic attention to how they gain information about such change. Scholars have shown that firms develop new product ideas and learn how to present their offerings through engagement with customers (e.g., Koçak, Hannan, & Hsu, 2014; Salomon & Jin, 2010; Zander & Zander, 2005). Yet, considerable work within strategy highlights problems with relying on existing customers for learning. Focusing on preferences expressed by existing customers can be misleading in changing environments (Christensen, 1997; Christensen & Bower, 1996). Organizations often overweight such temporally and spatially proximate information, hindering exploration of the broader environment (Levinthal & March, 1993). Adaptation efforts based on direct feedback from a limited subset of the market can thus lead firms

to pursue preexisting strategies and accumulate competitive advantages along dimensions the market increasingly devalues (Levitt & March, 1988). Therefore, a key challenge firms face in changing markets is moving beyond local experience-based learning to develop a broader understanding of the demand landscape (Gavetti & Levinthal, 2000). It is unclear how organizations can gather information about their changing demand landscape from feedback that pertains to their prior actions.

In this study, we develop and test theory about the kinds of customers that facilitate (rather than limit) an organization's ability to gain timely information about evolving customer preferences in its market and adapt its market positioning accordingly. Building on earlier studies of experiential diversity (Beckman & Haunschild, 2002; Weigelt & Sarkar, 2009), we propose that exposure to customers who have previously interacted with diverse types of organizations in the market convey information-rich feedback that better enables organizations to understand and adapt to changing demand landscapes. We expect access to experientially diverse customers to be particularly valuable in contexts where customer preferences change at a rapid pace—conditions under which organizations are particularly likely to experience competency traps (Levitt & March, 1988). We further expect organizations that position themselves congruently with market preferences to be stronger market competitors.

Our empirical setting is legalized cannabis markets within seven U.S. states that have legalized the use/possession of cannabis. These markets represent competitive settings in which many small businesses have entered and struggled to establish footholds in recent years (Rodd, 2018). Our sample consists of cannabis dispensaries listed between July 2014 and June 2016 on Weedmaps.com—a website often referred as the "Yelp of Cannabis" (Hsu, Koçak, & Kovács, 2018; Robinson, 2014). Online communities such as Weedmaps provide organizations with an important source of learning: the feedback customers regularly convey on exchange experiences through communicative acts such as textual reviews (Kovács, Carroll, & Lehman, 2013; Miller, Fabian, & Lin, 2009). Through reviews, customers express both positive and negative views of market phenomena as well as explanations of their assessments (Witell, Kristensson, Gustafsson, & Löfgren, 2011). Reviews thus reflect consumers' perceptions of the organizations (Kovács et al., 2013) and their expressed preferences for different product features (Archak, Ghose, & Ipeirotis, 2011) and could be used to construct perceptual maps of the market landscape (Netzer, Feldman, Goldenberg, & Fresko, 2012).

Using Weedmaps, we explore the kinds of customers and customer feedback cannabis dispensaries encounter as well as the way dispensaries attempt to position themselves vis-à-vis their market. More specifically, we measure the degree of congruence between an organization's market-positioning claims and consumers' preferences within the same geographical market. We investigate how this congruence changes as a function of the degree of change in the demand landscape and the experiential diversity of a dispensary's customers. We also examine the effect of congruence on key organizational outcomes related to success and growth.

2 | THEORY DEVELOPMENT

Recent demand-side theories of organizational evolution propose that customers can be a key source of market knowledge for organizations seeking to develop competitive advantage (Ye, Priem, & Alshwer, 2012; Zander & Zander, 2005). Through customer interactions, firms learn how customers make sense of the market, the dimensions customers care about, and how best to engage with them (Rosa, Porac, Runser-Spanjol, & Saxon, 1999; Godes et al., 2005; Kocak et al 2014). However, as customer preferences change, how can their evaluations of past actions be useful? This is an example of the learning dilemma that behavioral theories of organizational adaptation emphasize: if firms

primarily learn from their own experiences, the feedback they receive concerns past actions. Relying on this feedback opens firms to the many potential pitfalls of experiential learning such as competency traps, overexploitation, or localized search (Levitt & March, 1988). Customer feedback can thus play a negative role in organizational adaptation, as firms fail to adapt to dramatic changes in market conditions when they listen too closely to their existing customers (e.g., Christensen, 1997).

Reliance on customer feedback is particularly likely to impair adaptation when the relationship of preference dimensions to payoffs involve interdependencies that make it difficult for actors to infer payoffs in parts of the landscape they have not sampled or if the market is changing so that new dimensions are being added (Levinthal, 1997). Perversely, firms are likely to rely on experiential learning when they are least likely to benefit from it. For example, organizations rely on familiar forms of search in uncertain or ambiguous settings (Beckman, Haunschild, & Phillips, 2004; Gulati & Gargiulo, 1999; Stuart & Podolny, 1996). Current customers are a familiar source of information, but are typically constrained by their limited experience with existing market offerings, leading to a narrow reference frame (Ulwick, 2002).

Is there any way firms can learn from past experiences and existing stakeholders in changing markets? Researchers interested in customer-led innovation have focused on "lead users"—those who are in the vanguard with respect to market trends (von Hippel, 1986). Identifying lead users is a challenge; however, since it requires knowing what the relevant trends are (Lüthje & Herstatt, 2004). Lettl, Hienerth, and Gemuenden (2008) find that a central aspect in the recognition of opportunities by lead users is their access to diverse knowledge. This suggests an alternate path to identifying useful customers in changing market contexts—those whose prior experiences establish a broader, more diverse frame of reference for interpreting market phenomena.

More specifically, we expect that customers who have engaged in exchanges with a diversity of organizations within a market provide firms with a broad range of relevant information from which it can learn. Customers with diverse organizational experiences have been exposed to firms that cater to customers in different ways—for example, developing distinct sources of value or adopting various tactics of pricing and promotion. Prior exchanges with organizations that vary in their strategies are expected to influence consumers' attention and consideration, shaping the mental representations they form of the market (Durand & Paolella, 2012; Rosa et al., 2005; Rossman, 2012). From these diverse experiential samples, such customers may be able to reflect on the different ways firms attempt to meet customer preferences and develop inferences about benefits and drawbacks of each (Beckman & Haunschild, 2002; Weigelt & Sarkar, 2009). Studies suggest consumers are adept at evaluating trade-offs associated with dimensions such as convenience, the depth and breadth of service offerings, and particular item combinations (Ye et al., 2012). Take, for example, the following customer assessments of preference trade-offs posted on Weedmaps:

> The security is very tight so it's a pain to get in but you feel safe once you're into the main waiting room. It feels cleaner than a lot of dispensaries I've been to; not medical facility clean, but friendly collective clean.
> Granted the prices are higher than a lot of places, but if you're like me price comes second to quality and their price is a deal for their quality.
> The place is a little hectic compared to others I have been to. 3–4 people getting served at the same time. But staff is really friendly. No rush at all and they really listen to your needs.

