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The commercialization of volunteer contributions in digital platforms

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THE COMMERCIALIZATION OF VOLUNTEER CONTRIBUTIONS IN DIGITAL PLATFORMS

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To my family, whose unconditional love, support, and belief in me made it possible for me to embark on this academic journey at a more seasoned age.

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ABSTRACT

Digital platforms increasingly rely on the unpaid contributions of volunteers to build, maintain, and scale their products and services. While such contributions generate substantial economic value, the commercialization of volunteer work raises critical questions about organizational control, contributor agency, and community sustainability. This dissertation investigates how commercialization efforts reshape contributor behavior and platform-community dynamics across different stages of monetization, drawing on quantitative case studies of monetization events that took place at two organizations: the Huffington Post and Duolingo.

The first study examines Duolingo, considering an increasingly common practice in platform governance, wherein the operator transitions from volunteerism to a model of paid employment, in preparation for an eventual sale or public offering. Focusing on Duolingo's internal professionalization strategy, I analyze detailed activity logs and internal records from the Duolingo Incubator to investigate how pre-existing organizational commitment shaped volunteers' decisions to apply for paid roles and their subsequent productivity once hired. While all three forms of commitment—continuance, affective, and normative—influenced these outcomes, continuance commitment—defined as sustained

engagement motivated by the perceived benefits of staying and the costs of leaving—emerged as the strongest predictor of both application behavior and post-hire performance. In contrast, affective commitment, while associated with a desire to stay involved, did not consistently translate into productivity under formal employment arrangements.

The second study examines a second form of commercialization event: acquisition. Examining panel data on contributor activity surrounding the announcement of AOL's acquisition of *The Huffington Post*, I apply a dynamic difference-in-differences approach to understand causal effects on different groups of contributors. I find that the acquisition led to a significant decline in article submissions, particularly among unpaid contributors and specifically contributors working as professional journalists. These heterogeneous effects offer insight into the underlying mechanisms of contributor disengagement, highlighting how perceived violations of community norms—rather than the acquisition itself—drive withdrawal. Further, the results highlight the critical role of worker identity as a driver of volunteers' response to commercialization events.

I conclude by discussing open questions in this space and identifying fruitful avenues for future research. Together, these studies advance our understanding of how commercialization reshapes the social contract between digital platforms and their contributors, offering both theoretical and practical insights for platform governance and emphasizing the importance of managing contributor relationships during key organizational transitions.

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CHAPTER ONE

The Commercialization of Volunteer Contributions in Digital Platforms

1.1 Introduction and Background

Many digital platforms have utilized online volunteers to create substantial economic value (e.g., Moon & Sproull, 2008; Levine & Prietula, 2014). The Huffington Post initially relied on free content created by unpaid contributors after its inception in 2005, and was later purchased by AOL for $315 million; Viki, a global video streaming platform, crowdsources video subtitles across 160 languages via a volunteer community and was reportedly valued at $200 million when it was acquired by Rakuten in 201; Duolingo, a popular language learning app, recruited volunteers to create and maintain many language courses, and it was valued at $2.4 billion in its last private funding round before going public; Quora, a community-based question-and-answer website, relies on volunteer contributors to answer users' questions and was reported to be valued at $2 billion in its last private funding round in 2019; similarly, Stack Overflow, a question-and-answer website for programmers, which has long depended on the free contributions of community members, was acquired by Prosus for $1.8 billion in 2021.

Unlike peer production communities such as Wikipedia or open-source software projects (e.g., Linux, Apache)—which are typically governed by nonprofit entities and have been extensively examined in the literature (for a review, see von Krogh et al., 2012)— the contribution-dependent commercial platforms listed above are categorically different. They are founded as for-profit ventures, backed by venture capital, with the

explicit goal of achieving rapid growth and delivering investor returns through IPOs or acquisitions (Thiel & Masters, 2014). Table 1 summarizes the funding histories and valuations of the firms that govern these platforms, illustrating their economic significance and commercial orientation. As Figure 1 also illustrates, these firms have followed trajectories shaped more by financial imperatives—such as investor expectations and scalable growth—than by community-driven governance. In many cases, the early and sustained contributions of volunteers played a pivotal role in enabling platforms to develop core offerings, attract users, and achieve market legitimacy—foundational steps that helped position them for later expansion, portfolio diversification, and revenue generation. Yet, despite their central role in this formative stage, volunteers' efforts are often commercialized without their consent, involvement in governance, or participation in the resulting financial gains—frequently prompting backlash, public criticism, or even legal action (Lee et al., 2025).

Platform	**Total VC Funding**	**Valuation**
Huffington Post	$37 million	$315 million in 2011 (Acquired by AOL)
Viki (Rakuten)	$24.3 million	$200 million in 2013 (Acquired by Rakuten)
Duolingo	$183.3 million	$9.5 billion in 2023 (IPO)
Stack Overflow	$153 million	$1.8 billion in 2021 (Acquired by Prosus)
Quora	$301 million	$2 billion in 2019 (Last private valuation)
Reddit	$1.3 billion	$10 billion in 2021 (IPO in 2024)

Table 1. Funding History and Valuation of Contribution-Dependent Commercial Platforms

Despite the economic importance of these platforms, little scholarly attention has been paid to the volunteer contributors who sustain them. These individuals occupy a distinct position in the organizational ecosystem: they are neither formal employees nor passive users, but active contributors whose time, expertise, and sustained effort help build and maintain core products and services (Lee et al., 2025). Unlike online reviewers or casual contributors whose efforts are often one-off and unstructured, or influencers on platforms like TikTok or YouTube whose input is transparently tied to direct monetization (e.g., advertising revenue or sponsorships based on views and engagement), the contributors examined in this dissertation engage in structured, ongoing work without clear economic incentives or contractual arrangements. Their efforts often mirror the regularity and responsibility of formal employment, yet they remain outside traditional labor classifications.

Enabled by advances in information technology and digital infrastructure (Kraut et al., 2010), these contributors represent an emergent and under-recognized stakeholder group—distinct from both paid workers and participants in community-governed peer production models. Yet despite their sustained and structurally significant involvement, their contributions are frequently commercialized without tangible remuneration, decision-making power, or formal recognition. Given the for-profit nature of contribution-dependent commercial platforms—and the substantial cost savings they derive from unpaid labor, particularly during early-stage growth—these volunteers warrant closer examination. Understanding who they are, how they contribute, and how they respond to commercialization pressures is critical for advancing both theory and practice in platform

governance and digital labor.

This dissertation represents an effort to examine an important but underexamined phenomenon: the commercialization of unpaid volunteer contributions in for-profit digital platforms. At the heart of this phenomenon lies a seemingly paradoxical situation: volunteers contribute their time and expertise to for-profit companies, only to react negatively when these companies attempt to monetize those contributions. While much remains to be explored about the dynamics between volunteers and firms, this study responds to recent calls in the Information Systems literature for *phenomenon-focused problematization*—that is, developing theoretical insights grounded in pressing empirical puzzles rather than solely in theoretical gaps (Monteiro et al., 2022). Specifically, I problematize the emerging organizational form in which digital platforms recruit and rely on volunteers to build core services, only to later monetize their contributions without offering tangible remuneration or decision-making power (Lee et al., 2025). In addition, it aligns with broader efforts to reorient digital innovation research toward questions of *value capture, allocation,* and *justice* in digital ecosystems (Yoo et al., 2024). As Yoo et al. (2024) write "The fruits of innovation are disproportionately enjoyed by a privileged few… We call for more research on value capture and allocation among different stakeholders in the digital ecosystem." In that spirit, this dissertation seeks to make modest but meaningful contributions to our understanding of volunteer contributors—an often overlooked and under-theorized stakeholder in commercial digital platforms—as well as the dynamics of digital labor, platform governance, and organizational hybridity.

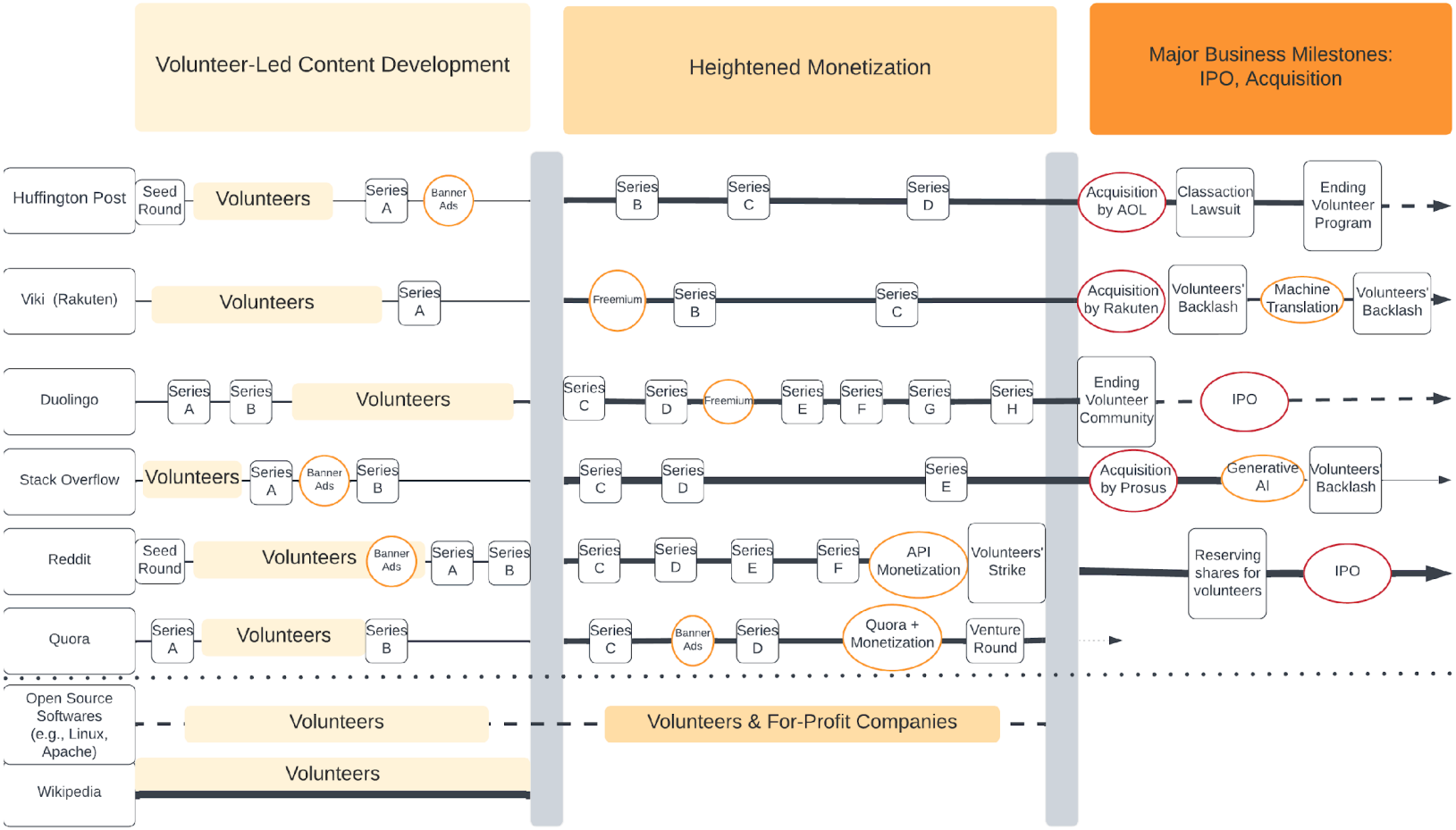


Figure 1. Organizational Trajectories of Contribution-Dependent Commercial Platforms vs. Nonprofit Peer Production Models

1.2 Commercialization in Contribution-Dependent Digital Platforms

Digital platforms are commonly defined as enablers of value-creating interactions between external producers and consumers (Constantinides et al., 2018). This definition accounts well for app-based innovation ecosystems (e.g., iOS, Android) and transaction-based services (e.g., Airbnb, Uber), but it overlooks a growing category of platforms that rely on unpaid contributors to build and maintain core products and services. These contributors occupy an ambiguous position: they are neither formal employees nor traditional end-users, but external value-creators whose sustained, skill-intensive labor is central to the platform's functionality and growth. Yet despite their critical role, they are often excluded from formal governance, compensation, or value-sharing arrangements. I refer to this emerging organizational form as contribution-dependent digital platforms—a subcategory of digital platforms that rely structurally on unpaid volunteer contributions to develop key digital artifacts, while systematically excluding those contributors from the economic value they help generate. This category raises the need to problematize dominant assumptions in the platform literature and to better account for the appropriation and commercialization of unpaid contributions in for-profit contexts (Monteiro et al., 2022). Understanding how these platforms commercialize unpaid labor requires a clear conceptualization of commercialization itself.

Formally, I define commercialization as a process through which for-profit platforms extract or position themselves to extract financial value from volunteer-generated contributions. This process includes two analytically distinct but interrelated

components: (1) Commercialization enablers—organizational and governance shifts that make unpaid contributions more controllable or translatable into proprietary assets (e.g., replacing unpaid contributors with paid workers, consolidating control over content, or internalizing IP rights), and (2) Monetization mechanisms—the direct conversion of community-generated value into revenue through strategies such as display advertising, freemium pricing, or API licensing. While not strictly sequential, platforms often undergo substantial strategic restructuring—such as governance consolidation or labor formalization—in advance of major business milestones, such as acquisitions or public offerings. In this sense, commercialization captures both the extraction of value and the organizational transformations that convert unpaid labor into firm-controlled capital.

1.2.1 Case Selection and Analytical Approach

Following a theory-building approach grounded in comparative case analysis (Eisenhardt & Graebner, 2007; Siggelkow 2007), the framework draws on cases from high-profile platforms—*The Huffington Post*, *Duolingo*, *Viki*, *Stack Overflow*, *Quora*, and *Reddit*. These platforms were purposefully selected based on two criteria: (1) each platform was founded as a for-profit venture rather than nonprofit initiatives and (2) each relied structurally on unpaid contributors to create value central to the platform's functionality. This purposeful sampling strategy (Patton, 2002) enables conceptual generalization by selecting information-rich cases that illuminate the commercialization of volunteer contributions—an issue central to this inquiry. These platforms stand in contrast to nonprofit-governed, community-driven projects such as Wikipedia or Open-Source

Software projects (e.g., Linux or Apache), which operate under different institutional logics and growth pathways (Benkler & Nissenbaum, 2006) and are therefore excluded by design.

To construct the typology, I conducted a cross-case comparison of these platforms' commercialization trajectories. This included reviewing public records, media reports, archival material, and prior research, as well as conducting fieldwork and interviews in selected cases. While formal coding procedures were employed—particularly for the Duolingo case and select comparative materials—the coding details are not included in this dissertation for the sake of focus and clarity. Instead, the typology presented here is the product of cross-case pattern recognition and conceptual abstraction. The detailed typology of commercialization, which conceptualizes commercialization as a multi-stage process encompassing not only direct revenue-generating strategies but also the organizational transformations that enable such strategies, is available in Appendix A. Appendix B provides an overview of the archival and documentary sources that informed the analysis.

1.3 Volunteers' Responses to Commercialization: Setting the Stage for Two Empirical Studies

Contribution-dependent digital platforms engage in increasingly complex strategies to appropriate value from unpaid contributions. The commercialization processes not only reshape internal governance structures and monetization models but also transform the social and economic position of volunteers. Once central to platform development, unpaid contributors often find themselves marginalized or displaced as firms assert control over digital artifacts, introduce monetization layers, or pursue financial exits such as

acquisitions and IPOs. While it is intriguing that volunteers choose to contribute to for-profit platforms in the first place—sometimes with incomplete awareness that their work might be commercialized, or without fully anticipating the implications—an even more puzzling phenomenon is the heterogeneity of their reactions once commercialization becomes visible. As platforms grow and their owners or investors begin to capture substantial economic value from volunteer contributions, some volunteers accept commercialization as a natural evolution for for-profit firms, while others experience a growing sense of disillusionment, resistance, or disengagement.