Experientially diverse customers may be particularly well-suited to provide an informed perspective on the different dimensions along which customers evaluate offerings in a firm's market. They can

reflect on what competitors are doing and how the focal firm compares. Such information may be more useful than what a firm learns from simply observing its competitors, since it may perceive differences between itself and its competitors but may not know which features are more appealing to customers (Baum, Li, & Usher, 2000; Manz & Sims, 1981). When customers convey information directly about how the focal firm compares to competitors, the firm is provided with specific information on what dimensions it should focus along in a salient, tangible way. Further, while customer reviews of other firms may present a potential source of learning, the implications of these reviews for a firm's existing knowledge and routines can be difficult to interpret if it does not know much about what the other firms are doing in the first place. Even more, distant discourse about changing preferences may go unnoticed as part of the "almost infinite stream of events and inputs that surround any organizational actor" (Weick, Sutcliffe, & Obstfeld, 2005: 411). This is especially the case for information that does not fit with the firm's existing understandings (Reger, Mullane, Gustafson, & DeMarie, 1994; Tripsas, 2009). Thus, mere access to novel feedback available in online communities may not be enough to prompt organizations to move beyond the mental models constructed through their past experiences (Gavetti & Warglien, 2015).

We expect that interactions with experientially diverse customers provide diverse information about market preferences in a mode that naturally fits with firms' proclivity to focus on temporally and spatially proximate information (Levinthal & March, 1993). Such exposure to diverse market information may push firms to develop new offerings or services that more effectively appeal to market preferences (Hannan, Carroll, & Pólos, 2003). It may also encourage firms to adjust their market-positioning claims—claims about their organizational identity, the offerings/services they provide, and the types of customers they target. Firms often advance such claims through media such as press releases and promotional campaigns in the hopes of positively influencing new consumers' perceptions (e.g., Glynn & Abzug, 2002; Kennedy, 2008; Navis & Glynn, 2010). They seek to portray a positive image along dimensions that are meaningful to external actors looking for information to help them choose among a set of potential exchange partners (Scott & Lane, 2000). In nascent markets where product meanings are still being formed, firms may also use claims to advance interpretations of their product that advance their strategic interests (Anthony, Nelson, & Tripsas, 2016).

While organizational claims may seem highly malleable (especially relative to underlying technologies or product features), several factors restrain their rate of change. Firms tend to filter and interpret incoming information in ways that reinforce their existing understandings (Reger et al., 1994; Tripsas & Gavetti, 2000). Organizational members may also have a vested interest in maintaining explicitly-stated claims about their organization to preserve the individual-level identities they have cultivated over time (Ashforth & Mael, 1989). Structurally, such understandings also become embedded in organizational processes and decision frames (Henderson, 2006; Kogut & Zander, 1996; Oliver, 1997; Tsoukas & Chia, 2002), contributing to stability of organizational practices. These inertial tendencies mean that most firms' market-positioning claims will grow increasingly out of sync with broader audience preferences as their market evolves. Yet, we expect that greater exposure to customers with greater breadth in prior organizational experiences will better enable firms to perceive, make sense of, and assimilate to changes in market preferences. As a result, these firms are expected to demonstrate greater congruence between their market-positioning claims and market preferences over time:

H1. *Feedback from customers with diverse organizational experiences increases the congruence between a firm's market-positioning claims and the preferences held by consumers in its market.*

The value of customers' experiential heterogeneity rests on the assumption that there is novel, dynamic information about the demand landscape that must be integrated into firms' existing beliefs. Access to this information enables managers to better envision and evaluate potential market opportunities and make timely, informed choices about how to best position their organization (Adner & Snow, 2010; Gavetti & Levinthal, 2000). This suggests the value of experientially diverse exchange partners should be enhanced in markets with rapidly changing consumer preference orderings, where firms are at greater risk of falling behind the market (Le Mens et al., 2014). We thus expect experientially diverse customers to be particularly valuable in markets where the demand landscape is quickly changing:

H2. *The positive effect of feedback from customers with diverse organizational experiences on the congruence between a firm's market-positioning claims and the preferences held by consumers in its market will be stronger for firms in markets with more quickly changing demand landscapes.*

The relevance of our theory for understanding organizational adaptation hinges on the presumption that congruence between an organization's claims about itself and the preferences held by market consumers positively impacts key organizational outcomes. We expect organizations that advance claims emphasizing dimensions consumers in a market generally care about will both attract and appeal more to new customers. For example, a firm that emphasizes the quality of its production process in a market where consumers increasingly care about craftsmanship is likely to appeal to new consumers, increasing their likelihood of transacting with the organization. Conversely, a firm that emphasizes its convenience and low prices in that same market is likely to be viewed as incongruent and, as a result, avoided.

A firm's ability to attract and appeal to new consumers is particularly important in emerging markets. As new competitors and customers enter the market, firms must increasingly jockey for resources. By growing their customer base, firms place themselves in stronger positions to withstand the changing competitive climate. We thus expect firms that present themselves in ways that are more congruent with evolving consumer preferences will be more likely to survive and grow though the acquisition of new customers.

H3a. *Firms whose market-positioning claims are more congruent with the preferences held by consumers in their market will be more likely to survive.*

H3b. *Firms whose market-positioning claims are more congruent with the preferences held by consumers in their market will attract and appeal more to new customers.*

3 | EMPIRICAL SETTING

The U.S. cannabis industry is a context well suited for studying organizational adaptation to changing market preferences. While cannabis possession and use continues to be prohibited at the federal level, support for cannabis legalization has grown substantially in recent decades. The Gallup organization finds that the percentage of Americans age 18 and older who favor legalizing cannabis use has steadily increased from 31% in the early 2000s to 66% in 2018 (McCarthy, 2018). The proportion of adults who perceive great risk of harm from smoking cannabis 1–2 times per week decreased from a slight majority (50.4%) in 2002 to 30.3% in 2014 (Compton, Han, Jones, Blanco, & Hughes, 2016).

These changing perceptions are reflected in state-ballot initiatives legalizing possession/use of cannabis for medicinal purposes (Sacco & Finklea, 2014). By mid-2016 (the end of our study's time period), 25 states and the District of Columbia had passed medical marijuana legislation (Kilmer & Pacula, 2017). In addition, four states passed state-ballot initiatives allowing for nonmedical use of cannabis by adults 21 years of age and older.

As the number of legal state-wide cannabis markets has increased, so has the prevalence of its usage. Cannabis is the most commonly used illicit drug in the U.S. (Center for Behavioral Health Statistics and Quality, 2015). The Center for Disease Control reports that, in 2014, an average of 7,000 new users per day tried cannabis for the first time (Azofeifa et al., 2016). A 2016 Gallup poll found that the percent of American adults who report being current cannabis users increased from 7.0% in 2013 to 13% in 2016 (Gallup News, 2016).

Multiple factors associated with increasing state-level cannabis legalization, including changing social norms, lowered perceived risks, and widening access to legal cannabis may be encouraging new users (Pacula & Sevigny, 2014). Media sources suggest that the increasing prevalence of new users complicates the positioning choices cannabis dispensaries face (Vara, 2016). These factors relate to the issue at the center of our empirical investigation: how dispensaries adapt to changing consumer preferences in the markets they compete within.

4 | MEASURES

Our study's sample consists of cannabis dispensaries listed on Weedmaps.com—an online community in which consumers can look up dispensaries and access information such as product menus, discounts, and reviews. Cannabis dispensaries have limited access to traditional marketing outlets; online websites such as Weedmaps are thus a major avenue through which they engage customers (Burke, 2015; Marijuana Business Daily, 2013). Among cannabis websites aiming to connect customers with dispensaries in the U.S., Weedmaps has gained particular prominence. A CEO of a cannabis consultancy notes: "Weedmaps is the No. 1 go-to source. Anybody that opens up a dispensary, the first thing they think about is, 'We've got to get listed on Weedmaps…'" (quoted in Schroyer, 2018).

Our own comparison of popular cannabis websites in July 2014 showed that Weedmaps.com provided substantially higher coverage of U.S. dispensaries relative to other online cannabis communities.[1] We obtained Weedmaps data on a monthly basis for 2 years, from July 2014 to June 2016. For the purposes of our current study, we focus on dispensaries located in the seven states with more than 80 dispensaries listed on Weedmaps at the start of our investigation: Arizona, California, Colorado, Michigan, Nevada, Oregon, and Washington.

Table 1 provides an overview of the states in our database, including the initial year state cannabis legislation was passed and the types of dispensaries present on Weedmaps during the period under investigation. Cannabis regulations differ both across and within states, as counties and cities have often enacted their own legislation. Our theory is meant to apply regardless of these variations, and we control for local variation in a dispensary's market through dispensary-level fixed effects. Although medical and recreationally licensed dispensaries might be regarded as different subtypes, we treat all cannabis dispensaries listed on Weedmaps as members of the same industry in our main models.[2] Existing research suggests the line between recreational and medical usage is blurry

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[1]In our July 2014 searches, for example, the website Leafly listed 1,051 dispensaries, THC Finder listed 3,365, and Potlocator listed ~2,500. In comparison, Weedmaps listed 4,423 dispensaries nationally.

[2]In supplementary models, we report results of analyses that only consider the medical segment of the industry to examine the robustness of our effects.

TABLE 1 Overview of states in empirical sample

State	Year initial cannabis legislation passed	Storefront-medical	Delivery-medical	Storefront-recreational
Arizona	1996	Yes	Yes	No
California	1996	Yes	Yes	No
Colorado	2000	Yes	No	Yes
Michigan	2008	Yes	Yes	No
Nevada	2001	Yes	Yes	No
Oregon	1998	Yes	Yes	Yes
Washington	1998	Yes	Yes	Yes

Note: Recreational dispensaries started operations in Oregon in 2015.

(Bostwick, 2012; Hsu et al., 2018). For example, a 2016 survey found that 86% of respondents who reported using cannabis medically also used it recreationally (Pacula, Jacobson, & Maksabedian, 2016). Further, consumers who use cannabis recreationally often choose to purchase from medical dispensaries, either because of legal restrictions or because medical-use cannabis is sold at a lower tax rate (Hickey, 2014; Light, Orens, Lewandowski, & Pickton, 2014).

During the 2-year period covered, we observe 10,830 dispensaries appearing on Weedmaps for more than 1 month, with address information and a self-description. We include 8,343 (~77%) of these that had at least one review posted and were located in markets with dispensaries listed on Weedmaps for at least 4 months. These are the minimum requirements for us to ascertain the type of customer feedback a dispensary has received and the rate of broader preference change among dispensary customers in the dispensary's market.

Our sample may diverge from the broader set of dispensaries operating in the U.S. in two ways. First, we only study firms who choose to be listed on Weedmaps. In their investigation of Colorado dispensaries, Hsu et al. (2018) found roughly 76% of those with active state licenses were listed on Weedmaps during their study period (2014–2015). Of the remaining dispensaries, roughly two-thirds were no longer licensed by the end of the period, suggesting these may have been in the process of closure. This suggests Weedmaps provides a reasonable but incomplete approximation of dispensaries in active operation. In particular, firms who do not seek new customers or wish to avoid regulator scrutiny may be more likely to be missing from our sample.

Second, the dispensaries we study were likely more established organizations since they had at least one customer review posted, operated in markets with at least several months of legal dispensary operations, and had resources to pay Weedmaps' listing fees. By excluding less established firms, we may be excluding dispensaries that were less congruent with local market preferences. This is in addition to the bias that would exist if more congruent firms were more likely to survive (H3a). In changing markets, it is unclear how our sample selection may bias coefficients. The dispensaries we study may have more resources to respond to changing customer preferences (relative to the full set of dispensaries), but also may be less flexible to change. While we cannot include unlisted dispensaries, we use econometric methods (described below) to address potential biases stemming from sample selection.

In total, the dispensaries in this sample received 274,130 reviews during our observation window. Four thousand seven hundred and six (roughly 56%) of the 8,343 dispensaries in our dataset posted at least one direct reply through Weedmaps to a review submitted. Since dispensaries must pay a

monthly fee to be listed on Weedmaps, this degree of attention is perhaps not surprising. In general, this indicates that a majority of dispensaries attend to their Weedmaps listings and to customer reviews posted.

4.1 | Dependent variables

Our main d.v., a dispensary's congruence with market preferences, requires measurement of the (a) preference dimensions that dispensaries use to describe their market positions in their self-descriptions of their organizations ("About Us" statements on Weedmaps) and (b) dimensions that appear in consumers' evaluations of dispensaries in the same market. Preference dimensions include organizational identity-related categories ("a medical cannabis collective"), distinctive organizational features ("fast and efficient," "environmentally conscious"), types of offerings and services provided ("a quick sign up process," "high end medical marijuana"), and the kinds of customers seek to appeal to ("patients seeking proper medication for the specific ailment they are dealing with").[3]

Table 2 provides excerpts from dispensaries' self-descriptions and customer's reviews. The dispensaries in these examples highlight different preference dimensions (medical expertise, service approach, and product quality) as they attempt to positively distinguish themselves from others in the market. The customer review excerpts reflect focus on those same dimensions from the customer perspective. In addition to variation across dispensaries, we also observe within-firm change in preference dimensions over time. Of firms listed on Weedmaps for at least 2 month during our study period, 91% changed their self-descriptions text during our study period. On average, dispensaries changed their self-descriptions 3.1 times. Dispensaries appeared to change their profiles in a gradual fashion—when change to self-description text occurred, 7.6% of dispensaries either added a new dimension or dropped an existing dimension, 3.7% added/dropped two dimensions, and 4.9% added/dropped three or more dimensions. In the remaining majority (81.5%), firms changed text but did not add or drop a dimension.

Creating measures based on preference dimensions required the development of a text-based method for systematically assessing and comparing dispensary self-descriptions and review text. The language used in dispensaries' self-descriptions and consumers' reviews was often specific to cannabis (e.g., "frosty" and "dank" are quality-related descriptors; "shatter" and "wax" are types of products). We thus found it important to develop a context-specific coding scheme of preference dimensions. In Appendix A, we provide details on the process by which the coding scheme was created, which involved multiple iterations of independent coding, comparison, and discussion of coded preference dimensions for randomly selected samples of self-descriptions and reviews by two of the study authors. Through this iterative coding process, we arrived at a set of dimensions used by dispensaries and reviewers to discuss the relative appeal of dispensaries and their offerings/services. The final set of codes consists of 838 terms/phrases, grouped across 16 preference dimensions. Appendix A also presents details on the dimensions (descriptions, example terms/phrases for each) as well as several checks conducted to (a) verify that dispensaries' self-descriptions corresponded to underlying behavioral differences and (b) examine the independence of identified preference dimensions.

We created a software program to construct a dataset of dispensaries and the number of times they referenced each preference dimension in each monthly batch download. Each dispensary's self-

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[3]This coding scheme is broader than the one used by Hsu et al. (2018), which relied only on cannabis dispensaries' identity related dimensions.