This seemingly paradoxical organizational form—where for-profit businesses generate economic value through the labor of unpaid contributors without offering formal recognition, compensation, or a share in the resulting gains—raises a host of theoretical and practical questions. Among these, two stand out as particularly salient: How do platforms navigate the transition from community-driven production to profit-driven operations? And how do contributors respond to different forms of commercialization—through loyalty, resistance, disengagement, or organized backlash (Hirschman, 1970)? These questions remain open and merit closer examination.

This dissertation advances this inquiry by focusing on the factors that drive volunteers' responses to different types of platform commercialization efforts. It examines two distinct forms of monetization events, each shaped by its own contextual nuances and volunteer populations. Chapter 2 examines Duolingo’s professionalization process—a governance shift from an open volunteer model to a closed, paid employment structure, whereby unpaid volunteer roles were formalized or replaced by paid positions to reduce

uncertainty, consolidate control over digital assets, and prepare the platform for future business milestones such as an IPO. Drawing on internal data from a contribution-dependent platform and leveraging the organizational commitment framework, this study investigates which types of volunteers are more likely to apply for paid roles and remain productive when such transitions occur. Chapter 3 turns to acquisition, one of the most consequential milestones in the commercialization process. Focusing on The Huffington Post's sale to AOL, this study analyzes how a platform that initially thrived on unpaid contributions changed following its commercial exit, and how contributors responded to the transformation. Together, these studies offer insight into how commercialization strategies interact with volunteer motivations, organizational control efforts, and platform-community relationships.

CHAPTER TWO

Managing the Transition from Crowd Volunteerism to Paid Work in Firm-Sponsored Online Communities: Evidence from the Field

2.1 Introduction

This chapter turns to an empirical examination of one specific commercialization enabler: professionalization. Professionalization is a common phenomenon in contribution-dependent digital platforms—platforms that leverage volunteer labor to collaboratively build core products and services through wiki-like online communities. As these platforms grow and the value of volunteer-created assets becomes more salient, they often pursue a governance shift toward a closed, paid employment model by formalizing or replacing volunteers with paid positions. Such transitions are not necessarily undertaken to reward prior volunteer contributions; rather, they serve as strategic moves to consolidate control, reduce uncertainty, and prepare the platform for monetization or larger business milestones such as acquisitions or IPOs.

We examine the implications of professionalization through the lens of organizational commitment theory, which provides a robust framework for understanding how individuals' relationships with organizations influence behavior during periods of change. This framework is particularly relevant for contribution-dependent digital platforms that rely on wiki-like online communities—communities where contributors operate under pseudonyms, engage in collaborative production without direct career incentives, and are motivated primarily by intrinsic or mission-driven goals. In such settings, contributors' sustained engagement is less about contractual obligations or financial gain, and more about psychological attachment, perceived obligations, and

ongoing participation within a collectively constructed digital environment. Organizational commitment theory, encompassing continuance, affective, and normative dimensions (Meyer & Allen, 1991), is well-suited to capture these relational dynamics, providing insights into why volunteers remain engaged, adapt to change, or disengage when the governance structure shifts.

The concept of organizational commitment has been extensively applied to understand behaviors in both for-profit and nonprofit contexts (e.g., Becker, 1960; Meyer & Allen, 1997; Meyer et al., 2002; Dawley et al., 2005; van Vuuren et al., 2008), and has also been employed to examine how different forms of commitment influence participation in online communities (Bateman et al., 2011). However, prior research has largely treated organizational commitment as a static notion, overlooking how it might be affected by organizational transformations such as professionalization. This gap is particularly relevant in the context of digital platforms, where firms increasingly opt to transition from volunteer communities to paid labor as part of strategic realignments. For instance, the Huffington Post decided to replace unpaid contributors with paid writers in 2018, to better control the quality of content (Ember, 2018). Similarly, Duolingo closed its volunteer community and transitioned to paid content creation in 2021, before going public (Awodey & Tsai, 2021). These cases highlight the importance of understanding how volunteers' pre-existing commitments affect their willingness to maintain their relationship with the organization in a paid capacity and their productivity once hired. These are essential issues to address if firms hope to maintain continuity and retain volunteers' domain-specific institutional knowledge and experience (von Krogh et al., 2003; Ransbotham & Kane, 2011; Zhang et

al., 2013).

Leveraging proprietary data obtained from a large digital content company that initially relied on volunteer content contributors from the time of its founding, in 2013, before transitioning to a paid workforce in 2021, we study how different dimensions of organizational commitment affect workers' decisions to remain, applying for paid positions, and how pre-existing forms of commitment relate to the productivity of volunteer-turned-paid workers. We find that volunteers with high levels of organizational commitment—whether continuance, affective, or normative—exhibit a greater inclination to pursue paid employment. Importantly, however, we find that continuance commitment exerts the strongest influence on this decision, dominating affective and normative commitment. This result highlights that practical considerations, such as the need to change one's contribution schedule, play a more influential role than affective or normative attachment in the decision to transition from voluntary to paid work. Next, examining how these commitments relate to productivity once hired, we find that only pre-existing continuance and normative commitment are positively associated with productivity, post-transition. In contrast, volunteers' pre-existing affective commitment has a negative relationship with productivity under paid employment, a result we attribute to the incongruence between formal organizational practices and many volunteers' desires for casual socialization. Finally, we find that even before the full transition, firms' attempts to actively control volunteer-managed digital artifacts weaken the relationship between two forms of volunteer commitment—affective and normative—and volunteers' decisions to apply for paid positions.

Our work makes several contributions to both theory and practice. By studying a newly emerging phenomenon, namely firms' transition of their online volunteer community toward a paid workforce, we contribute to the nascent literature on firm-sponsored online communities and firm-managed ecosystems (Altman et al., 2022; Safadi et al., 2024). Additionally, we extend organizational commitment theory by exploring its potential dynamic nature, applying the framework to a context where organizational members transition from voluntary to paid roles. Finally, our work offers managerial insights on how firms can best leverage online volunteers for growth, providing guidance on the transition from volunteer to paid models, and thereby aiding in effective human capital management.

2.2 Literature Review

2.2.1 Organizational Commitment as a Theoretical Framework

There are various reasons why individuals contribute to online communities, including intrinsic, extrinsic, and altruistic factors (e.g., Roberts et al., 2006). A significant portion of the existing literature on online community participation employs motivation-based theoretical frameworks to explain participant behavior in community-based online communities, such as open-source software projects or Wikipedia, which typically do not undergo major organizational changes (e.g., von Krogh et al., 2012). While these frameworks illuminate how individual-level interactions between tasks and incentives drive contributions (e.g., Deci & Ryan, 1985; Frey & Jegen, 2002), they do not fully account for the interplay between the community and its individual members. In contrast, the organizational commitment framework provides an additional and complementary

theoretical lens by integrating both individual-level and the community-level aspects (Bateman et al., 2011), making it particularly relevant for studying member behavior in online communities that transition to more formal, organization-driven structures.

Commitment, formally defined as “willingness to devote one’s time and energy to a job or activity,” was initially studied by scholars to better understand people engaging in “consistent lines of activity” (e.g., Becker, 1960; Cambridge University Press, n.d.). Organizational scholars further refined the concept to examine individuals' commitment specifically within organizational settings, recognizing that commitment extends beyond habitual behavior to include emotional and calculative attachments to organizations (e.g., Meyer & Allen, 1997, for review). This shift in focus led to the development of organizational commitment theory, which examines the ways in which individuals' relationships with organizations shape their behaviors (Meyer & Allen, 1991). Formally, organizational commitment refers to the psychological attachment individuals feel toward an organization, affecting their willingness to remain engaged and contribute (O’Reilly & Chatman, 1986). Such commitment can develop either retrospectively, as members rationalize their decision to behave in a certain way, or prospectively, based on their assessment of the organization's working conditions (Meyer & Allen, 1997). Although organizational commitment can be flexibly measured using alternative proxies, such as employee-generated ratings on platforms like Glassdoor (e.g., Wowak et al., 2022), it is widely accepted as a multidimensional construct, typically conceptualized through three interrelated components: continuance commitment, affective commitment, and normative commitment (e.g., Meyer & Allen, 1991; Jaros et al., 1993).

Continuance commitment refers to an individual's ongoing engagement with an organization based on the perceived costs of leaving and the benefits of staying—for example, members who continue their roles because they do not want to sacrifice the status, reputation, social connections, or organization-specific skills and knowledge they have established through prior investments and engagement, making the prospect of leaving less appealing. Affective commitment is the emotional attachment and identification with the organization, such as when individuals remain engaged because they enjoy the camaraderie and sense of belonging they experience within their team or community. Normative commitment involves a sense of obligation to contribute to the organization's goals and remain with it, like individuals who feel a moral duty to continue supporting the organization's mission after receiving professional development opportunities or support.

These components have been shown to affect key organizational outcomes such as turnover, productivity, and citizenship behavior across both for-profit and nonprofit organizations (e.g., Meyer & Allen, 1997; Meyer et al., 2002; Dawley et al., 2005). Notably, the framework has previously been used as a theoretical lens to contrast unpaid volunteers and paid workers within the same organization (van Vuuren et al., 2008), making it particularly useful for examining how organizational members—whether paid employees or volunteers—react to changes in their roles, responsibilities, and relationships with the organization. While much of the organizational commitment literature has focused on traditional workplaces, the framework has also been applied to online communities. For instance, in online discussion communities, different forms of commitment have distinct effects on behaviors such as thread reading, reply posting, and moderating (Bateman et al.,

2011).

The extant literature on organizational commitment has relied heavily on survey methods, utilizing scales developed by Meyer & Allen (1997). Researchers have used Likert scale survey items such as 'I do not feel a strong sense of belonging to this organization' to measure each form of commitment in a single period and assess its relationship with organizational outcomes, even at different time periods. While surveys may effectively capture a snapshot of the psychological bonds of selected members at a particular point in time, these measurements are subject to change. For example, studies that measured commitments across multiple periods in similar settings (e.g., 1 day, 1 month, 3 months, or 1, 6, and 12 months) have produced mixed findings (e.g., Vandenberg & Self, 1993; Meyer & Gardner, 1994), suggesting the complexity of measuring organizational commitment as a dynamic process. As Meyer and Allen (1997) caution, changes in commitment over time, as well as its evolving relationship with organizational outcomes, necessitate careful interpretation when using survey-based measures.

While prior research has explored how organizational commitment responds to changes in corporate environments—such as workforce downsizing, mergers, and acquisitions (e.g., Meyer & Allen, 1997 for a review)—such studies have relied predominantly on retrospective surveys. For instance, Brockner et al. (1992) asked employees who remained after corporate layoffs to recall and compare their commitment levels before and after the event (e.g., "put yourself back in time before the layoffs" or "now in comparison to how you felt one month before first hearing that there would be layoffs"). Although survey studies are thoughtfully designed to capture subjective

experiences, they may still be subject to common survey biases, including selection, response, social desirability, and recollection bias. Given these challenges in objectively measuring organizational commitment and tracking its changes over time, empirical studies that utilize observational data to approximate behavioral indicators of commitment can provide a valuable supplement to traditional approaches in organizational commitment research. Furthermore, little research has explored the relationship between organizational commitment and organizational outcomes amid organizational transformations—particularly in emerging digital contexts, such as the transition of volunteers to paid employees within online communities.

2.2.2 From Voluntary to Paid Labor in Firm-sponsored Online Communities

While many online platforms initially rely on unpaid contributors for core functions—such as content creation, moderation, and support—firms may later professionalize these roles as part of a broader strategic effort to consolidate control, reduce uncertainty, and prepare for monetization or exit. Firm-sponsored communities differ from commons-based peer production in that they are shaped by corporate governance and profit-seeking motives, even though much of the value creation still occurs outside the formal employment boundary (Altman et al., 2022; Safadi et al., 2024). As these firms grow, volunteers performing essential tasks may find their roles replaced by paid staff. Quora, for example, introduced paid opportunities for select contributors (Silberling, 2021); the Huffington Post phased out its unpaid contributor base (Ember, 2018); and Duolingo transitioned from a volunteer-led model to hired content creators in 2021 (Awodey & Tsai, 2021).

These transitions often depend on volunteers' existing organizational commitment. AOL's Community Leader Program, for instance, relied on unpaid moderators who were deeply embedded in the platform through both affective and continuance commitment—finding social belonging and skill development in their roles, while having few alternative platforms at the time. Similarly, Reddit depends on committed volunteer moderators who perform core governance functions out of duty and emotional attachment to their subreddits (Li et al., 2022; McArdle, 2023).

As firms transition to paid labor models, they must grapple with whether and how these existing forms of commitment shape volunteers' willingness to apply for paid roles and their effectiveness if hired. Volunteers with strong affective or normative commitment may feel alienated by formalization, while those with high continuance commitment may be more willing to convert to paid status. Understanding these dynamics is essential for platforms seeking to retain domain-specific knowledge and ensure continuity during professionalization.

2.3 Theoretical Development

Organizational commitment theory seeks to explain factors driving an individual's choice to maintain active and engaged membership in an organization, emphasizing how organizational factors and individual characteristics shape member behavior (e.g., Lewin, 1951; Becker, 1960). Although the theory has primarily been applied within traditional, formal organizations, research on new forms of organizing highlights its applicability to emerging organizational contexts—such as online communities—that blur distinctions between firms and decentralized collectives (Yoo et al., 2012; Puranam et al., 2014). In

such contexts, members engage voluntarily and may exhibit distinct forms of commitment within online communities; nevertheless, sustained commitment remains essential for core community activities, such as content creation, moderation, and social interaction (Bateman et al., 2011; Ren et al., 2012). While committed members may advocate for change when dissatisfied (Hirschman, 1970), this dynamic becomes more complex in firm-sponsored online communities, where profit-driven firms retain control over key decisions, often reducing members' influence over policy (Safadi et al., 2024). For instance, firms may alter resources or close communities if they no longer align with strategic goals, complicating the member-firm relationship. Given these complexities, it remains unclear how volunteers' commitments affect their decisions to stay and their performance when the community transitions from volunteerism to paid work—an increasingly common phenomenon. We use organizational commitment theory to explore how continuance, affective, and normative commitments shape volunteers' responses to this transition.

The first dimension to consider is continuance commitment, which refers to an individual's ongoing engagement with an organization, driven by the perceived benefits of continued participation and the anticipated costs associated with leaving (Kanter, 1968; Meyer & Allen, 1991). Continuance commitment elicits members to direct their efforts toward maintaining their organizational ties for personal gains, leading them to do what they must to keep their position and status (Becker, 1960; Bateman et al., 2011). Members remain engaged and committed when the organization offers benefits aligned with their personal needs; conversely, if the costs of participation outweigh the perceived benefits or better alternatives are available, they are more likely to reduce their involvement or exit

the organization (Thibaut & Kelley, 1959; Homans, 1961). In the context of online communities, individuals may develop continuance commitment by deriving personal benefits such as gaining information, building a reputation, or engaging in community-specific activities (e.g., Wasko & Faraj, 2005; Bateman et al., 2011). Community-specific assets, such as status and privileges, are accumulated through consistent participation over time, making them valuable and difficult to replace (Ren et al., 2012). As these assets take significant time and effort to build, members with higher continuance commitment may find it particularly challenging to leave the community, as doing so would mean forfeiting benefits and status that are difficult to replicate elsewhere. The prospect of joining an alternative community where they would have to start from scratch and rebuild these assets often discourages them from exiting, even if other options are available.