TABLE 2 Examples of dispensary and reviewer text

Preference dimension highlighted	Dispensary self-description excerpt	Review excerpt
Medicine	Modern research suggests that cannabis is a valuable aid in the treatment of a wide range of clinical applications. These include pain relief particularly of neuropathic pain (pain from nerve damage), nausea, spasticity, glaucoma, and movement disorders. Marijuana is also a powerful appetite stimulant, specifically for patients suffering from HIV, the AIDS wasting syndrome, or dementia…. With all these benefits, and no medical problems (if used with a vaporizer or taken in edible form), who would not want to use a drug as safe and effective as Marijuana for pain or other illnesses?	I was diagnosed with liver cancer. The staff was more than knowledgeable in not only top cancer fighting products as well as effective pain management. I am always very pleased with the positive attitudes and vast knowledge of <name> staff!
Service approach	We emphasize the importance of compassionate care for each individual's medical condition and we offer exceptional service. Our knowledgeable staff is professional will assist you with any questions you may have…With wellbeing of our clients at heart and security in mind, you can feel safe when visiting our dispensary and relax in the comfort while we help you chose the best product for your needs.	The staffs here are compassionate, and truly care about us, the patients! Anyone in the area looking to find quality meds, compassion, and professionalism should come here.
Quality	<name> provides small-batch craft cannabis for discerning cannabis patients…Clean cannabis matters! To experience the most pristine expression of the plant's medicine, to enjoy the entourage of cannabinoids, terpenes, and flavonoids and to know it is mindfully-grown and hand-watered with lots of TLC is the birthright of every Cannasseur!	Untouchable quality! I would have to say that <name> is by far the best dispensary I have been to. From their flower to the concentrates, it is all top quality and grown in house by some of the nicest guys in the business. I explicitly shop at <name> because it is hard to find a medical shop with finer medicine. Simply put amazing in their craft.

description in each month was coded into a 1-by-16 preference vector. The average dispensary self-description had ~172 total words and ~35 coded terms/phrases that mentioned 6.8 preference dimensions on average. Customer evaluations tended to be shorter in length than dispensary self-descriptions—with ~42 total words and ~6 coded terms/phrases corresponding to 4.6 preference dimensions on average.

To construct each *dispensary's congruence with market preferences*, we used the 1-by-16 vectors to represent congruence between dispensary's self-descriptions and preference dimensions important to consumers in their same geographical market in each month. This includes customers both of the focal and other dispensaries in their same market. We calculated the average Jaccard similarity between a dispensary's preference vector and the vector of each customer in its market using the following formula:

$$\text{Congruence}_{i,j,t} = \frac{\sum_{j \in \text{reviewer in same market}} \frac{|\text{preference\_dimensions}_{i,t} \cap \text{preference\_dimensions}_{j,t}|}{|\text{preference\_dimensions}_{i,t} \cup \text{preference\_dimensions}_{j,t}|}}{\text{Count}(j)_t},$$

where preference_dimensions$_{i,t}$ refers to dimensions referenced by focal dispensary i in its self-description in month t, and preference_dimensions$_{j,t}$ refers to dimensions referenced by customer j during reviews submitted in month t.[4] A higher congruence score indicates that a dispensary's self-description mentions dimensions that customers reflect on more in their review text (irrespective of whether customers mention them in positive or negative ways in their reviews).

Table 3 presents an example of how congruence is calculated for two hypothetical dispensaries in a market with five customers who submit reviews in a given month. The "Dimensions mentioned" columns are marked "yes" if a given review or dispensary self-description is coded as referencing a given preference dimension. Jaccard similarity scores are calculated between each pairing of customer review with dispensary self-description. Each dispensary's congruence is then calculated as the average of these pairwise comparisons for the dispensary. As Table 3 shows, Dispensary B—which emphasizes *convenience*, *product selection*, and *service approach*—shows greater congruence with the preference dimensions in the five customer reviews than Dispensary A, which focuses on three dimensions this particular set of customers did not focus on—*medicine*, *quality*, and the *process of production*.

We regarded a customer as within a dispensary's geographical market if she/he posted a review of a dispensary located within 30 miles of the focal dispensary (including the focal dispensary). We focus on each dispensary's geographical market to construct its targeted market for several reasons. Given continuing federal prohibitions against cannabis use and sales, the industry operates at a local level. Explorations of our dataset also suggest customer preferences differ by geographical region (see Appendix B). This variation is perhaps not surprising given the wide range in factors such as regulations, sociopolitical environments, and competitive conditions across the markets in our dataset. Further, as Appendix B illustrates, customer preferences change in different ways in different locations during our time period.

Our next outcome of interest is a dispensary's *hazard of survival*. We used a proxy for survival—a dispensary's continued listing on Weedmaps. This is only a rough proxy, since a dispensary could discontinue listing on Weedmaps because it finds the cost of listing to exceed perceived benefits. Yet, we believe it is reasonable to assume that a Weedmaps delisting generally indicates that a dispensary is struggling. As noted earlier, Weedmaps is one of the few avenues dispensaries have for reaching new customers (Burke, 2015; Hsu et al., 2018; Marijuana Business Daily, 2013). We tracked dispensaries until they ceased to list on Weedmaps; all surviving histories are right-censored at the end of our study period—June 2016. We set a dispensary's exit time to the month in which they were last listed on Weedmaps.

Our last two outcomes are the extent to which a dispensary *attracts new customers* and *appeals to them*. To measure the new customers a dispensary attracts, we calculated the monthly count of Weedmaps users who post a review of each focal dispensary for the first time. We measured a dispensary's appeal to new customers based on new customers' numerical rating of each dispensary on a scale of one to five stars. We calculated the average rating submitted by Weedmaps users evaluating a focal dispensary for the first time on a monthly basis.

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[4]The Jaccard measure focuses on the presence or absence of a preference dimension rather than its relative frequency within each text. We view the Jaccard measure as appropriate for comparing review texts, which tend to be relatively short in terms of overall length and number of dimensions referenced.

TABLE 3 Dispensary congruence with market consumers

Disp.	Self-description	Convenience	Medicine	Price	Product	Process	Quality of prod.	Service approach	Service security	With Disp. A	With Disp. B
		Dimensions mentioned								**Similarity scores**	
A	Our mission is to preserve the art of artisan medicinal cannabis. All of our strains are grown organically, with the highest quality nutrients.		Yes		Yes	Yes	Yes				
B	Fast and friendly service! Open late, with a great product selection and helpful budtenders. Come check us out!	Yes			Yes			Yes			
Cust.	**Review text**										
1	Good variety of product, but getting there was a hassle and long wait time.	Yes			Yes					1/5	2/3
2	Best budtenders. Super friendly and well informed. Ask for Judy!							Yes		0/5	1/3
3	Love the selection of strains. Fast service, amazing prices, great staff.	Yes		Yes				Yes		0/7	2/3
4	Shady place. Tried to push me into buying overpriced crap. Unprofessional--avoid this club!			Yes				Yes	Yes	0/7	1/5
5	Staff is nice and knowledgeable. Clean and comfortable atmosphere!							Yes		0/5	1/3
	Average similarity with reviewers									0.04	0.44

4.2 | Independent variables

4.2.1 | Customers with diverse organizational experiences

Our first independent variable is the extent to which a dispensary's customers have had prior experience with diverse types of dispensaries in the market, as reflected in their reviewing histories on Weedmaps. This measure focuses on diversity in the market-positioning claims of the dispensaries a customer visited in the past. A customer is regarded as more *diverse in organizational experiences* if the firms s/he reviewed were highly dissimilar from one another in terms of the preference dimensions referenced in their self-descriptions at the time of review. For each customer, we calculated the average pairwise similarities between the dimensions in the self-descriptions of all the dispensaries they have reviewed prior to the focal review. Each pairwise similarity is calculated as the correlation between the 1-by-16 vector of the dispensaries' self-descriptions, taken at the time the customer reviewed these dispensaries.[5] We reverse coded the average correlation to convert it from a similarity to a diversity measure. Table C1 provides examples illustrating the calculation of this measure.