Continuance commitment, at its core, involves individuals weighing their personal gains and losses in maintaining organizational ties. When a firm-sponsored online community transitions volunteer members to paid positions, this calculus may be influenced in several ways. The introduction of financial incentives, alongside the monitoring and performance evaluation inherent in formal employment, could potentially diminish the nonmonetary benefits that volunteering in the community provides. However, given that members of online communities often have diverse motivations, the opportunity to transition into a paid position may align with their existing or latent extrinsic motivations (Roberts et al., 2006). Moreover, since volunteer members are already familiar with their tasks and can continue to work with the same level of flexibility and autonomy – working remotely during their spare time whenever and wherever they want (Cao et al., 2022), they

may not view the added oversight as overly controlling. Instead, they might perceive the offer of paid work as recognition of the value they bring to the community—an acknowledgment that their contributions are worthy of compensation, which, in turn, may increase their loyalty as they are provided with meaningful work opportunities (e.g., Wilson, 2000; Butler et al., 2008).

For those who have invested significant time and effort into building their status and reputation within the community, the prospect of securing a paid position may further reinforce their continuance commitment. This is because the costs of leaving the community, such as losing their hard-earned reputation and status, would outweigh the benefits, even after the transition to paid employment (e.g., Becker, 1960; Meyer & Allen 1991). Additionally, volunteers who have developed work routines that align closely with regular work hours face a lower cost of adapting their work habits to the structure of paid employment. By maintaining a regular and consistent schedule, these volunteers can more easily adapt to the expectations of formal employment, which further enhances their continuance commitment. Although some volunteers might initially view the increased monitoring and evaluation that comes with paid positions as a drawback (e.g., Deci & Ryan, 1985; Moon & Sproull, 2008), those with strong continuance commitment are likely to focus on the benefits of maintaining their established ties and securing financial rewards. Therefore, we hypothesize that volunteers with higher continuance commitment are more likely to apply for paid positions, as they seek to preserve their established connections and maximize the benefits of their continued participation.

Affective commitment, the second dimension of organizational commitment, refers to an individual member's emotional attachment to an organization (Mowday et al., 1979; Meyer & Allen, 1991). This form of commitment is deeply rooted in the emotional bonds that individuals form with the organization and its members (Ren et al., 2012). Members with high affective commitment remain part of an organization, driven by feelings of belonging, alignment with organizational values, and strong emotional ties to other members, regardless of the specific tasks that constitute their roles (Bateman et al., 2011). In the context of online communities, affective commitment often develops through shared interests and collaborative efforts that foster a sense of belonging. Positive interactions with other members, including feelings of camaraderie (Hall & Graham, 2004) and reciprocity (Wasko & Faraj, 2005), further enhance this emotional attachment. These elements, combined with alignment with the community's goals and values, lead members to feel a deep connection to the community.

When a firm-sponsored online community offers volunteers the opportunity to transition into paid positions, their existing affective commitment plays a critical role in shaping their interest in these roles. Volunteers with high affective commitment are emotionally attached to the community and have developed a strong sense of belonging, potentially motivating them to continue their association with the community even in a paid capacity. Given that volunteers are often driven by the opportunity for social interaction and that their retention is frequently influenced by the retention of their peers (Pearce, 1983; Hyde et al., 2016), the prospect of continuing these interactions in a paid capacity can significantly influence their interest in transitioning to paid roles. Although

some volunteers may initially worry that transitioning to a paid position could alter the voluntary nature of their involvement, those with strong affective commitment are likely to view the change as an opportunity to deepen their engagement with a community to which they are emotionally invested and to continue interacting with their close peers. Therefore, we hypothesize that online volunteers with higher affective commitment are more likely to apply for paid positions.

Normative commitment refers to an individual's sense of obligation to remain a member of their organization (Meyer & Allen, 1991). This sense of duty is nurtured as individuals internalize normative pressures, compelling them to act in the organization's best interests (Wiener, 1982). Additionally, when individuals believe they have received valuable benefits from the organization, they may feel a compelling obligation to reciprocate, further strengthening their normative commitment (Gouldner, 1960). Members with strong normative commitment are more likely to exhibit unwavering loyalty and are less likely to leave their organization, as they perceive it as a moral imperative (Marsh & Mannari, 1977; Mathieu & Zajac, 1990). Moreover, they actively contribute to their organization's objectives by voluntarily engaging in organizational citizenship behaviors that extend beyond their prescribed job duties (Bateman et al., 2011).

In the context of online communities, normative commitment is often exhibited by members who take on leadership roles or serve as moderators, actively engaging in activities that protect and enhance their community (Bateman et al., 2011; Safadi et al., 2020). Unlike traditional organizations, online communities offer greater ease of exit, allowing members to leave with minimal barriers. However, members with strong

normative commitment feel a deep sense of obligation to their community, compelling them to continue contributing through roles that maintain community standards and guide interactions towards positive outcomes. This often includes behind-the-scenes work, such as moderating discussions to address negative behaviors and uphold community guidelines or taking on leadership tasks that facilitate the participation of other members. This sense of duty is particularly noteworthy given that volunteers are generally less inclined to assume leadership roles compared to paid employees (Pearce, 1980). When a firm-sponsored online community transitions from a volunteer-based model to a paid workforce, volunteers with high normative commitment are more likely to remain engaged during this shift. These individuals may perceive their continued involvement as a moral imperative, driven by a sense of loyalty and responsibility to the community and its mission. The transition to paid roles may even strengthen their commitment, as they view the opportunity to be compensated as further validation of their contributions and an additional way to fulfill their obligations to the organization. Moreover, their leadership experience and deep understanding of the community make them valuable assets during the transition, ensuring continuity and stability within the organization. Taken together, we hypothesize that online volunteers with higher normative commitment are more likely to apply for paid positions.

H1: Each dimension of organizational commitment—continuance, affective, and normative—toward the firm-sponsored online community will positively influence the likelihood of volunteers applying for a paid position.

When comparing the relative strength of each dimension of organizational commitment on volunteers' decision to apply for paid work, we hypothesize that

continuance commitment is likely to exert a stronger influence due to its practical and calculative nature. Continuance commitment reflects the costs and benefits of staying versus leaving an organization (Kanter, 1968), often driven by the volunteer's investment of time, effort, and resources. Volunteers with high continuance commitment have established routines and relationships within the community, making the transition to paid work more seamless. Furthermore, volunteers in firm-sponsored online communities may be incentivized by external factors—such as the risk of losing their standing or reputation within the community if they fail to contribute consistently. This type of investment makes leaving the community costly, pushing them to apply for paid positions where they can continue benefiting from the time and effort they have already put into the community. Therefore, while affective and normative commitment may play a role in the decision to apply for paid work, the practical considerations tied to continuance commitment are expected to have a stronger impact on this decision, leading to the following hypothesis:

H2: Continuance commitment to the firm-sponsored online community will have a stronger positive impact on the likelihood of volunteers applying for paid positions than affective and normative commitment.

In many firm-sponsored online communities, volunteers play a key role in content creation and moderation, often driven by their commitment to the community and its mission (e.g., Kane & Ransbotham, 2016; Reischauer & Mair, 2018). However, as firms transition from volunteer-driven operations to more formalized, paid workforces, they may take steps to control and manage the community. These efforts often involve the firm exerting greater oversight, control, and ownership over the digital artifacts or volunteer-

created content, as part of a strategy to standardize and formalize the community's outputs (Faraj et al., 2011). In doing so, firms face the challenge of balancing openness—allowing volunteers to continue contributing—while coordinating and managing the overall community to ensure alignment with organizational goals (Boudreau, 2017; O'Mahony & Ferraro, 2007). Prior to fully closing volunteer communities, firms may implement intermediate steps, such as asserting control over volunteer-created resources while still maintaining some degree of community openness. This "middle ground" between community-driven and firm-driven management reflects the firm's attempt to balance volunteer autonomy with the need for structured oversight (Benkler, 2006). While such measures may help the firm streamline its operations and ensure consistency in content, they may also reduce the autonomy and flexibility that many volunteers value (e.g., Moon & Sproull, 2008; Safadi et al., 2024). This exertion of control can potentially alter the volunteers' experience, reducing the perceived benefits of maintaining their commitment to the community (Pearce, 1993).

When firms actively coordinate and manage volunteer communities, this can weaken the influence of the volunteers' existing forms of organizational commitment—continuance, affective, and normative—on their decisions to apply for paid positions. As firms impose more control, volunteers may no longer feel the same level of autonomy or ownership over their contributions, which could diminish their overall commitment (e.g., Deci & Ryan, 1985; Moon & Sproull, 2008). More specifically, volunteers who once contributed out of a sense of affective commitment may feel less motivated if they perceive their social interactions being restricted and restructured by firm management (Ashforth &

Mael, 1989). Similarly, those with high continuance commitment, driven by their investment of time and resources, may reassess their involvement if the firm's control reduces the flexibility they previously enjoyed (Becker, 1960). Even normative commitment, which stems from a sense of duty, may be weakened if volunteer leaders feel their ability to lead the community is being undermined or if they perceive the community's mission is being overshadowed by the firm's revenue-seeking goals (Meyer & Allen, 1991). Thus, we hypothesize:

H3: A firm's efforts to tightly control the volunteer community during the transition to paid work will weaken the relationship between all three forms of volunteer commitment—continuance, affective, and normative—and volunteers' decisions to apply for paid positions.

Continuance commitment, which refers to a member's sustained involvement with an organization based on the perceived benefits of remaining and the potential costs of leaving, drives members to engage in "consistent lines of activity" (Becker, 1960, p.33). This consistent organizational behavior stems from the need to preserve the relationship with the organization, as members seek to maintain access to unique benefits while recognizing that viable alternatives may not be available (Meyer & Allen, 1991). In the context of online communities, volunteers with high continuance commitment consistently contribute their time and effort to community activities such as coding in open-source projects or writing and editing articles on Wikipedia (e.g., Lakhani & von Hippel, 2003; Ren et al., 2012). Given their significant investment in building community-specific assets, such as status and reputation, these volunteers are likely to remain committed and perform

well as paid workers to maintain their position. In firm-sponsored online communities, this behavior is especially prominent if firms encourage frequent and regular contributions by linking participation to maintaining one's status or position, as was the case with Duolingo, where volunteers faced the risk of losing their role if they became inactive.

Additionally, prior research on hourly shift workers shows that consistent work schedules enhance productivity by fostering rhythmicity and effort (Grote et al., 1994; Kesavan et al., 2022). Even though volunteers in online co-production communities, such as Wikipedia and open-source software, operate in self-organizing environments, deciding autonomously when, how, and what to work on (Faraj et al., 2011; Arazy et al., 2016), volunteers with higher continuance commitment have already established consistent work routines that mirror the expectations of paid employment. As a result, these volunteers are more likely to experience a smoother transition into paid roles, facing lower adjustment costs. Their habits of regularity and effort are already aligned with the demands of paid work, making them more likely to sustain or even improve their productivity in formal employment settings. Therefore, we hypothesize:

H4: Volunteers with greater continuance commitment will be more productive as paid workers.

Affective commitment, which is based on an individual's emotional connection to both the organization and its members, primarily develops through social interactions within the organization and drives individuals to engage in activities that advance the organization's mission (e.g., Cook & Wall, 1980; Meyer & Allen, 1997; Meyer & Herscovitch, 2001; Ren et al., 2012). Members with strong affective commitment not only

genuinely like their organization but also find emotional and social satisfaction in their association with the organization and its members, putting forth more effort and performing better than those with weaker affective commitment (e.g., Meyer & Allen, 1997; Akerlof & Kranton, 2005). Similarly, in online communities, volunteer contributors with high affective commitment are more likely to favor their community, remain engaged for longer periods, and make more substantial contributions (Ren et al., 2012; Faraj et al., 2016). However, during organizational change—specifically when firm-sponsored online communities transition from volunteer contributions to paid work—the very social structures that underpin affective commitment may be disrupted. Volunteers who were driven by their social interactions with fellow contributors may find that not all of their peers transition to paid roles, leading to a potential loss of the social bonds that initially fostered their commitment. Considering that social relationships play a crucial role in employees' adjustment to new roles (Ashforth, 2001; Van Maanen & Schein, 1979), the loss of these interactions can erode affective commitment, particularly in communities where peer support and camaraderie were key to motivation and sustained participation (Griffeth et al., 2000; Louis, 1980).

Moreover, when firms take control, the organic and informal social interactions that were once central to volunteers' emotional connection may be replaced by more structured, corporate team-building exercises and formalized social events. While these efforts may aim to foster cohesion, they often lack the spontaneous, peer-driven dynamics that characterized the volunteer community (e.g., Kahn, 1998; Faraj et al., 2016; von Krogh et al., 2012; Safadi et al., 2024). As the nature of social interactions changes, and as these

interactions become subject to increased monitoring and evaluation, volunteers may find it difficult to sustain the same level of emotional attachment (Liang et al., 2022). This transformation in social dynamics is likely to affect volunteer-turned paid workers' productivity. Taken together, volunteers with higher affective commitment, whose motivation was rooted in organic social ties, may struggle to maintain their previous level of engagement and performance when these connections are no longer sustained in paid roles. Therefore, we hypothesize:

H5: Volunteers with greater affective commitment to the community will be less productive when their social connections are not maintained.

Normative commitment, rooted in a sense of duty and internalized loyalty to shared norms, motivates members to align their actions with organizational goals, driven by the belief that it is the 'right and ethical thing' to do (Wiener, 1982). Members with strong normative commitment are often willing to go the extra mile, exerting more effort in their assigned tasks, taking on non-mandated roles, supporting fellow members, and assuming leadership positions (e.g., Meyer & Allen, 2012). Even in the face of significant organizational changes, such as downsizing or mergers and acquisitions, which might challenge their commitment, these individuals tend to voice their concerns, advocate for necessary adjustments, and remain loyal to the organization (Hirschman, 1970; Meyer & Parfyonova, 2010). In online communities, where high turnover and turbulent role-taking behaviors are common (Faraj et al., 2011; Arazy et al., 2016), normative commitment plays a critical role in maintaining community stability. Members who benefit from the contributions of others frequently develop a strong sense of obligation to give back and

repay their perceived debt to the community (e.g., Lakhani & von Hippel, 2003; Bateman et al., 2011). This sense of duty, despite the absence of formal hierarchies in many online communities (e.g., O'Mahony & Ferraro, 2007; Faraj et al., 2015) and the general reluctance of volunteers to assume leadership roles (Pearce, 1993), often motivates them to voluntarily assume both formal and informal leadership roles and take on less favored tasks, such as moderating forums, enforcing rules, and maintaining the integrity of community resources (e.g., Bateman et al., 2011; Kraut et al., 2011; Johnson et al., 2015). Thus, volunteers with high normative commitment often step up to fill these leadership gaps, including roles as moderators, channeling their efforts toward sustaining and enhancing the community.

As these highly committed volunteers transition to paid roles, their sense of obligation is likely to persist, if not strengthen. The transition formalizes the responsibilities they have already shouldered, providing them with the opportunity to further support the organization in a structured capacity. The formalization of their roles may also provide additional clarity and accountability, which can reinforce their drive to contribute (Katz & Kahn, 1978; Meyer & Herscovitch, 2001). Prior research suggests that individuals with strong normative commitment thrive in environments where they feel accountable and where their responsibilities are clearly defined (Meyer & Allen, 1997). Additionally, formal employment often introduces clearer performance metrics and feedback, which can further enhance the productivity of those driven by a sense of duty (Organ, 1997). Even though the dynamics of formal employment differ from the more flexible and volunteer-driven nature of online communities, volunteers with greater

normative commitment are more likely to navigate the transition smoothly. Their strong internalized sense of obligation may enable them to maintain or even increase their level of contribution as they adapt to the formal requirements and accountability structures of their paid positions. Therefore, we hypothesize:

Hypothesis 6: Volunteers with greater normative commitment will be more productive as paid workers.

2.4 Research Setting

Our study is based on a digital content company that offers more than 100 language courses to approximately 500 million registered users. Initially, the company developed a select number of popular language courses, such as Spanish and French, using in-house staff. However, recognizing the potential of its passionate user base, the company subsequently transitioned to a hybrid model, blending firm-sponsored initiatives with community-driven volunteer contributions for the majority of its course offerings. To achieve this, the company actively recruited unpaid volunteers from both its existing user base and external communities, inviting individuals beyond the firm to participate in creating and maintaining new language courses. A distinctive feature of the volunteer community was the degree of anonymity among contributors: volunteers commonly used pseudonymous usernames and non-professional profile images, such as fictional characters or animals, rather than disclosing their real identities.