4.2.2 | Changing market preferences

Our next i.v. is the rate of change in customer preferences within a dispensary's geographical market. For each month, we calculated a 1-by-16 vector of the proportion of customers that focused on each of the coded preference dimensions. Higher values for each dimension reflect greater interest in a dispensary's market along a particular dimension. This averaged vector reflects the preference-ordering profile within a dispensary's market. To calculate change in consumer preferences, we compared this to the preference-order profile within the dispensary's market 3 months prior. We calculated the correlation between the two vectors and then reverse-coded the correlation to assess the extent of change in market preferences. This measure was updated on a monthly basis.[6]

4.2.3 | Control variables

We include several variables to control for the effect of changes in dispensary characteristics, market size, and competitive pressures. Dispensary fixed effects control for characteristics that remain stable through our study period. Controlling for the lagged count of customers who have reviewed the focal dispensary helps isolate the impact of customers with diverse organizational experiences. While we do not have any a priori expectations of how the size of a dispensary's customer base will affect its congruence with market preferences, we expect new customers to be more likely to try out a

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[5]As noted earlier, dispensaries mentioned ~35 coded terms/phrases in their self-description on average. Given this length, we prefer a similarity metric such as correlation which takes into account the relative frequencies with which dispensaries mention each of the 16 coded preference dimensions in their self-descriptions.

[6]Table 4 shows that variation in this market preference change measure is low. There are two factors to note in interpreting this. First, we are studying change in preferences averaged across all customers within a dispensary's geographical market over relatively short spans of time (3 month windows). Changing overall preferences can be expected to result in relatively small changes in the weights assigned to different dimensions in most markets that have substantial reviewer counts. A change in preference order profiles is possible only if many reviewers in the market change the weights they assign to dimensions in similar ways. Second, the scope condition specified in Hypothesis 2 specifies that diverse customer organizational experiences benefit dispensaries most when they are located in that subset of markets in which customer preferences are changing more rapidly. Thus, while change may happen more gradually in most markets, our theory is expected to be most relevant for the subset in which preferences undergo more radical and rapid change.

TABLE 4 Summary statistics

Variable	Mean	Std. Dev.	Std. Dev. Within disp.	N disp.	N obs.
Disp. congruence w. market preferences	0.25	0.08	0.03	8,343	63,909
Monthly count of new customers	2.99	10.35	7.95	6,123	53,082
Monthly average rating, new customers	4.56	0.91	0.69	6,123	53,082
Dispensary distinct reviewers (ln, lag)	3.51	1.32	0.29	8,343	63,909
Inverse-weighted disp. density, (ln, lag)	3.61	1.06	0.15	8,343	63,909
Market customer base count, (ln, lag)	7.39	1.92	0.36	8,343	63,909
Dispensary tenure	1.79	1.45	0.39	8,343	63,909
Organizational chain	0.43	0.49	0.17	8,343	63,909
Prop. reviews dispensary replied to/100 (lag)	0.002	0.003	0.001	8,343	63,909
3 mo. market preference change (lag)	−0.99	0.04	0.02	8,343	63,909
Customer diversity in organizational experiences/100 (lag)	0.001	0.001	0.001	8,343	63,909
Cust. diversity in org. exp. × 3 mo. mkt. pref. change (lag)	2×10^{-06}	4×10^{-05}	3×10^{-05}	8,343	63,909
Violent crime per capita in county	2×10^{-03}	8×10^{-04}	8×10^{-05}	8,343	63,909

dispensary with a larger reviewer count since this may be viewed as an indicator of popularity or experience.

We also include a distance-weighted measure of local dispensary density lagged by 1 month. We follow Sorenson and Audia's (2000) measure, which weighs neighboring dispensaries by the inverse of their distance from the focal dispensary and sums those weighted values. The following formula describes the localized density measure for each dispensary *i*:

$$\mathrm{LD}_{it} = \sum\nolimits_{j \in \text{dispensary-at-time-}t} \frac{1}{\left(1 + d_{ij}\right)},$$

where *j* indexes all dispensaries in the focal dispensary's 30-mile radius and d_{ij} is the geographical distance (in miles) between the dispensaries. In our models estimating dispensaries' new reviewer counts, we control for logged count of consumers posting reviews in the dispensary's geographical market. A higher count of consumers in the same market, after controlling for local dispensary density, suggests that demand may exceed supply of legal cannabis and should positively impact the count of new reviewers for a given dispensary.

We control for a dispensary's tenure on Weedmaps (years since first listing on the website) and whether it is a member of a larger chain, as reflected in a shared email, phone number, or website with other dispensaries listed on Weedmaps.[7] We also control for dispensaries' proclivity to respond to the feedback provided by its existing set of customers by measuring the proportion of a dispensary's reviews that it posts a response to on Weedmaps. We expect dispensaries that are more responsive to online reviewers to be more congruent with market preferences, since they demonstrate a more active orientation toward customer feedback.

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[7]Different Weedmaps listings within the same chain (same email, phone number of website url) sometimes also share the same physical address and self-description. Because these appear to be multiple listings for the same organization, we only retained one of the listings in such cases.

TABLE 5 Cross-correlation table

Variables	1	2	3	4	5	6	7	8	9	10
1. Disp. congruence w. market preferences										
2. Monthly count of new customers	−0.02									
3. Monthly average rating, new customers	−0.04	0.04								
4. Disp. distinct reviewers (ln, lag)	−0.02	0.18	−0.03							
5. Inverse-weighted dispensary density (ln, lag)	−0.24	0.06	0.06	0.08						
6. Market customer base count (ln, lag)	−0.32	0.07	0.09	0.08	0.89					
7. Dispensary tenure	0.02	−0.03	−0.09	0.52	−0.02	−0.10				
8. Organizational chain member	−0.06	−0.05	0.03	−0.32	0.21	0.23	−0.17			
9. Prop. reviews dispensary replied to (lag)	0.00	−0.02	0.03	0.05	−0.01	0.02	0.01	−0.01		
10. 3 mo. market preference change (lag)	0.04	−0.02	−0.02	−0.06	−0.36	−0.41	0.02	−0.00	−0.03	
11. Customer diverse org. experiences (lag)	−0.04	0.02	−0.02	0.02	0.02	0.04	0.01	−0.03	−0.00	−0.03

All time-variant variables are lagged by 1 month. Table 4 presents descriptive statistics and Table 5 presents pairwise correlations for key variables in the reported analyses.

5 | PRELIMINARY ANALYSES

A key premise underlying Hypotheses 1 and 2 is that experiential diversity leads customers to develop richer, more diverse understandings of preference dimensions in a given market (Weigelt & Sarkar, 2009). Before our hypothesis testing, we conduct analyses exploring the validity of this premise. First, we examine whether experientially diverse reviewers provide feedback that is more representative of the preference dimensions customers in a given market focus on. For each reviewer, we calculated each reviewer's *market congruence* as the average Jaccard similarity between the reviewers' preference dimension set and the set of every other customer in its same geographical market. A higher congruence score indicates that a reviewer mentions preference dimensions that other customers reflect on more in their reviews.

Next, we examine whether experientially diverse reviewers provide feedback that is more *informationally diverse*, as reflected in the following Simpson diversity index of coded preference dimensions referenced in each review: $\text{Diversity}(b) = 1 - \sum_{i=1}^{S} p_{b,i}^{2}$, where $p_{b,i}$ reflects the proportion of codes under dimension i relative to the total number of dimensions mentioned in customer b's review. This index takes into account both the number of different dimensions referenced as well as how evenly discussion of different dimensions is distributed across the review. This measure ranges 0–0.89, with higher values indicating greater diversity in and evenness of mentions across preference dimensions (see Table C2, for the calculation of informational diversity for a sample review).

Lastly, we examine whether the feedback provided by experientially diverse reviewers is higher in construal level relative to reviewers who lack experiential diversity (Wiesenfeld, Reyt, Brockner, & Trope, 2017). Construal level theory distinguishes between concrete or lower-level construal, that is "relatively unstructured, contextualized representations that include subordinate and incidental

T A B L E 6 Fixed effects regression estimates of customers' feedback characteristics

Variables	Congruence		Informational diversity		Construal	
	(1)	(2)	(3)	(4)	(5)	(6)
Count of dispensaries visited (ln)	−0.013	−0.015	−0.015	−0.019	−0.015	−0.010
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Diversity in organizational experiences		0.007		0.020		0.013
		(0.022)		(0.000)		(0.039)
Constant	0.503	0.503	0.486	0.486	0.486	2.512
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Num.(observations)	203,848		274,130		274,130	
Num.(customers)	147,839		191,230		191,230	

Note: p-values in parentheses. All covariates lagged by 1 month.

features" and higher-level construal—"schematic, decontextualized representations that extract the gist from the available information" (Trope, Liberman, & Wakslak, 2007: 83). Higher construal level feedback indicates a broader, more integrative perspective on market experiences as compared to the more specific, detailed, and narrowly focused evaluations associated with lower construal levels (Wiesenfeld et al., 2017). An advisor who provides higher level feedback is more likely to be regarded as an expert, which in turn increases the likelihood recipients will follow his advice (Reyt, Wiesenfeld, & Trope, 2016). Appendix C describes how construal level is calculated.

In Table 6, we present review-level models that estimate the impact of diversity in prior organizational experience on customers' feedback to dispensaries. We estimate a fixed effects panel specification at the customer level to control for time-invariant differences in feedback across customers, allowing us to estimate change in a customer's feedback characteristics after experiencing diverse organizational types. Since we seek to understand how diversity in prior experiences shapes reviewers' perspectives, we compare the effects of diverse versus sheer organizational experience with cannabis dispensaries (measured as the count of dispensaries each customer has reviewed in the past) on reviewer feedback characteristics in our estimation.

In Model 1, we first estimate the effect of sheer experience with dispensaries on a reviewer's congruence with preference dimensions held by customers in the broader market. In Model 2, we add in diversity of prior organizational experiences. The results suggest that diversity in organizational experiences increases a reviewer's congruence with the broader market, while sheer experience by itself decreases it. Parallel models are estimated for informational diversity (Models 3 and 4) and construal level (Models 5 and 6) of consumers' review text. Overall, these results suggest that diversity in prior organizational experiences allows customers to provide higher level, more diverse feedback that is more representative of preferences held in the broader market than the feedback provided by other types of customers.

6 | MAIN MODELS: ESTIMATION METHODS

We employ statistical methods to rule out omitted variable biases that may account for a correlation between congruence and consumer experience diversity that does not stem from our causal arguments. One concern is that dispensaries that have the competencies to gather market information and

TABLE 7 Fixed effects regression estimates of dispensary congruence with market preferences

Variables	(1) 1	(2) 2	(3) 3	(4) 4	(5) Spline
Dispensary distinct reviewers (ln)	0.005	0.005	0.005	−0.001	0.005
	(0.000)	(0.000)	(0.000)	(0.787)	(0.000)
Inverse-weighted dispensary density (ln)	0.017	0.017	0.018	0.027	0.017
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Market customer base count (ln)	−0.015	−0.015	−0.015	−0.018	−0.014
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dispensary tenure	−0.009	−0.009	−0.009	−0.013	−0.009
	(0.033)	(0.033)	(0.033)	(0.004)	(0.030)
Organizational chain member	−0.001	−0.001	−0.001	−0.008	−0.001
	(0.077)	(0.077)	(0.077)	(0.006)	(0.084)
Prop. reviews dispensary replied to	1.274	1.274	1.276	1.042	1.261
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Customer diversity in organizational experiences		−0.005	0.037	−0.456	−0.246
		(0.965)	(0.740)	(0.055)	(0.185)
3 mo. market preference change	−0.070	−0.070	−0.061	0.008	
	(0.000)	(0.000)	(0.000)	(0.787)	
Cust. diversity in org. experiences × 3 mo. market pref. change			15.970	15.646	
3 mo. market preference change: medium			(0.000)	(0.000)	−0.002
					(0.000)
3 mo. market preference change: high					−0.007
					(0.000)
Cust. diversity in org. experiences × 3 mo. market pref. change: med.					0.134
					(0.579)
Cust. diversity in org. experiences × 3 mo. market pref. change: high					0.782
Inverse mills				−0.180	(0.006)
				(0.019)	
Month dummies and dispensary-level FE	Included in all models				
Constant	0.249	0.249	0.249	0.402	0.252
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	63,909	63,909	63,909	63,909	63,909
R-squared	0.061	0.061	0.061	0.061	0.060
Number of dispensaries	8,343	8,343	8,343	8,343	8,343

Note: p-values in parentheses. All covariates except tenure and organizational chain membership are lagged by 1 month.

respond to environmental changes may also attract customers who patronize diverse competitors. We control for such firm level capabilities by including fixed effects at the dispensary level. These fixed effects also control for variation across geographic locations.

Several measures control for trends that may better enable organizations to attract diverse customers and maintain congruence with the market: increasing tenure, the accumulation of more customers, increasing market competition, and increases in dispensaries' proclivity to respond to customer feedback. We also run supplemental analyses to rule out additional processes that may create an association that we mistakenly attribute to the effect of diverse-experience customer feedback on dispensary congruence: diversity of preferences across different customers, rate of feedback from customers new to Weedmaps, heterogeneity in market demand, and changing position vis-à-vis competitors in demand and product space.

Another estimation concern arises because market congruence increases organizational performance, including likelihood of continued listing on Weedmaps (see Table 8). That is, incidental

TABLE 8 Dispensaries' hazard of survival and attraction/appeal to new customers

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Survival Cox model		New customer count Poisson (FE)		New customer ratings linear (FE)	
Disp. congruence with market preferences	0.149	0.145	0.620	2.591	0.188	0.839
	(0.008)	(0.010)	(0.000)	(0.000)	(0.057)	(0.000)
Inverse-weighted dispensary density (ln)	−0.080	−0.086	−0.306	−0.796	0.147	−0.018
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.764)
Market customer base count (ln)	0.033	0.040	0.234	0.361	−0.012	0.029
	(0.000)	(0.000)	(0.000)	(0.000)	(0.273)	(0.080)
Dispensary tenure	0.041	0.039	0.186	0.566	−0.350	−0.219
	(0.000)	(0.000)	(0.041)	(0.000)	(0.005)	(0.094)
Dispensary distinct reviewers (ln)	0.050	0.052	0.224	1.045	−0.041	0.237
	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)	(0.005)
Organizational chain member	0.056	0.058	0.126	0.808	0.028	0.243
	(0.000)	(0.000)	(0.000)	(0.000)	(0.134)	(0.000)
Violent crime per capita in county		−28.463				
		(0.000)				
Inverse mills				7.534		2.343
				(0.000)		(0.001)
Constant					4.410	2.332
					(0.000)	(0.000)
Month dummies and dispensary-level FE	No	No	Yes	Yes	Yes	Yes
Observations	63,906	63,906	53,082	53,082	49,811	49,811
R-squared					0.010	0.010
Number of dispensaries	8,343	8,343	6,123	6,123	6,123	6,123