Additionally, volunteers collaborated through a dedicated online community platform, a wiki-like digital tool similar to those used in well-known community-driven

projects like Wikipedia. Through this platform, contributors were able to create, edit, discuss, and review course content collaboratively. Individual exercises could be edited and refined by multiple volunteers, and end users studying the course had no visibility into which volunteer had created or modified specific content. Like Wikipedia, which is recognized as an online community due to its collaborative nature, transparent logging of contributions, and interaction capabilities, the digital platform used by the company fostered a comparable community atmosphere. Volunteers engaged in collective course-building, communicated frequently, exchanged insights, and coordinated efforts, contributing to a strong sense of community identity.

To qualify as a course contributor, volunteers were required to be bilingual and submit applications for specific courses, providing written responses in two languages. Figure 2 shows a sample application for volunteer course contributors with further details. Initially, the company selected a small number of volunteers per language course based on their applications. These selected volunteers then recruited additional team members to form a dedicated team for each course. Each course was developed and managed exclusively by its respective team, with members focusing solely on that particular course. Although individual learners were welcome to provide suggestions for exercises or alternative translations, editing privileges for course materials were reserved exclusively for the recruited volunteers assigned to that specific course. Meanwhile volunteers from different courses had channels to interact with one another, but primary collaboration and course-building activities were conducted within individual teams. The entire process of recruiting, mentoring, collaborating, and interacting among volunteers played a crucial role

in solidifying the community aspect of the platform, as it relied on the volunteers themselves to grow and strengthen the community.

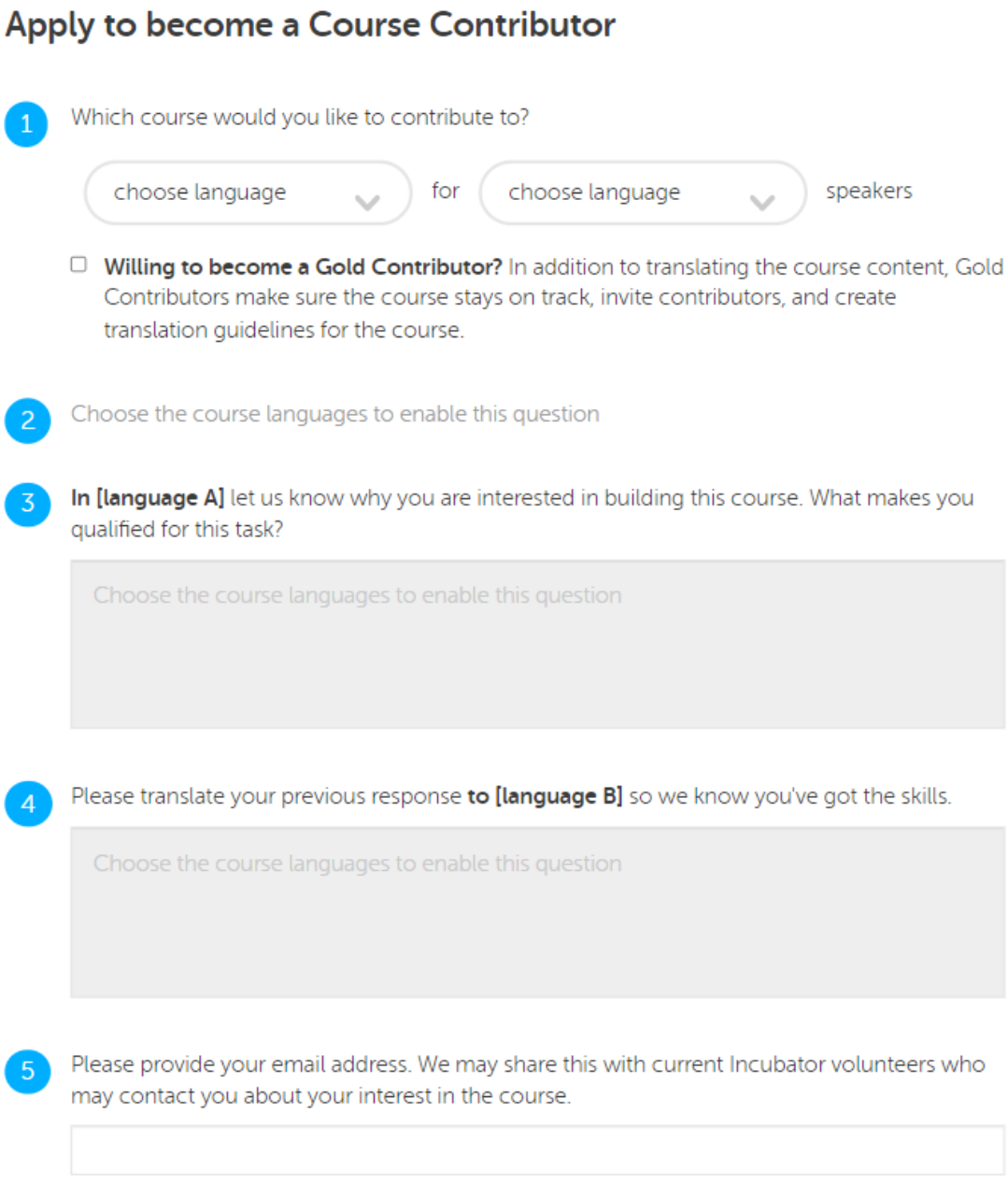


Figure 2. Sample Volunteer Contributor Application Page

As the company grew and began generating revenue from courses created by volunteers, it decided to discontinue the volunteer contributor program and implement a paid management system for course creation, updates, and maintenance. As a result, the firm eventually closed the online community that all course volunteers were part of across all courses. In an official announcement, the company provided reasons for this change. First, it felt that continuing the volunteer program would no longer be fair or equitable now that the company was generating revenue. Second, as the company aimed to standardize procedures and courses, it believed it would be challenging to enforce deadlines and specific templates on volunteers. Following the announcement of the transition plan, the company allowed a one-month grace period for volunteers to finalize their course contributions before terminating the volunteer program. To recognize the efforts of volunteers, the company presented symbolic awards, such as the Language Impact Award, and provided financial compensation based on their previous work, with the option for volunteers to donate their compensation. Additionally, volunteers were encouraged to apply for paid positions if they wished to continue contributing to their courses in a paid capacity. Detailed job descriptions for the paid positions can be found in Figure 3.

Needs to hire 80 Freelancers

Language Course Specialist

Responsibilities

Help maintain and improve language course content. Work with 's team of curriculum designers, educational content developers, and content program managers to identify and apply best practices to course content creation and organization. Prior experience with language teaching and/or translating is a plus.

This is a part-time, contractor role.

Weekly responsibilities include

Creating and reviewing course content (sentences, translations, hints, grammar tips, etc.)
Analyzing and applying learner feedback
Communicating with the team on Slack and Zoom for close collaboration

Must have

Stable wifi connection
Up to date computer and willingness to learn 's course creation tools, and to collaborate in the standard fleet of Google products (gmail, word docs, spreadsheets, calendar, etc.)
High proficiency in target and UI language of the course

Details

Depending on the course's needs, Course Specialists will be responsible for maintenance and improvement goals (keeping learner reports to a minimum, triaging bugs, fixing audio, and moderating sentence discussions). This role is initially planned for 3 months with the possibility of extension depending on content and product needs. Prefer to work with those who can accommodate EST schedule for most meetings and communications as most of staff is active during EST daytime hours.

Figure 3. Sample Paid Work Job Posting Page

The volunteers' reactions to this transition were mixed. On the one hand, some volunteers were satisfied that their work was being acknowledged and appreciated the unexpected compensation. They agreed that transitioning to a paid system was an essential step for further developing the courses. On the other hand, some volunteers were discontented with losing access to their courses and being unable to complete their planned projects, including launching new courses and updating existing ones. They also voiced

concerns about less qualified professionals taking over their work and the potential deprioritization of low-resource and less-spoken language courses due to limited market demand.

2.5 Methods

2.5.1 Data

Our data pertains to 460 volunteers supporting 87 courses from 2013 to 2021. The company provided us with proprietary data collected from four different internal sources. First, historical data on course contributions—such as creating sentence lessons, revising existing course materials, and adding alternative translations based on user reports—and course-specific data were collected from the firm's digital collaboration tool, which also functions as an online community. Second, individual contributor variables were gathered from their profile pages within the community and a Slack channel for volunteer course contributors. Lastly, volunteers' job application data was obtained from a third-party human resources company hired to track job applicants. Below, we describe the specific variables that we have obtained or constructed for our analyses.

Dependent Variables

Apply (Job Application): Our dependent variable for the first part of the study is the job-applying behavior of volunteer contributors. It captures whether volunteer contributors have applied to paid positions once new job opportunities became available. Using the application data from a third-party Human Resources firm, we created an indicator variable, *Apply*, which is set to 1 if volunteers applied for paid course specialist positions and set to 0 if they did not apply for paid positions.

Worker Productivity:

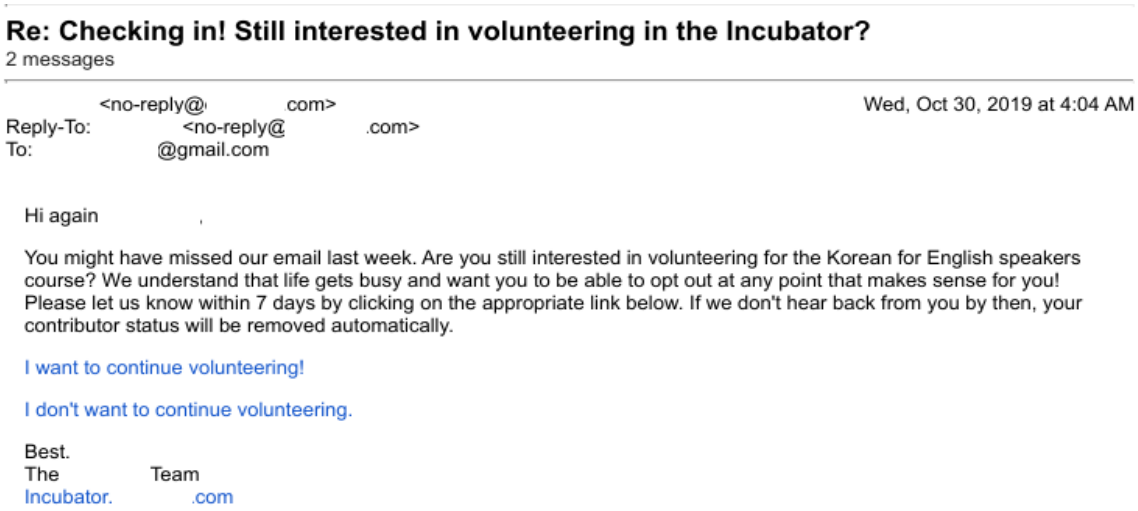
Our dependent variable for the second part of the study is the individual–level worker productivity. It measures the weekly productivity of volunteer-turned paid workers. To compute weekly productivity, a worker's weekly aggregate contributions, including tasks such as creating new sentence exercises, adding alternative translations, addressing user reports, and revising existing sentence pairs, were divided by weekly assigned hours. After the firm transitioned to a paid content creation model, hired workers were paid the same hourly rate across courses, but weekly hours were assigned differently based on the need of their respective courses. We calculated the weekly productivity of the 13-week period from August 31st to November 30th of 2021.

Independent Variables

Instead of relying on traditional surveys to capture self-reported attitudes, we measure each component of organizational commitment based on members' actual behaviors within the community.

Continuance commitment: Recognizing that continuance commitment is defined as an individual's sustained involvement with an organization, motivated by the advantages of staying and the costs of leaving (Kanter, 1968; Meyer & Allen, 1991), we use volunteer members' consistency of contributions to course development activities as a proxy for this form of commitment. As shown in Figure 3, the firm encouraged volunteers to actively participate in course-building activities and threatened to remove inactive volunteers. Given that volunteers face the possibility of removal if they do not remain engaged, they are acutely aware of the consequences of inactivity. Those who wish to maintain their

organizational ties for personal benefits are thus compelled to contribute, making consistent and frequent contributions a reasonable proxy for continuance commitment.


Re: Checking in! Still interested in volunteering in the Incubator?
2 messages

<no-reply@ .com> Wed, Oct 30, 2019 at 4:04 AM
Reply-To: <no-reply@ .com>
To: @gmail.com

Hi again ,

You might have missed our email last week. Are you still interested in volunteering for the Korean for English speakers course? We understand that life gets busy and want you to be able to opt out at any point that makes sense for you! Please let us know within 7 days by clicking on the appropriate link below. If we don't hear back from you by then, your contributor status will be removed automatically.

I want to continue volunteering!

I don't want to continue volunteering.

Best.
The Team
Incubator. .com

Figure 4. A sample email to volunteers encouraging continued participation and outlining potential removal.

Regularity: To measure one dimension of continuance commitment, we use the inverse of the coefficient of variation (CV) to quantify the regularity in a volunteer's contribution pattern. The coefficient of variation, defined as the ratio of the standard deviation to the mean, is a statistical measure that captures the dispersion of frequency distribution, independent of the unit of measurement. Since contribution records contain only non-negative values, the coefficient of variation is an appropriate measure to compare how regularly volunteers contribute to their courses. Using the log file that recorded the contributions of all volunteers on the collaboration tool, we calculate each volunteer's standard deviation and mean of daily contributing activities, and then calculate the coefficient of variation. In our context, a lower CV (indicating higher regularity) means that the volunteer contributes more consistently, while a higher CV suggests less regularity.

Based on this measure, we calculate the regularity of each volunteer's contributions in the six months leading up to the transition announcement, between September 1st and March 1st of 2021.

Weekday (Weekday vs Weekend): To measure the frequency dimension of continuance commitment, we calculate how much each volunteer contributes on weekdays compared to weekends. We construct a variable labeled 'weekday' and calculate the ratio of aggregate weekday contributions to the total weekly contributions of each volunteer. A higher weekday ratio indicates that a volunteer contributes more on weekdays compared to weekends, suggesting that volunteering is integrated into their regular routine, reflecting a stronger and more consistent commitment. Conversely, a lower weekday ratio, where more contributions are made on weekends, suggests that volunteering is more of a secondary or leisure activity. Similar to the work regularity measure, we computed the ratio of weekday to weekend contributions for each volunteer using data from September 1st to March 1st, 2021.

Affective Commitment: We operationalize affective commitment, defined as a member's emotional attachment to the community, in two distinct ways. First, we measure members' attachment to the broader community through their participation in the Slack channel, which serves as a platform for volunteers to interact not only with their course team members but also with the wider community of contributors and firm staff. This channel fosters interaction, communication, and socialization beyond the confines of individual course teams, reflecting a volunteer's commitment to the community as a whole. Specifically, the Slack channel was used as a venue for the firm to make announcements,

and for volunteers to freely share both work-related and non-work-related topics with the community. Second, we capture members' attachment to specific individuals within their course teams by creating a variable that measures how many of their teammates have also applied for paid positions. This variable reflects the idea that volunteers are emotionally connected to those they interact with most closely on a regular basis. If a volunteer's team members apply for paid positions, it suggests that the volunteer may also apply to preserve and continue their close personal relationships within the team.

Socialization (Social Engagement): We measure the emotional attachment to the community aspect of affective commitment by assessing whether an online volunteer participated in Slack channels, where they could engage in informal and playful interactions with other course volunteers and firm employees. To do this, we use members' participation on the Slack channel as a proxy, constructing a binary variable, Socialization, which is set to 1 if volunteers participated on the Slack channel and 0 if they did not. The Slack channel facilitated interactions with volunteers from other courses.