Note: Robust *p*-values in parentheses; SE for Cox model clustered at the dispensary level.
All covariates except tenure and organizational chain membership are lagged by 1 month.

truncation may bias our estimates, since incongruent firms are more likely to drop out of the sample. We address this concern by using a generalization of Heckman's two-step estimator (Heckman, 1976), described by Lee (1983). We adopt a nonparametric approach to modeling sample selection, using Cox regressions (Delmar & Shane, 2003; Mitsuhashi, Shane, & Sine, 2008). We use violent crime rates per population as an exclusion restriction. This is a local variable that strongly affects survival of firms but is not significantly correlated with their market congruence ($r = -0.11$). After running this Cox regression, we calculated the inverse Mills ratio (lambda), based on the linear prediction of the hazard for continued listing on Weedmaps. We added this variable to models of new customer counts and ratings. We use similarly constructed inverse Mills ratios in our models predicting congruence (Table 7). These results remain robust to using Probit to estimate the selection equation, as originally proposed by Heckman (1976).

7 | RESULTS

7.1 | Dispensary congruence with market preferences

In Table 7, we examine the effects of experientially diverse customers on the congruence of dispensaries' market-positioning claims with the preferences held by consumers in their geographical market. We center independent variables around the global mean.

Model 1 presents a baseline model with controls at the dispensary and market levels. Dispensaries with greater tenure tend to be less congruent with market preferences, while those with a greater proclivity to reply to reviewer feedback tend to be more congruent. Market-level controls show that dispensaries in markets with a larger number of consumers posting reviews tend to be less congruent, while those facing greater competitive density tend to be more congruent. Model 1 also shows that greater change in market preferences over the past 3-month period has a negative effect on congruence. This suggests that, in more quickly changing markets, dispensaries are more likely to become out of sync with audience preferences. In Model 2, we do not find a main effect of customer diversity in organizational experiences.

In Model 3, we interact a dispensary's count of experientially diverse customers with the rate of market preference change. The main effect of feedback from experientially diverse customers remains nonsignificant, while the interaction of experientially diverse customers with market preference change is positive ($p < .001$). We thus find support for H2—the effect of experientially diverse customers on dispensary congruence with market preferences is greater in more rapidly changing demand landscapes. Including the inverse Mills ratio to account for incongruent dispensaries dropping out of the sample does not change our main result (Model 4). Thus, it appears that the benefit of experientially diverse customers on dispensary congruence manifests in markets with greater change in customers preferences (but not, on average, in all markets, as proposed in H1).

To help illustrate the main relationships in our data, we conduct a spline model that categorizes markets as experiencing *low*, *medium*, versus *high* rates of overall preference change. Markets in the bottom quartile of our overall distribution of preference change rates were treated as *low* in their rate of market preference change; markets in the 25th to 75th percentile had a *medium* rate of change, while those in the top quartile had a *high* rate of change. We represent these through dummy indicators and estimate effects for *medium* and *high* change markets relative to the omitted category of *low* change markets in Table 7, Model 5. This model shows the effects of interacting customer diversity in organizational experiences with these different levels of market preference change. The marginal effects of customer diversity in organizational experiences in these different market contexts are

illustrated in Figure D1. This shows that, in markets experiences low and medium rates of change in preferences, exposure to customers with diversity in organizational experiences does not have any significant effect on a dispensary's predicted congruence with broader market preferences. In contrast, in markets with high rates of overall preference change, customer experiential diversity significantly increases predicted dispensary congruence. Overall, this suggests that customer diversity in organizational experiences does not have any benefit (or drawback) for dispensary congruence with local market preferences in slower-moving markets. It is in quickly changing markets where feedback from customers with diverse organizational experiences appears to matter for firm congruence with broader preferences. This is again consistent with Hypothesis 2.

7.2 | Dispensary continued listing and growth

Table 8, Models 1 and 2, estimate the effect of a dispensary's congruence with market preferences on its hazard of continued listing on Weedmaps. We use the Cox proportional-hazards model, which controls for right censoring, to estimate the rate of continued listing (Kalbfleisch & Prentice, 1980) and cluster standard errors at the dispensary level. In support of Hypothesis 3a, we find that greater congruence improves a dispensary's likelihood of continued listing. We also find that longer tenure, a greater number of reviewers, and membership in an organizational chain, all improve the hazard of continued listing. At the market-level, having more consumers in the local market improves a dispensary's hazard of continued listing, while greater local competition decreases it.

In Models 3–6, we estimate the monthly count of reviewers rating the dispensary for the first time and average rating submitted by new reviewers.[8] We estimate the monthly count of reviewers rating a dispensary for the first time using a Poisson specification with fixed effects at the dispensary level. In Models 4 and 6 we include the inverse Mills ratio to correct for incidental truncation, while Models 3 and 5 provide the unadjusted estimates. In line with prior statistical research on sample selection bias (Achen, 1986: 79–81), we find that the estimates in the selected sample underestimate the real effect size because the sample selection criterion is positively correlated with our dependent variables. In support of Hypothesis 3b, we find that lagged dispensary congruence with market preferences has a positive impact on the count of new reviewers. Based on the estimates in Model 4, a one SD increase in dispensary congruence with market preferences leads to an expected 21% increase in new customer count.

Dispensary- and market-level controls show patterns similar to effects for the continued-listing analyses. Higher competitive pressures (lagged competitor density) decreases the count of new reviewers, while a larger base of consumers in the market increases this count. Meanwhile, dispensaries with longer tenure on Weedmaps, dispensaries that are members of a larger chain, and dispensaries that have a larger base of existing reviewers attract more new reviewers.

In Models 5 and 6, we estimate the impact of dispensary congruence with market preferences on the average rating submitted by reviewers new to a dispensary. We find a positive effect of dispensary congruence on how appealing on average new reviewers find the focal dispensary (supporting H3b). According to the estimates in Model 6, a one SD increase in dispensary congruence with market preferences leads to an expected 2.9% increase in average rating. Overall, dispensaries whose market-positioning claims are more congruent with market preferences survive longer, bring in a greater number of new consumers, and are generally more appealing to those consumers.

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[8]Models 2–5 only include a subset of the dispensaries in our total sample, because fixed effects specifications exclude dispensaries that acquire no new reviewers during the entire observation window.

7.3 | Supplementary analyses

We conduct a series of supplementary analyses that explore key assumptions underlying and potential alternatives to our main finding that exposure to experientially diverse reviewer feedback increases a dispensary's congruence with market preferences. Due to space constraints, these are presented and described in Appendix D. We also provide an example from our sample to help illustrate in a concrete fashion how a dispensary might change in response to its reviewers to increase its congruence with the broader market in Appendix E.