Peer Apply (Cluster Hiring): We measure another aspect of affective commitment—specifically, the feeling of closeness to particular team members—as follows. Since volunteering in our setting is done on a team basis, we construct a variable, peer_apply, that measures how many other members within a team have also applied for paid positions. To calculate this, we first count the total number of applicants within each team and then subtract the individual volunteer's application status (Apply) from this total. For example, if a French for German speakers course team consists of 10 members and 4 members have applied for paid positions, a volunteer who has applied for a position (Apply = 1) will have

a peer_apply value of 3. Conversely, if a volunteer did not apply (Apply = 0), their peer_apply value will be 4.

Normative commitment:

Considering that volunteers are generally less likely to assume leadership roles than paid employees, and recognizing that leaders in online communities often work behind the scenes to maintain and protect the community, we measure normative commitment by examining whether a volunteer served in a leadership role or as a forum moderator. Both roles reflect a strong sense of responsibility and obligation toward the community's well-being, as they involve efforts to guide, support, and uphold community standards.

Leader (Leadership Position): In each team, a few members are designated as leaders by the firm based on their willingness, competency, or prior contributions and performance. These leaders are responsible for recruiting and training new volunteers and directly communicating with the firm's coordinators regarding course-specific issues. Their leadership status is visible through a golden ring on their profile page. We created a binary variable, Leader, set to 1 if a volunteer held a leadership position within their team before the transition, and 0 if they were a regular member.

Moderator (Forum Moderator): Independent of their role as course contributors, volunteers could serve as forum moderators. Moderators primarily interact with general users, answer questions related to courses or other topics, and ensure adherence to community guidelines in course-specific forums. While this role is distinct from course-building activities, it reflects a strong sense of duty and responsibility toward the community. Therefore, we include the Moderator variable as a proxy for normative commitment to capture volunteers'

sense of obligation and loyalty to the organization. The *Moderator* variable is a binary variable and set to 1 if a volunteer is a moderator or 0 if not.

Moderator Variable

FirmMGT(FirmManagement) : Before officially closing its volunteer contributor community, the firm began to exert tighter control over certain volunteer-led courses. This control included actions such as more active monitoring of course content, enforcing specific standards, requesting the removal of particular expressions, or even taking over the ownership and management of the courses, effectively removing volunteer access to maintain these courses. The *FirmMGT* variable is a binary indicator, set to 1 if a course was under such firm control, and 0 otherwise. This variable is used to capture the firm's increasing involvement in the management of volunteer contributions during the transition to paid work, reflecting the extent to which the firm imposed oversight and reduced volunteer autonomy.

Instrumental Variable

When estimating the productivity of volunteer-turned-paid workers, we only observe the productivity of volunteers who are actually hired for paid positions. This is the canonical Heckman selection problem. To address the potential selection bias, we use the Heckman correction (Heckman, 1979), employing a plausibly exogenous instrumental variable. We consider the following instrument.

Learners: The instrumental variable we consider is the number of learners in each course. We have observed that courses with a smaller number of learners often pertain to less-spoken languages. Volunteer contributors for these courses may perceive themselves to

possess more unique expertise and skill sets compared to those involved in courses with a larger user base. Consequently, they are more likely to apply for paid positions and have a higher likelihood of being hired, as there is typically less competition for these roles. Our initial analysis provides compelling empirical evidence that supports this rationale. In addition, it is essential to note that all paid positions across courses are assigned a specific number of hours per week, such as 5, 7, or 10, and perform similar tasks, such as building and maintaining courses, creating new sentence exercises, adding alternative translations, and addressing user reports. As a result, the number of learners in a course does not affect the productivity of paid workers.

To further illustrate (see Figure 5), Italian or Dutch-speaking volunteers contributing to German courses, which have roughly 500,000 learners, are more likely to apply for paid positions and be hired in paid positions than French or Spanish-speaking volunteers contributing to German courses, which have approximately 1 and 2 million users, respectively. However, the number of active learners in courses does not directly affect the productivity of volunteer-turned-paid workers. For instance, Dutch or Italian-speaking contributors to German courses are not more productive than their French or Spanish-speaking counterparts in their weekly assigned hours due to the differences in the number of course learners.

Figure 5. Sample Course Page with the Number of Learners

Control Variables

Contribution Intensity: One may suspect that our measure of the regularity of contributions might be correlated with the intensity of contributions and that one's intensity of contributions needs to be controlled for. We construct a variable *Contribution Intensity* by calculating the average number of contributions per week from September 1st to March 1st, 2021.

Followers: The language learning app allows users to follow each other, recommending users to follow based on mutual friends, course progress, or other engagement metrics to encourage social learning. However, the number of followers a volunteer has does not necessarily reflect their status within the volunteer community, as followers are usually general users who may not be aware of the volunteer's role in course creation. Instead, followers tend to follow volunteers due to the app's suggestions or visible activity. To account for any potential influence of social presence as a user, we include the number of followers as a control variable.

User Engagement (XP): In the language learning app, users earn experience points (XP) each time they complete a lesson in any language course. This variable serves as a proxy for a volunteer's own language-learning activity rather than their content creation efforts. Since XP reflects a volunteer's engagement with the app as a learner rather than as a contributor, it captures their interest and motivation for language learning, which may indirectly influence their decision to apply for a paid position. We include this variable as a control to account for potential differences in volunteers' intrinsic interest in language learning that could affect their overall engagement and motivation.

Employment: It may also be important to control for volunteers' employment status in our study, as it could affect their decision to apply for paid positions. Based on the volunteers' resumes or LinkedIn profiles, we created a binary variable, *Employment*, which is set to 1 if a volunteer had any income-generating job—either full-time or part-time—and 0 if a volunteer was unemployed or retired.

Finally, to account for heterogeneity among teams, we include course-specific control variables, including the total size of a team (*team size*) and the number of *learners* per course. The total size of a team is the aggregate number of volunteers who remained on the team list until the volunteer program ended. The number of learners indicates how many active learners were studying the course that a contributor was building and maintaining. Each of the variables examined in both studies is summarized with descriptive statistics in Table 2 and Table 3; Table 4 and Table 5 present the matrix of correlations.

Table 2. Summary of Variable Descriptions and Descriptive Statistics of Key Variables for Study 1 Applying for Paid Positions					
Variable	**Description**	**Mean**	**Std. Dev**	**Min**	**Max**
Apply	Dummy variable, 1 if a volunteer applied for paid positions; 0 otherwise.	.369	.483	0	1
Regularity	The inverse of the coefficient of variation (CV) of a volunteer i's contributions.	0	1	-4.709	0.934
Weekday	The ratio of aggregate weekday contributions to the total weekly contributions of each volunteer.	0	1	-4.493	0.867
Socialization	Dummy variable, 1 if a volunteer participated on the Slack channel; 0 otherwise.	0	1	-0.941	1.059
Peer_Apply	The number of other volunteers within a team who applied for paid positions.	0	1	-1.078	3.476
Leader	Dummy variable, 1 if a volunteer is the leader of their team; 0 otherwise.	0	1	-0.996	1.001
Moderator	Dummy variable, 1 if a course volunteer volunteered as a forum moderator; 0 otherwise.	0	1	-1.035	0.964
Contribution Intensity	The average weekly number of contributions for each volunteer.	0	1	-0.433	7.480
Followers	The number of users following a volunteer.	0	1	-1.430	1.615
User_Engagement	The number of experience points (XP) that each volunteer received as a user of the app.	0	1	-1.517	1.569
Employment	Dummy variable, 1 if a volunteer had a part-time or full-time job at the time, 0 otherwise.	0	1	-5.845	0.171
Team Size	The total number of volunteer members within a team.	0	1	-1.103	2.906
Learners	The number of active learners for each course that a volunteer is contributing.	0	1	-1.308	1.685

Table 3. Matrix of Correlations for Study 1 - Applying for Paid Positions													
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**
(1) Apply	1.000												
(2) Regularity	0.248	1.000											
(3) Weekday	0.144	0.082	1.000										
(4) Socialization	0.202	0.236	-0.063	1.000									
(5) Peer Apply	0.116	-0.059	-0.097	0.011	1.000								
(6) Leader	0.207	0.250	0.059	0.443	-0.112	1.000							
(7) Moderator	0.110	0.227	0.002	0.350	-0.069	0.338	1.000						
(8) Contribution Intensity	0.135	0.310	0.049	0.268	-0.109	0.245	0.118	1.000					
(9) Followers	0.056	0.139	0.015	0.253	-0.120	0.241	0.486	0.105	1.000				
(10) User Engagement	0.045	0.144	-0.014	0.279	0.078	0.146	0.382	0.057	0.492	1.000			
(11) Employment	-0.165	0.039	-0.051	-0.095	-0.010	-0.085	0.006	-0.028	-0.039	0.005	1.000		
(12) Team Szie	-0.003	0.089	0.072	0.064	0.512	-0.012	-0.015	-0.013	-0.115	0.034	-0.159	1.000	
(13) Learners	-0.161	0.093	0.133	0.041	-0.148	0.033	0.152	-0.018	0.247	0.083	0.015	0.117	1.000

Table 4. Summary of Variable Descriptions and Descriptive Statistics of Key Variables for Study 2 - Productivity of Hired Volunteers					
Variable	**Description**	**Mean**	**Std. Dev**	**Min**	**Max**
Productivity	Hourly productivity of paid workers per week (Log transformed)	2.308	2.243	0.006	6.467
Regularity	The inverse of the coefficient of variation (CV) of volunteer i's contributions.	0	1	-4.709	0.934
Weekday	The ratio of aggregate weekday contributions to the total weekly contributions of each volunteer.	0	1	-4.493	0.866
Socialization	Dummy variable, 1 if a volunteer participated in the volunteer slack channel.	0	1	-0.941	1.059
Leader	Dummy variable, 1 if a volunteer is the leader of their team; 0 otherwise.	0	1	-0.996	1.001
Moderator	Dummy variable, 1 if a course volunteer volunteered as a forum moderator; 0 otherwise.	0	1	-1.034	0.964
Followers	The number of users following a volunteer (Normalized).	0	1	-1.446	1.611
User Engagement	The number of experience points (XP) that each volunteer received as a user of the app.	0	1	–20.481	1.428

Table 5. Matrix of Correlations for Study 2 - Productivity of Hired Volunteers								
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
(1) Productivity	1.000							
(2) Regularity	0.001	1.000						
(3) Weekday	0.033	0.082	1.000					
(4) Socialization	0.245	0.054	0.045	1.000				
(5) Leader	0.165	-0.003	0.055	0.442	1.000			
(6) Moderator	0.273	-0.002	-0.031	0.350	0.338	1.000		
(7) Followers	0.130	0.104	-0.006	0.246	0.232	0.481	1.000	
(8) User Engagement (XP)	0.427	-0.019	-0.004	0.062	0.057	0.073	0.484	1.000

2.6 Econometrics Specifications and Results

2.6.1 Pursuit of Paid Work Framework

To understand job application decisions, we employ a linear probability model (LPM), estimating a model of the form expressed by Equation (1), where we regress the decision to apply for paid work, *Apply*, onto our series of measures described earlier. Here, *i* indexes volunteers. To facilitate a comparison of coefficient magnitudes, we standardized all continuous variables. Our regression employs robust standard errors, clustered by course.

$$Apply_i = \beta_1 \cdot Regularity_i + \beta_2 \cdot Weekday_i + \beta_3 \cdot Socialization_i + \beta_4 \cdot Peer\_Apply_i + \beta_5 \cdot Leader_i + \beta_6 \cdot Moderator_i + \beta_7 \cdot Contribution\_Intensity_i + \beta_8 \cdot Followers_i + \beta_9 \cdot User\_Engagement_i + \beta_{10} \cdot Team\_Size_i + \beta_{11} \cdot Learners_i + \beta 12 \cdot Employment_i + \varepsilon_i \quad (1)$$

Our results from this regression are presented in Table 6, column (1). In columns (2) and (3), we repeat our estimation using logistic and probit regression for robustness, and we observe consistent results across all three models. Considering column (1), we first find evidence in support of our first hypothesis—that each dimension of organizational

commitment positively influences the likelihood of volunteers applying for paid positions. The estimated coefficients of *Regularity* ($p<.001$) and *Weekday* ($p<.001$) suggest that volunteers who work regularly or work more on weekdays are more likely to apply for paid positions. In other words, volunteers who exhibit work patterns similar to employees, such as working consistently or primarily on weekdays, are more likely to transition to paid positions compared to sporadic volunteers. These findings suggest that volunteers with a high level of continuance commitment—having already integrated their volunteer engagement into a regular work routine—are more likely to view their relationship with the firm as something worth maintaining as a hired worker. For these volunteers, the perceived costs of leaving are greater because they have already invested significant time and resources into their role. As a result, they are more likely to transition to paid positions compared to episodic volunteers, whose irregular contributions suggest lower levels of continuance commitment.

We also find empirical support that volunteers who were socially active or had more peers apply from the same team are more likely to apply for paid positions themselves, as indicated by the estimated coefficients of *Socialization* ($p<.01$) and *Peer Apply* ($p<.01$), respectively. These results suggest that volunteers with strong affective commitment—those who formed emotional connections with their peers through frequent social interactions—are motivated to maintain these relationships by transitioning to paid roles. The opportunity to continue engaging with their community and peers may strengthen their desire to stay with the organization, even after their volunteering period ends. The estimated coefficient of *Leader* ($p<.01$) suggests that volunteers who took on leadership

roles are more willing to maintain their relationship with the firm under paid employment. This finding supports the positive relationship between normative commitment and the decision to apply for paid positions, as these volunteers likely feel a sense of duty and responsibility to continue contributing to the organization.

The first column in Table 6 supports our second hypothesis (H2), which posits that continuance commitment has a stronger positive impact on the likelihood of volunteers applying for paid positions compared to affective and normative commitment. In this analysis, all coefficients are standardized to allow for the direct comparison of the magnitude of each component of organizational commitment. The estimated coefficient for *Regularity* (0.145, $p<.001$), a proxy for continuance commitment, is the largest, indicating that volunteers who contribute consistently are significantly more likely to apply for paid positions. The coefficient for *Weekday* (0.083, $p<.001$), another proxy for continuance commitment, is slightly smaller than the coefficient for *Peer Apply* (0.087, $p<.01$), which captures affective commitment. However, both continuance commitment variables (*Regularity* and *Weekday*) are still larger than *Socialization* (0.082, $p<.01$) and *Leader* (0.076, $p<.01$), representing affective and normative commitment, respectively. These findings suggest that while *Regularity* plays the most significant role, continuance commitment overall exerts a stronger influence on the likelihood of volunteers applying for paid positions than affective and normative commitment.

Table 6. Commitments Affecting Interest in Paid Work (DV=Apply)

Type	Variable	(1) LPM	(2) Logistic	(3) Probit
Continuance	Regularity	0.145*** (0.024)	1.409*** (0.350)	0.856*** (0.205)
Commitment	Weekday	0.083*** (0.017)	0.741** (0.234)	0.447** (0.135)
Affective	Socialization	0.082** (0.030)	0.493** (0.162)	0.297*** (0.095)
Commitment	Peer Apply	0.087** (0.030)	0.507** (0.178)	0.297** (0.524)
Normative	Leader	0.076** (0.028)	0.372* (0.159)	0.212** (0.093)
Commitment	Moderator	0.052+ (0.029)	0.320+ (0.182)	0.194+ (0.106)
Controls	Contribution Intensity	0.006 (0.028)	0.051 (0.132)	0.032 (0.074)
	Followers	-0.033 (0.035)	-0.170 (0.192)	-0.118 (0.113)
	User Engagement	-0.023 (0.024)	-0.182 (0.171)	-0.110 (0.101)
	Employment	-0.077** (0.023)	-0.581** (0.180)	-0.326** (0.095)
	Team Size	-0.036 (0.019)	-0.247 (0.186)	-0.144 (0.108)
	Learners	-0.101*** (0.022)	-0.621*** (0.159)	-0.367*** (0.092)
	Intercept	0.310*** (0.022)	1.321** (0.210)	0.795*** (0.120)
	Observations	322	322	322
	Adjusted R^2	0.2463	0.2593	0.2607

Notes: Robust standard errors clustered by course are shown in parentheses.
+ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 7 presents the results of testing our third hypothesis, which posits that the firm's efforts to exert control over the volunteer community will weaken the relationship between all three forms of volunteer commitment—continuance, affective, and normative—and volunteers' decisions to apply for paid positions. To assess this, we introduced *FirmMGT* as a moderator in each model, interacting it individually with the variables representing the three forms of commitment. The results across columns (3) to (7) show that the interaction terms are statistically significant only for FirmMGT x Socialization and FirmMGT x Leader, with estimated coefficients of -0.133 ($p<0.05$) and -0.145 ($p<0.05$), respectively. These negative coefficients suggest that the firm's attempts

to exert greater control weaken the relationship between volunteers' affective and normative commitment and their decision to apply for paid positions. Specifically, volunteers who are emotionally connected to the community through social interactions (affective commitment) and those who hold leadership roles (normative commitment) are less likely to apply for paid roles when they perceive a reduction in autonomy and an increase in firm control.

Table 7. Effects of Firm Management on Commitments Affecting Interest in Paid Work (DV=Apply)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regularity	0.145*** (0.024)	0.147*** (0.024)	0.142*** (0.025)	0.148*** (0.025)	0.146*** (0.025)	0.147*** (0.024)	0.146*** (0.023)	0.147*** (0.024)
Weekday	0.083*** (0.017)	0.075*** (0.018)	0.076*** (0.018)	0.078*** (0.018)	0.076*** (0.017)	0.074*** (0.017)	0.074*** (0.018)	0.075*** (0.018)
Socialization	0.082** (0.030)	0.079** (0.030)	0.080** (0.030)	0.080** (0.031)	0.079** (0.030)	0.080** (0.031)	0.080** (0.030)	0.078** (0.029)
Peer Apply	0.087** (0.030)	0.084** (0.030)	0.085** (0.030)	0.086** (0.031)	0.084** (0.029)	0.085** (0.031)	0.082** (0.030)	0.084** (0.030)
Leader	0.076** (0.028)	0.078** (0.028)	0.078** (0.028)	0.077** (0.028)	0.077** (0.028)	0.079** (0.029)	0.077** (0.038)	0.078** (0.028)
Moderator	0.052+ (0.029)	0.052+ (0.028)	0.050+ (0.028)	0.053+ (0.028)	0.052+ (0.028)	0.051+ (0.029)	0.047+ (0.028)	0.052+ (0.028)
Contribution Intensity	0.006 (0.028)	0.005 (0.027)	0.005 (0.026)	0.006 (0.026)	0.004 (0.026)	0.005 (0.026)	0.006 (0.027)	0.005 (0.027)
Followers	-0.033 (0.035)	-0.027 (0.034)	-0.027 (0.034)	-0.027 (0.035)	-0.028 (0.034)	-0.029 (0.033)	-0.030 (0.034)	-0.027 (0.034)
User Engagement	-0.023 (0.024)	-0.030 (0.022)	-0.030 (0.022)	-0.031 (0.023)	-0.028 (0.022)	-0.030 (0.023)	-0.027 (0.022)	-0.030 (0.023)
Employment	-0.077** (0.023)	-0.073** (0.023)	-0.074** (0.024)	-0.073** (0.024)	-0.073** (0.024)	-0.073** (0.023)	-0.074** (0.023)	-0.073** (0.023)
Team Size	-0.036 (0.019)	-0.033 (0.018)	-0.034 (0.018)	-0.034 (0.019)	-0.036 (0.019)	-0.033 (0.019)	-0.039 (0.019)	-0.033 (0.019)
Learners	-0.101*** (0.022)	-0.105*** (0.021)	-0.103*** (0.022)	-0.106*** (0.022)	-0.103*** (0.022)	-0.104*** (0.022)	-0.100*** (0.023)	-0.105*** (0.022)
Firm Management		-0.060 * (0.025)	-0.050* (0.023)	-0.064* (0.026)	-0.054* (0.027)	-0.060* (0.026)	-0.050+ (0.027)	-0.060* (0.025)

FirmMGT × Regularity			-0.037 (0.028)					
FirmMGT × Weekday				-0.013 (0.015)				
FirmMGT × Socialization					-0.045* (0.025)			
FirmMGT × Peer Apply						0.007 (0.025)		
FirmMGT × Leader							-0.049* (0.024)	
FirmMGT × Moderator								0.001 (0.023)
Intercept	0.310*** (0.022)	0.309*** (0.022)	0.311*** (0.022)	0.332*** (0.024)	0.308*** (0.022)	0.309*** (0.022)	0.311*** (0.022)	0.309*** (0.022)
Observations	322	322	322	322	322	322	322	322
Adjusted R^2	0.2463	0.2587	0.2588	0.2573	0.2648	0.2565	0.2657	0.2563

Notes: Robust standard errors clustered by course are shown in parentheses. + $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

2.6.2 Worker Productivity

In our second analysis, we examine the factors that contribute to the productivity of volunteer-turned-paid workers, i.e., after volunteers are hired. The econometric model we employ is as reflected by Equation (2), where *i* once again indexes volunteers. Additionally, as noted earlier, we estimate this model with a Heckman correction, addressing the fact that we only observe productivity measures for volunteers who chose to apply and were hired into paid positions.

$$Productivity_i = \beta_1 \cdot Regularity_i + \beta_2 \cdot Weekday_i + \beta_3 \cdot Socialization_i + \beta_4 \cdot Leader_i + \beta_5 \cdot Moderator_i + \beta_6 \cdot Followers_i + \beta_7 \cdot User\_Engagement_i + \varepsilon_i \quad (2)$$

The outcome variable, *Productivity,* measures the amount of work completed per hour by each individual volunteer-turned-paid worker. Specifically, it represents the weekly aggregate of each individual worker's total amount of work, including tasks such as creating new sentence exercises, adding alternative translations, addressing user reports, and revising existing sentence pairs, divided by the number of weekly assigned hours. As all volunteer-turned-paid workers received the same hourly rate, the hourly wage does not influence the measured productivity across individuals.

The results of this analysis are presented in Table 8, providing empirical support for our fourth, fifth, and sixth hypotheses. The estimated coefficients of *Regularity* ($p<.001$) and *Weekday* ($p<.001$) suggest that, among volunteer-turned-paid workers, those who had a history of regular volunteering patterns or who volunteered more on weekdays

compared to weekends tend to exhibit higher productivity levels after being hired. In other words, volunteers with higher continuance commitment are more likely to become productive paid workers, as they have already established work routines that align with the expectations of paid employees, resulting in lower adaptation costs when transitioning into paid roles. Interestingly, we find a negative association between *Socialization* ($p<0.01$), our proxy for affective commitment, and productivity, indicating that individuals who were driven by social interactions as volunteers tend to become less productive as paid workers. This result likely stems from the nature of the transition in social interactions: former volunteers, accustomed to communal and organic social interactions, might find the shift to structured, professionally designed team-building activities by the firm less appealing. Furthermore, the estimated coefficients for *Leader* ($p<0.001$) and *Moderator* ($p<0.01$) suggest that volunteers who assumed leadership or moderator positions—reflecting higher normative commitment—are more likely to become productive after transitioning to paid staff members. These findings highlight the role of the different components of organizational commitment—continuance, affective, and normative—in explaining the productivity of volunteer-turned-paid workers.

Table 8. Commitments Affecting Productivity of Paid Work (DV = Productivity)

Variable	(1) Heckman with IV (Learners)	(2) Heckman without IV
Regularity	1.331*** (0.008)	0.935** (0.321)
Weekday	1.675*** (0.017)	0.942* (0.459)
Socialization	-0.363** (0.004)	-0.566+ (0.310)
Leader	1.114*** (0.001)	0.880** (0.311)
Moderator	1.102**(0.003)	0.633* (0.284)
Followers	-0.167 (0.003)	-0.126 (0.251)
User Engagement	2.838***(0.004)	2.576***(0.425)
Intercept	4.942*** (0.239)	-0.324 (0.808)
Observations	407	407

Notes: Robust standard errors clustered by course are shown in parentheses.
+ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Lastly, we complemented our archival analyses with insights from a survey conducted by the firm. The survey was administered six months after the transition from crowd volunteerism to a paid work model, specifically targeting newly hired paid workers. To ensure representation from each language course, a minimum of one response was requested from each team. Out of the 33 responses received, 76% of hourly paid workers reported voluntarily planning their work, adhering to their own regular work routines, or consistently working on a fixed schedule. Workers shared their approaches to scheduling, such as: “I normally try to work at least an hour per day (MON-FRI) if possible,” and “According to my weekly hour allowance, I try to work the same amount of hours Mon-Fri.” These findings indicate that volunteer-turned-paid workers prioritize and structure

their tasks, maintaining a high level of consistency even in the presence of highly flexible work schedules. The fact that the majority of volunteer-turned-paid workers voluntarily schedule their work and stick to this routine further supports our findings that volunteers with high levels of continuance commitment are more likely to apply for paid positions and remain productive as paid workers. Many respondents indicated that they saw little difference between their volunteer and paid work routines, further confirming the ease of transitioning to a paid role for those with established continuance commitment.

A significant portion of respondents, around 30%, reported challenges related to the transition, particularly with the formalized aspects of the role, such as tracking time via Upwork and adjusting to changes in team composition. Many respondents highlighted the reduction in team size and the lack of informal, organic social interactions they had as volunteers, replaced by formalized team-building activities. This transition led some to express that, despite receiving payment, they found their volunteering experience to be more rewarding and enjoyable. One respondent shared, “Volunteering was a more rewarding experience. Having a larger team would improve the experience.” Additionally, several respondents mentioned that being required to track time via Upwork made them question whether they could freely interact with teammates, especially when discussing non-work-related topics. The firm’s enforcement of strict time tracking and limits on working hours complicated matters, with one respondent noting the difficulty of “tracking only for ten minutes” or wondering if “chatting about something else is allowed.” These added logistical hurdles contributed to a sense of detachment, as the social dynamics they enjoyed as volunteers were disrupted by the formalized structure. These responses

highlight the importance of affective commitment, as volunteers were motivated by their relationships with team members and felt emotionally attached to the volunteer community. The absence of these informal social connections in the paid work environment negatively impacted their experience and productivity, aligning with our findings on affective commitment.

In terms of normative commitment, several experienced volunteers emphasized a sense of responsibility in their new paid roles, with many using phrases like “in charge of” and “prioritizing what’s needed” to describe their work ethic. These respondents noted that they felt a duty to maintain the quality of the course, with one participant mentioning, “Each of us is responsible for our own language course.” Some also took on roles that were not part of their initial scope, helping wherever they saw a need, reflecting their strong sense of duty and leadership within the community. This behavior aligns with our findings on normative commitment, as these volunteers exhibited a higher willingness to maintain their role and continue their contributions even after transitioning to paid work.

2.7 Discussion

2.7.1 Conclusion and Contributions

Using the organizational commitment framework, we examine the transition from a firm-sponsored online community that relies on crowd volunteerism to a paid work model, identifying which volunteers are more likely to apply for paid positions and which are likely to be productive once hired. Our findings highlight several key insights into how different dimensions of organizational commitment—continuance, affective, and

normative—affect volunteers' decisions to apply for paid positions and their productivity as paid workers. First, volunteers with higher levels of commitment across all dimensions are more likely to apply for paid positions, with continuance commitment having the strongest influence. However, only continuance and normative commitment translate into productivity as paid workers. While volunteers with strong affective commitment may be motivated to pursue paid positions, their emotional attachment to the community does not necessarily lead to effective performance in a formal work setting. They may find it challenging to adapt to the structured, corporate environment that replaces the informal, community-driven atmosphere they are accustomed to. These findings suggest that changes to the nature of the organization can differentially shape how volunteers' organizational commitment translates into their decision-making and effectiveness in paid roles.

Our study contributes to multiple streams of research. First, we contribute to the nascent literature on firm-sponsored online communities and managed ecosystems (e.g., Altman et al., 2022; Safadi et al., 2024), as well as to the broader online community literature (e.g., Kraut et al., 2011). Our study is among the first to explore how a firm-sponsored online community navigates the increasingly common transition from a volunteer-driven model to a formal, paid workforce, providing managerial insights into how firms can balance the governance challenges that arise from the inherent tensions between firm-based control and community-driven approaches during such transitions (e.g., Shah 2006; West & O'Mahony, 2008; Safadi et al., 2024). This research also addresses a gap in the online community literature by focusing on the final stage of an

online community's lifecycle—closing its volunteer community and morphing into a paid model. While substantial research exists on the early and growth stages of online communities (e.g., Ren et al., 2007; Ren et al., 2012), there is limited understanding of how such communities manage the transition or closure phase. Our work responds to calls for research into the strategic considerations and timing of community transitions or closures (Resnick & Kraut, 2012), providing new insights into this underexplored stage of community evolution.

Second, we advance the literature on organizational commitment by operationalizing different dimensions of commitment through observable organizational behaviors, rather than relying solely on self-reported surveys (Meyer & Allen, 1997). This approach allows us to provide evidence of the dynamic nature of commitments during organizational changes, suggesting that these commitments may not remain static. Specifically, we illustrate how continuance, affective, and normative commitment among volunteers evolve as their roles transition to a structured, paid employment model, offering new insights into how these commitment types adapt in response to changes in organizational structures. Furthermore, we show how the firm's actions during the transition phase affect these three types of commitment, shaping volunteers' responses to the evolving work environment. In addition, our study contributes to the literature that distinguishes between commitment to the community and commitment to the organization (Zaccaro & Dobbins, 1989; Riketta & Van Dick, 2005). Our findings suggest that while commitment to the volunteer community may facilitate retention, it does not necessarily translate into productivity within a formal organizational role, highlighting the nuanced

ways in which these different forms of commitment can influence volunteers' decisions and behaviors during transitions (Ballinger et al., 2011). This distinction is crucial for understanding how volunteers may react when their sense of belonging and attachment shifts from a community-centric focus to a more structured corporate environment.

Lastly, our work contributes to the literature on volunteerism and online workers' productivity by examining how these dynamics unfold during the transition from volunteer roles to paid employment, offering insights into the emerging phenomenon where the line between volunteer work and paid employment is increasingly blurred. We show that volunteers with specific characteristics—such as regular contributions, leadership roles, and social motivations—are more likely to pursue paid opportunities when available, indicating that certain forms of engagement and commitment make volunteers more inclined to transition into paid roles. Additionally, when viewed through the lens of volunteer literature, our findings suggest that episodic volunteers, who contribute occasionally, are less likely to apply for paid positions compared to regular volunteers, even when those paid roles offer the flexibility of remote work. We also contribute to the literature on gig workers' productivity by demonstrating that self-regulated, consistent work routines are positively associated with productivity, indicating that regularity remains a key predictor of performance, even in flexible work environments. While previous studies have primarily focused on productivity factors in hourly-paid shift work within traditional retail and service industries (Kesavan et al., 2022; Lu et al., 2022), our study extends these insights to remote, autonomous workers in online settings.

2.7.2 Limitations

Numerous business ventures have built valuable online communities that harness volunteer contributions. This study is based on data collected from only one of those successful companies. Even if they similarly relied on volunteers to contribute to create economic value, each context may entail unique properties that are different from one another. For example, volunteers in different online communities may have varying motivations: developers and engineers may have career incentives in Open-Source Software communities, while contributors in Q&A forums like Quora may be driven by a desire to share knowledge or promote a cause. Our study was based on a setting where contributors used pseudonyms and worked in anonymized settings, similar to Wikipedia in which volunteers did not have career opportunities. Additionally, the firm in our setting maintained a policy of sending emails to inactive contributors, encouraging them to remain active or face removal from the community. This policy may have influenced volunteers' behavior, suggesting that the contribution patterns observed in our study could differ from those in communities without such an incentive. Moreover, there may be unobservable factors that partially affect individual volunteers' contribution patterns and varying levels of commitment. For these reasons, one should carefully consider factors specific to other settings and exercise caution when generalizing the findings from our study.