8 | DISCUSSION

In changing demand contexts, organizations that adapt to their shifting preference landscape are more likely to be successful. Yet, a key challenge to achieving congruence with changing consumer preferences is to collect information that can be used to adjust current actions (Claussen, Essling, & Peukert, 2018). Local learning from feedback on current actions will not be optimal in changing markets (Adner, 2002; Christensen, 1997; Gavetti & Warglien, 2015; Levinthal & March, 1993; Tripsas, 2008). Instead, organizations need to rely on diverse information to help them explore (March, 1991). Our findings indicate that customers who have had diverse experiences themselves are a viable source of useful information for firms. We show evidence that reviewers with more diverse experiences provide higher level, more diverse feedback that is more representative of preferences held in the broader market than the feedback provided by other types of customers. In turn, firms with feedback from experientially diverse customers exhibited greater congruence with changing market preferences.

8.1 | Limitations and scope conditions

Our findings have several limitations. First, our causal identification of the relationship between diverse customer experience and a firm's subsequent market congruence is not conclusive. To address potential issues with reverse causality and spurious correlation, we use a lagged structure, dispensary-level fixed effects, and time-varying controls. We use Heckman's two-step correction to address selection bias due to incidental truncation. Still, we cannot rule out time-varying unobserved heterogeneity or generalize to the population of dispensaries beyond those we are able to observe from the Weedmaps website. An ideal structure for testing the relationship between customer experience and firm congruence would be, for example, to exogenously vary diversity of customer experience. Given the natural restrictions of our dataset, further investigation of this issue is needed.

Second, organizations receive customer feedback in a number of ways besides online reviews, and there are many reasons why customers choose to post or to not post feedback online (Berger, 2014). Thus, online reviews present a selective portion of the total feedback received by dispensaries. Still, we see no reason to believe that the differences between online and other forms of feedback differ in any systematic way across dispensaries. Weedmaps plays a key role in facilitating interactions between dispensaries and customers in the legal cannabis industry, and we find that the feedback provided by customers with diverse organizational experience conveys valuable information for dispensaries seeking to keep up with a changing demand landscape.

Another possible limitation concerns the relatively short time period studied. While 2 years may seem too short for some industries, in these 2 years the legalized cannabis industry has grown considerably, with new consumers and producers flooding the market. Reports suggest the U.S. cannabis

industry grew from ~\$1.5 billion in annual legalized sales in 2013 (Mullaney, 2013) to ~\$6.7 billion in 2016 (Yakowicz, 2016). A 2-year timeframe thus appears sufficient for studying organizational actors' adaptation to rapidly changing market preferences.

A potential limit to generalization of our findings arises from the nature of market change we studied. Prior research investigating the impact of changes in demand on organizational adaptation has focused on exogenous shocks to technology or market structures that create major misalignment in customer preferences (e.g., Anderson & Tushman, 1990; Barnett, 1990; Bradley, Aldrich, Shepherd, & Wiklund, 2011; Christensen, 1997; Haveman, 1992; Miner, Amburgey, & Stearns, 1990). In contrast, we have compared organizational adaptation in markets where changes are continuous and typically, gradual. This is likely to have at least two implications for adaptation to customer feedback: First, organizations may have a harder time recognizing that the market is changing. Second, experiences of existing customers are likely to retain some relevance despite market changes. We found that, across markets and time, the benefit firms derive from experientially diverse customers is realized only in more rapidly changing demand landscapes. While we expect preference change to be rapid in many newly emerging markets or those undergoing substantial change in product features, future research in other contexts is needed to examine whether our results generalize. Future research should also explore the applicability of our novel measure of market preference change to other market contexts.

Relatedly, our theory and empirical analysis may not reflect the experience of specialist organizations, since we study each dispensary's congruence with its geographical market rather than specific segments within it. Our supplementary analyses suggest that any benefit of such customers will be limited for specialists relative to generalists. Future research is needed to better understand the kinds of customers that benefit specialists in changing markets.

Contributions and future directions

Our theoretical framework and empirical approach tie research on organizational fitness (e.g., Hannan & Freeman, 1977; Le Mens et al., 2014) to the organizational learning and adaptation literatures, which recognize that local learning often leads to lock-in and other forms of nonoptimal search (e.g., Adner, 2002; Christensen, 1997; Gavetti & Warglien, 2015; Levinthal & March, 1993; Tripsas, 2008), as well as outdated cognitive representations of rapidly changing markets (Tripsas & Gavetti, 2000). We find evidence that organizations can mitigate the negative effect of changing preferences if they receive feedback from customers who have had exposure to a diverse set of providers. The disadvantage of local embeddedness depends on the specific audiences and their relationship to the rest of the market landscape (Uzzi, 1997).

Information conveyed through experientially diverse customers represents an important mechanism for adaption for the many organizations that lack the resources and/or capacity to engage in formal exploration. Research generally suggests that, without a deliberative mechanism for exploration, such organizations will fall to the self-reinforcing bias of local exploitation, repeating the same strategic actions they have engaged in in the past. Further, organizations that try to learn from other organizations through observation alone are faced with the difficult questions of how to determine which other organizations and which of their practices to attend to (Baum et al., 2000; Manz & Sims, 1981), and identifying the most useful examples (Denrell, 2003; Kim & Miner, 2007; Terlaak & Gong, 2008). Our paper suggests a potential pathway through which organizations may manage to keep up with the changing market, and in doing so we identify an important source of market feedback that blends the advantages of experiential and exploratory learning. It also complements

existing work on the emergent processes through which entrepreneurs in nascent industries characterized by uncertain, shifting demand landscapes can attempt to learn and adapt to changing consumer preferences (Anthony et al., 2016; Shah & Tripsas, 2007).

Our study adds to literature on how cognitive schemas that shape strategic positioning and competition evolve through social interaction in firms and markets (e.g., Deephouse, 1999; Peteraf & Shanley, 1997; Porac & Thomas, 1990). We find that the market information that informs firms' cognitive models of the landscape is collected partly from existing customers. This finding complements prior work on how relationships with stakeholders impact tendencies to engage in local versus distant search (Gambeta, Koka, & Hoskisson, 2018).

Our findings raise important questions for future research on how customer feedback supports adaptation. Our study suggests that organizations can learn from the experiences of other organizations through the feedback they get from their own customers. This suggests that experiential and vicarious learning need not rely on separate sources of information even though they may constitute different mechanisms of learning (Posen & Martignoni, 2018). Further research is needed to study learning from customer feedback in depth, to understand what it is specifically that organizations learn from customers with diverse experiences. We find evidence that firms getting feedback from customers with diverse experiences are more likely to change how they present themselves, suggesting that feedback diversity is helping firms by increasing exploration. It is also possible that firms getting more diverse feedback engage in smarter exploration because they develop more accurate representations of the demand landscape. Future research on mental representations that drive adaptive behavior can speak to this question.

Much of the literature on organizational adaptation to demand landscapes relies on simulation studies (Baumann, Schmidt, & Stieglitz, 2019). One of our key contributions has been to develop several methodological innovations that enabled us to construct detailed measures of both the evolving demand landscape and organizations' self-positioning efforts from observational data. First, we developed a unique approach to coding the market-positioning statements of dispensaries and the content of customer evaluations that combined a grounded understanding of the study context with the automation necessary to classify a large number of textual documents. This allowed us to model key distinctions that matter to audience members in our empirical context. Second, we developed new text-based measures to assess the congruence between organization's market-positioning claims and the preferences expressed through customers' online feedback. Third, we developed measures for assessing increasing change in the distribution of consumers' preferences within a market. Given the increasing availability of these kinds of archival text in online markets, we believe that our empirical approach will be directly applicable to other settings and for other research questions.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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