In addition, due to the nature of the setting, we do not address the quality of contributions from both volunteers and paid workers. In principle, it is reasonable to consider the qualitative aspect of contributions from volunteers and how the quality of

outputs varies when former volunteers become employees. However, the unique properties of the setting mitigate concerns about quality. First, unlike Wikipedia, where anyone can make immediate changes to any article, our setting imposes high barriers to contribution, effectively eliminating vulnerabilities such as content corruption by unscrupulous users or vandals. Based on applicants' potential fit and motivation, a leader of each language course selectively recruited volunteers among qualified applicants who demonstrated written professional proficiency in both languages - the language that the course teaches and the language it is being taught from (refer to Figure 1). Newly recruited members had to get special training and receive a certificate upon completion. Only then, volunteers received access to their language course to contribute. Second, each course team had a peer review system. The internal collaboration tool had a contribution history function that allowed volunteers to monitor other members' contributions in great detail. Based on the types of contributions - new sentence creation or revising alternative translations, the tracking feature showed the details of individual volunteer's contributing activities with time/date information.

Lastly, inactive, or poorly performing volunteers were regularly reviewed and asked to leave. The firm or the team occasionally reviewed volunteers' performance, in terms of behaviors and contributions, and removed contributors' access if necessary. Considering that volunteers were expected to create a language course for beginners and intermediate levels by creating exercises consisting of a single sentence, there was relatively little room for observable, significant variations in the quality of qualified volunteers' contributions. Even though users can report if they think there is a mistake in

an exercise, the firm's head of research and AI stated that, in fact, the majority of user reports are incorrect (Drive Capital, 2020). Given that users of beginning or intermediate foreign language courses may not yet know the subtleties of expressions, they may often report an exercise as incorrect even if it is correct, making user reports a poor measure of quality in this context. In addition, even if a phrase or a sentence exercise is initially created by an individual volunteer, the exercise gets further revised by other volunteers in the team - proofreading sentences or adding alternative translations, etc., making it difficult to disentangle the quality of contributions on an individual volunteer level.

CHAPTER THREE

When the Platform Sells Out: The Effects of Acquisition on Unpaid Contributors

3.1 Introduction

Having examined the effects of one type of commercialization enabler in Chapter 2—namely, the professionalization of volunteers within a firm-sponsored online community—this chapter turns to a later stage in the commercialization process: the monetization of unpaid contributions through a third-party acquisition. Specifically, we examine how unpaid contributors respond when the platform to which they have contributed substantial time, effort, and content is sold to an external party. Platform acquisitions often crystallize the value generated by unpaid contributors, while simultaneously raising concerns about contributor recognition, rights, and continued engagement. These commercialization events are especially consequential in settings where individuals contribute under their real names, maintain personal profile pages with bios, and publish self-authored articles or columns. This contributor model foregrounds individual voice and visibility, creating conditions where contributors may be—at least in part—motivated by professional goals such as building an audience, strengthening their reputation, or advancing their careers.

The Huffington Post exemplifies this model. Founded as a pioneering digital media platform, it relied heavily on a large network of unpaid contributors to generate content and drive reader engagement. Its contributor base was diverse, encompassing both professional journalists and non-journalists who wrote op-eds, opinion pieces, and specialized content. For many contributors, participation on the platform was driven by career-related incentives: the opportunity to reach a large audience, enhance personal

visibility, secure additional writing opportunities, and strengthen professional credentials. Unlike hobbyist communities such as Wikipedia or Reddit, where users typically operate under pseudonyms and their real-world identities are deemphasized, HuffPost contributors wrote under their real names and often viewed their unpaid writing as an investment in their professional identity. This makes the contributor profession—specifically, whether an individual was a journalist or non-journalist—a particularly meaningful lens through which to understand heterogeneous reactions to commercialization. This setting offers a valuable opportunity to examine how unpaid contributors respond when the platform they help build undergoes a major commercialization event. We examine this research question using the Huffington Post's acquisition by AOL in February 2011, a $315 million deal. More specifically, we investigate how the acquisition affected unpaid contributor activity, and whether professional identity shaped the magnitude of contributors' responses.

Leveraging detailed panel data from the Huffington Post contributor platform, we examine how this acquisition affected unpaid contributors' activity. Using a dynamic difference-in-differences design, we find that unpaid contributors significantly reduced their output following the acquisition, with a sharp decline in the first two months and persistently lower contribution levels that lasted for at least six months. We observe no evidence of anticipatory decline prior to the acquisition, suggesting that the drop in activity was a direct response to the acquisition event itself. Additional analyses examining heterogeneity by contributor profession reveal that while both journalists and non-journalists reduced their contributions after the acquisition, the decline was more

pronounced among journalists—suggesting that contributors with professional journalism backgrounds were especially sensitive to the platform's commercialization.

3.2 Background and Related Literature

A rich body of research has documented the vital role unpaid contributors play on digital platforms and in online communities (Moon & Sproull, 2008; Levine & Prietula, 2014; Lee et al., 2025). Individuals voluntarily provide valuable resources such as user-generated content, software development, moderation, and knowledge production. Prior studies have extensively explored why individuals willingly participate in these digital communities without direct compensation, consistently identifying several motivations. These include intrinsic factors such as passion, intellectual curiosity, and enjoyment derived from contributing; internalized extrinsic motivators such as social recognition, reputation building, and peer appreciation; and extrinsic motivations linked to career concerns (e.g., Lerner & Tirole, 2002; Roberts et al., 2006; von Krogh et al., 2012).

Despite extensive scholarship on digital volunteerism, most prior studies have focused primarily on nonprofit or community-governed platforms such as Wikipedia and open-source software projects (e.g., Linux and Apache) (for a review, see von Krogh et al., 2012). These nonprofit-governed communities rarely experience substantial commercialization or dramatic organizational shifts, largely because their governance structures explicitly avoid profit-seeking imperatives. However, an increasing number of digital platforms built upon similar wiki-based digital collaboration systems are now venture-capital-backed, for-profit businesses. Unlike traditional nonprofit peer-production

projects, these commercial ventures explicitly aim to monetize unpaid volunteer contributions—through advertising revenue, freemium models, monetized APIs, or leveraging volunteer-generated content as training data for AI systems—to achieve growth, investor returns, and eventual exits via IPOs or acquisitions. Commercial platforms such as Duolingo, Reddit, Viki Rakuten, and Stack Overflow have commercialized unpaid volunteer labor to scale and meet these venture-capital-driven growth imperatives (Lee et al., 2025).

Yet, we still have limited understanding of how contributors react when their voluntary labor is monetized—especially at critical commercialization milestones such as acquisitions. On the one hand, volunteers might perceive acquisitions or commercialization moves as violations of implicit community contracts, triggering negative reactions such as strikes, organized backlash, or even lawsuits. For instance, volunteer moderators on Reddit reacted negatively to API monetization changes by initiating platform-wide blackouts, significantly disrupting normal operations. Recent research by Peukert et al. (2024) provides compelling evidence of this dynamic: when Unsplash, a stock photo platform, released contributors' work for commercial AI training without compensation, affected contributors not only reduced the rate of new uploads but also exited the platform at significantly higher rates. Similarly, unpaid contributors to the Huffington Post expressed dissatisfaction through strikes and lawsuits following its acquisition by AOL, feeling exploited by the platform's commercialization and insufficiently recognized for their role in creating its value (Lee et al., 2025). On the other hand, volunteers' responses to commercialization events might be muted or minimal due to their initial understanding of

the informal nature of the volunteer-platform relationship. Contributors may continue their engagement because they never expected transactional relationships, formal employment, or participation in strategic decisions. Additionally, volunteer communities might interpret commercialization as validation of the value of their contributions or as aligned with their professional or intrinsic motivations—potentially mitigating negative reactions.

In sum, existing literature provides substantial insights into motivations and behaviors within traditional nonprofit online communities and open-source software projects. However, there remains a crucial gap regarding unpaid contributor reactions to commercialization milestones within for-profit, VC-backed digital platforms. Understanding these reactions is vital theoretically—for clarifying how volunteers interpret their roles and relationships within evolving organizational contexts—and practically, for informing platform strategies to manage potential contributor backlash effectively. Our study directly addresses this gap by examining how unpaid contributors react to platform acquisitions, an increasingly common commercialization milestone for volunteer-dependent digital platforms.

3.3 Empirical Context and Methodology

3.3.1 Empirical Setting and Data

Our empirical setting is the Huffington Post contributor platform, one of the earliest and most prominent digital media platforms built on user-generated content. Launched in 2005, the Huffington Post (commonly known as HuffPost) distinguished itself from traditional media outlets by allowing a diverse array of unpaid contributors—including everyday

citizens, freelance writers, journalists, academics, politicians, and celebrities—to publish blogs, opinion pieces, and articles directly on its website. On February 7, 2011, AOL officially announced its acquisition of the Huffington Post for $315 million (AOL/The Huffington Post, 2011). Given that HuffPost had previously raised $37 million from venture capitalists and that none of the acquisition proceeds would be shared with unpaid contributors (Wearden, 2011), it is unclear how contributors would respond to this event. Leveraging this acquisition as a significant commercialization milestone, we study its impact on unpaid contributors by analyzing changes in their publishing behavior before and after the event.

Our dataset consists of article-level records from the Huffington Post contributor platform spanning 2005 to 2018. Each record includes details such as the publication date, headline, contributor profile, and author URL. Using this data, we constructed a contributor-by-month panel focused on the period surrounding AOL's acquisition of the Huffington Post on February 7, 2011. Specifically, we examine the six-month periods before and after the event to capture potential changes in contributor behavior. Our primary outcome variable is the number of articles published by each contributor in a given month, which allows us to examine shifts in publication activity around the time of the acquisition.

Contributors are classified as "paid" or "unpaid" based on language in their author biographies; those indicating a staff affiliation with HuffPost (e.g., variations of "HuffPost") are classified as paid, while all others are treated as unpaid. We further restrict our analysis to contributors who published at least one article before February 2011, thereby ensuring they were active prior to the acquisition and could plausibly be affected

by it. To minimize potential bias from extreme outliers, we exclude the top 5% of paid contributors based on total article count. The resulting final sample includes 2,837 unpaid contributors active prior to the acquisition, generating 36,881 author-month observations over the specified 13-month period.

To explore heterogeneity in contributors' responses to the acquisition, we classified contributors into *journalists* and *non-journalists* based on their self-reported professional biographies. This classification was motivated by the hypothesis that professional journalists may have responded differently to changes in the platform's strategy compared to contributors without formal journalism backgrounds. We parsed the mini-bios from contributor profiles using a keyword-based classification algorithm to flag authors with strong signals of professional journalism experience. Keywords included job titles (e.g., *journalist*, *reporter*, *editor*), media affiliations (e.g., *CNN*, *New York Times*), and academic credentials in journalism (e.g., *journalism degree*). Contributors were labeled as *journalists* if they met or exceeded a confidence threshold of 0.7 based on this scoring logic.

3.3.2 Empirical Strategy

To estimate the impact of the AOL acquisition on contributor activity, we employ an event-study framework leveraging contributor-level panel data. The unit of observation in our analysis is the author-month. Our dependent variable Y_{it} represents the number of articles written by contributor i in month t. To control for time-invariant individual-specific characteristics—such as author expertise, motivation, or intrinsic productivity—we include contributor fixed effects α_i.

Our event-study specification is as follows:

$$Y_{it} = \sum_{\tau=-6,\, \tau \neq -6}^{6} \beta_\tau \cdot \mathbf{1}\{\text{event\_time}_{it} = \tau\} + \alpha_i + \varepsilon_{it}$$

where $1\{\text{event\_time}_{it}=\tau\}$ is an indicator variable equal to 1 if month t for author i is exactly τ months from the acquisition date, and 0 otherwise. The coefficients $\beta\tau$ capture the within-author deviations in article production relative to the omitted reference period, six months prior to the acquisition. We specifically examine the six months before and after the acquisition to ensure sufficient pre- and post-event periods to identify and analyze the temporal dynamics clearly. Standard errors are clustered at the contributor level to account for serial correlation in individuals' article publication decisions over time. Given that the dependent variable is a count of articles, we estimate an alternative specification using a Poisson regression with author fixed effects.

To examine whether the acquisition affected contributors differently based on professional background, we apply the same fixed effects event study framework separately to journalists and non-journalists, as classified using the biographical data described in Section 3.2. This subgroup analysis enables us to examine whether contributors with professional journalistic identities responded differently to the platform's acquisition than those without such affiliations.

3.4 Results

Figure 6 shows the results of our baseline event study using author fixed effects and OLS. The y-axis shows the within-author change in monthly article output, relative to six months prior to the AOL acquisition (the reference period). Pre-trends are flat, suggesting parallel

trends, while a clear and persistent decline in output emerges after the acquisition. These estimates indicate a substantial behavioral response among unpaid contributors following the platform's commercialization.

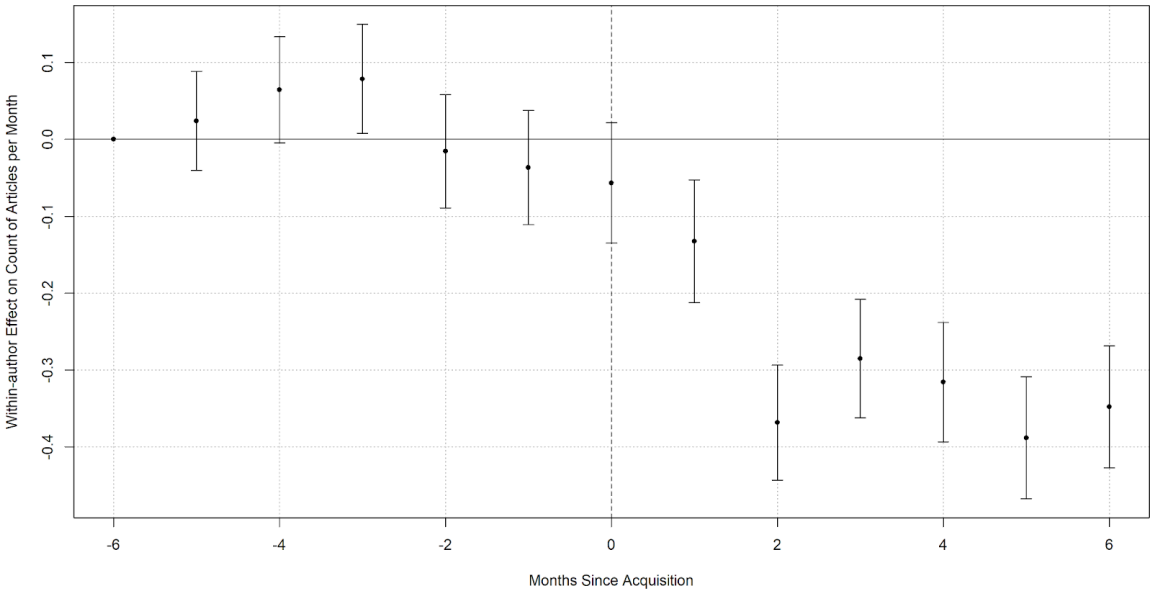


Figure 6. Impact of AOL Acquisition on Article Output (Linear Fixed Effects Model)

Accounting for the count nature of the outcome variable, Figure 7 presents results from a Poisson model with author fixed effects. The pattern mirrors the OLS estimates: output remains stable prior to the acquisition and declines sharply afterward. The magnitude and timing of effects are consistent, strengthening confidence in the baseline findings. The estimated Poisson coefficients show no statistically significant differences in output during the pre-acquisition period (months –5 to –1), indicating the absence of anticipatory behavioral shifts. However, contributor activity drops sharply following the acquisition. In month +1, article output declines by approximately 11.7% relative to the baseline month (–6), and by 36.7% in month +2. This downward trend persists through

month +6, with the largest estimated effect—a 39% decline—observed in month +5. All post-event coefficients from month +2 onward are statistically significant at the 1% level. These results underscore the magnitude and durability of the behavioral response among unpaid contributors.

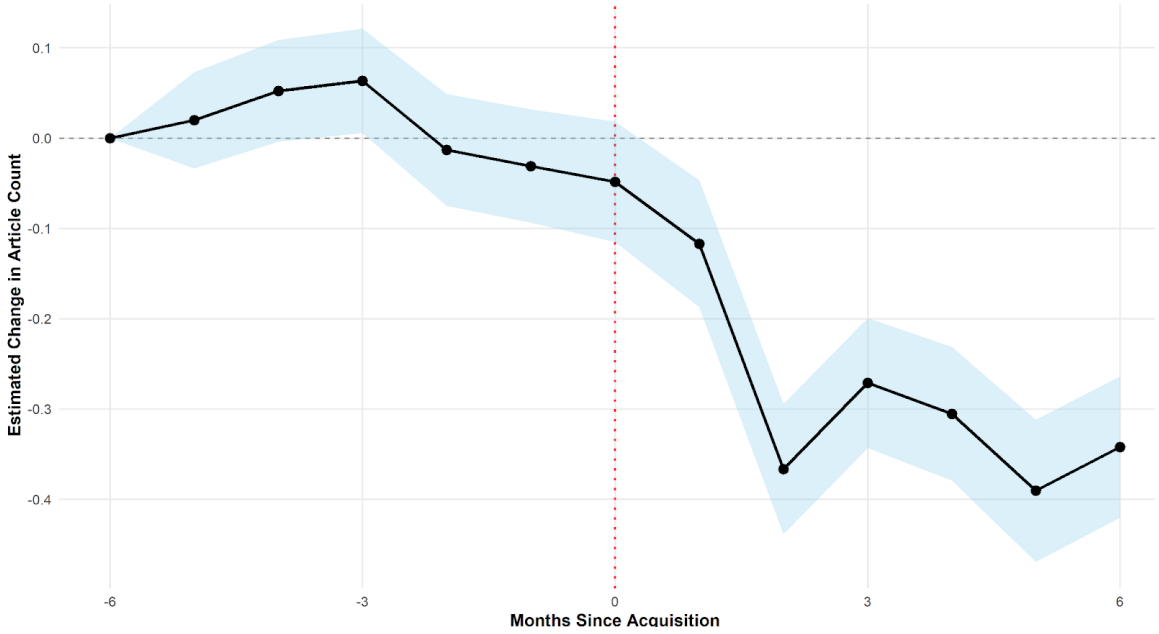


Figure 7. Impact of AOL Acquisition on Article Output (Poisson Fixed Effects Model)

We then turn to heterogeneity by contributor type. Figure 8 compares estimated effects for journalists and non-journalists using a combined event study plot. While both groups reduce output post-acquisition, the decline is more pronounced among journalists. The divergence begins immediately following the acquisition and persists throughout the post-event period. This suggests that contributors with professional journalism backgrounds were more sensitive to the acquisition of the platform.

Figure 8. Heterogeneous Impact of AOL Acquisition on Contributor Output (Linear Model)

Finally, Figure 9 provides a complementary visualization that plots the estimated event-time effects separately for journalists and non-journalists. Consistent with the combined plot in Figure 6, the results show that journalists exhibit a steeper and more sustained decline in output following the acquisition, relative to their non-journalist counterparts.

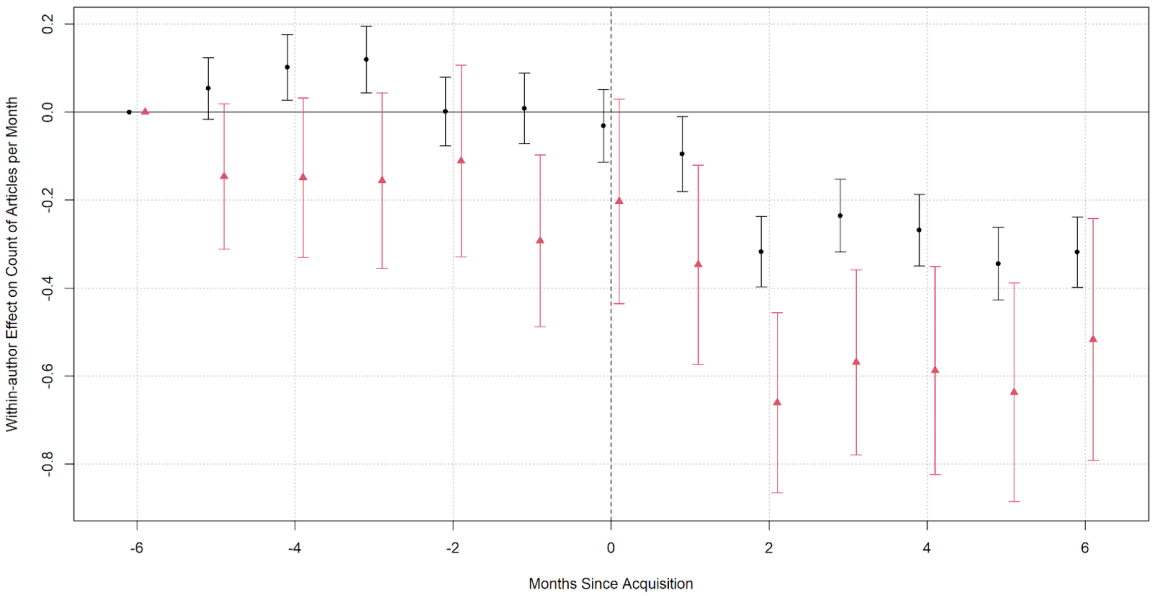


Figure 9. Event-Study Estimates by Contributor Type: Journalists vs. Non-Journalists

3.5 Discussion

This study examines how unpaid contributors respond to the monetization of a digital platform via a third-party acquisition. Drawing on contributor-level panel data from the Huffington Post and using an event-study design, we find a significant decline in article contributions following the platform's acquisition by AOL in 2011. Notably, this decline was more pronounced among contributors with professional journalism backgrounds compared to nonjournalists—suggesting that professional contributors may be particularly sensitive to commercialization events that repurpose their unpaid labor for financial gain.

3.5.1 Theoretical Contributions and Managerial Implications

This chapter extends emerging research on volunteer labor in digital platforms by showing how contributors respond not just to governance changes (as in professionalization), but to

firm-level monetization events. While prior work has emphasized how volunteers are motivated by community norms, autonomy, or identity (e.g., von Krogh et al., 2012), our findings suggest that volunteers are also attentive to how platforms treat their contributions as monetizable assets, especially when monetization is externalized through a sale. Contributors with professional identities may view such commercialization as a threat to personal or occupational values, prompting a withdrawal of effort. This highlights the importance of considering contributors' occupational and identity-based commitments in addition to their platform-level organizational commitment (Bateman et al., 2011; Zhang et al., 2013).

For platform managers and acquiring firms, these findings highlight the importance of managing contributor relationships carefully during commercialization events. Even if contributors are unpaid, they are not indifferent to how their work is used. Sudden commercialization without transparency or acknowledgment can trigger disengagement, especially among more professionally oriented contributors. Beyond labor withdrawal, firms may also face reputational risks or even legal challenges if volunteers believe their contributions have been unfairly appropriated. For example, following the Huffington Post's acquisition, a group of contributors filed a class-action lawsuit against the Huffington Post and AOL (Tasini et al. v. AOL, Inc., 2012). Although the case was ultimately dismissed, it reflects the broader tensions that can arise when platforms monetize community-generated value without offering mechanisms for contributor recognition or compensation—while continuing to depend on the very labor that made them valuable in the first place.

3.5.2 Limitations and Future Research

A key limitation of this study is the lack of a formal control group—all unpaid contributors were exposed to the acquisition at the same time. Although the event-study design provides useful causal leverage, future work could strengthen identification by incorporating synthetic controls or matched comparison samples from similar platforms that were not acquired. Second, while this study focuses on contribution quantity, it does not yet capture more subtle forms of contributor response, such as changes in article tone, content, or platform exit. Future work could complement this analysis with text analysis or survey-based methods. Finally, while we use profession as a proxy for sensitivity to commercialization, additional data on contributor motivations or attitudes would offer a more fine-grained view of how different types of volunteers interpret and respond to monetization events.

CHAPTER FOUR

General Discussion and Future Directions

4.1 Summary of Key Findings

This dissertation was motivated by a puzzling phenomenon: for-profit businesses increasingly rely on unpaid online contributors to develop core aspects of their products and services—yet often do so without sharing the value that these contributors help generate. In many cases, contributors engage in complex tasks such as blog writing, content moderation, forum engagement, subtitle translation, or course creation—roles that closely resemble those of paid employees in terms of effort, commitment, and responsibility. While digital collaboration of this kind echoes the volunteerism seen in open-source software communities (e.g., Linux, Apache) or Wikipedia, the platforms examined here are fundamentally different: they are owned and operated by entrepreneurs and investors, and structured in ways that make unpaid contributions directly enhance the value of the firm.

Despite the growing prevalence of this business model, the experiences and perspectives of unpaid contributors—arguably a neglected stakeholder group in the platform economy—have received limited scholarly attention. This dissertation addresses that gap by examining how platform commercialization efforts—both anticipatory (e.g., internal restructuring) and culminating (e.g., acquisitions)—reshape contributor behavior and participation. To ground this inquiry, the dissertation introduces and defines key concepts related to contribution-dependent digital platforms and theorizes the organizational and design mechanisms through which unpaid work is commercialized. These commercialization processes may vary in timing (upstream vs. downstream), in

visibility to contributors, and in their implications for contributor agency and platform governance.

Two empirical studies explore distinct stages of commercialization and highlight how contributor motivations influence reactions to platform transitions. The first study, based on Duolingo, examines an upstream governance shift from open volunteerism to paid employment. It shows that platform-led professionalization reshapes contributor engagement, with continuance commitment emerging as the strongest predictor of both application to paid roles and post-hire productivity, while affective commitment is negatively associated with productivity. The second study examines a downstream commercialization event—AOL's acquisition of *The Huffington Post*—and finds that the acquisition triggered a significant decline in article submissions, particularly among unpaid contributors with high prior engagement or professional journalism background. These heterogeneous effects reveal that contributor withdrawal is often driven less by commercialization itself than by perceived violations of community norms. Taken together, the studies offer a nuanced account of how commercialization affects not only contribution levels but also the underlying social contract between platforms and their unpaid contributors. By theorizing the overlooked experiences of these contributors, the dissertation advances our understanding of digital labor, value creation, and governance in the digital platform economy.

4.2 Implications

This dissertation advances theory and practice by conceptualizing and empirically examining how contribution-dependent digital platforms navigate commercialization

while relying on unpaid labor. It contributes to several academic literatures and offers practical guidance for entrepreneurs, community managers, and investors involved in building and scaling such platforms.

4.2.1 Theoretical Implications

First, the dissertation contributes to research on digital platforms and online communities by formally introducing the concept of contribution-dependent commercial digital platforms—platforms that generate value through the sustained participation of unpaid contributors yet are owned and monetized by entrepreneurs or investors. This category includes platforms relying on unpaid efforts in diverse roles, such as article writing, forum moderation, translation, or course development. The dissertation theorizes this phenomenon as a distinct form of organizing, where firms create and capture value through the engagement of external stakeholders rather than internal employees, often blurring the boundary between volunteerism and formal work.

Second, the dissertation enriches the platform governance literature by conceptualizing commercialization as a staged process—ranging from upstream structural shifts like professionalization and internal restructuring to downstream market-facing events such as acquisitions and IPOs. This staged view reveals how different types of commercialization reshape contributor expectations and affect platform-community dynamics in different ways. Third, this work contributes to the digital labor and online community literature by showing how unpaid contributors interpret and respond to changes in platform governance and value orientation. Contributors do not react solely to formal events, but to perceived violations of community norms and shifts in the platform's social

contract.

Fourth, the dissertation extends organizational commitment theory by applying it to digital volunteer contexts and hybrid labor models. Traditionally used to explain employee behavior within firms, the framework is adapted here to examine unpaid contributors in firm-sponsored platforms. The findings show that different dimensions of commitment—continuance, affective, and normative—shape the decision to apply for paid work and influence post-hire productivity in distinct ways. In doing so, this work advances our understanding of how commitment functions in novel organizational arrangements where contributors are neither fully internal nor external to the firm.

Finally, by empirically studying the professionalization of a volunteer-based online community, the dissertation also sheds light on the often-overlooked final phase of the community lifecycle—where firms transition from open, participatory models to more closed or managed forms of labor. This transition has important implications for platform sustainability, contributor morale, and long-term community viability.

4.2.2 Managerial Implications

For platform entrepreneurs, product managers, and venture capitalists who seek to build scalable digital services powered by unpaid contributors, the findings offer practical guidance for navigating the commercialization process responsibly and sustainably. First, the studies highlight the importance of managing contributor relationships during strategic transitions. In the Duolingo case, volunteers with high continuance commitment—those who had built habits of consistent engagement—proved to be the most adaptable to paid employment and the most productive once hired. In contrast, affective commitment—while

rooted in active social interactions and emotional attachment—did not consistently translate into strong performance within more formalized work environments. These findings suggest that firms should be cautious in assuming that emotional bonds or informal socialization alone are sufficient to sustain contributor engagement during professionalization.

Second, in the case of external commercialization events—such as acquisitions—the findings show that contributor disengagement is not uniform but varies significantly across contributor groups. In the Huffington Post case, declines in contribution were especially pronounced among unpaid contributors with professional journalism backgrounds and historically high levels of engagement. These heterogeneous effects suggest that some contributors may be particularly sensitive to changes in ownership or strategic direction. Platform owners and investors should therefore proactively assess which categories of contributors are most at risk of disengagement, carefully consider the potential consequences of their decisions, and take early steps to manage these transitions thoughtfully. Doing so can help mitigate the risk of reputational damage, backlash, or even legal disputes—especially when unpaid contributors have played a foundational role in generating the platform's value.

Importantly, the findings from Duolingo and The Huffington Post highlight that contributor reactions to commercialization are shaped not only by the type of transition but also by the underlying motivations that initially drew contributors to the platform. Platforms like Duolingo, which attracted contributors primarily motivated by intrinsic factors such as passion for education and community engagement, faced different

challenges compared to platforms like The Huffington Post, where contributors were often driven by professional goals such as building visibility, reputation, and career advancement. For mission-driven volunteer communities, professionalization efforts may succeed if they preserve the core values that originally motivated participation, offer meaningful pathways to continued involvement, and recognize contributors' past efforts. Abrupt governance changes that disrupt the sense of community or erode perceived fairness risk alienating highly committed contributors, even if paid roles are introduced. In contrast, career-driven contributors—such as unpaid journalists contributing to the Huffington Post—are particularly sensitive to commercialization events like acquisitions that alter the platform's brand, audience reach, or perceived professional legitimacy. For platforms built around professional visibility, maintaining contributors' public profiles, signaling stability and credibility, and offering new career-building opportunities become critical strategies to retain engagement. Therefore, platform owners and managers should carefully consider the incentive structures that characterize their contributor base and tailor their commercialization strategies accordingly—recognizing that the same transition may elicit very different reactions depending on what contributors value most.

Taken together, the dissertation emphasizes that commercial success is not solely a function of platform growth, but also of sustaining contributor trust and legitimacy. Entrepreneurs and investors must consider contributors not simply as a means to scale, but as critical stakeholders whose motivations and expectations may differ substantially. Recognizing and responding to these differences—whether volunteers are motivated by intrinsic mission alignment or professional advancement—is essential to managing

transitions successfully. By anticipating the frictions that commercialization can produce across diverse contributor groups, platform builders can better design transition strategies that protect both the value they've built and the communities that helped create it.

4.3 Limitations and Future Research

While this dissertation offers theoretically grounded and empirically robust insights, several limitations merit discussion—many of which open promising avenues for future research. First, the empirical analysis focuses on two platforms—Duolingo and The Huffington Post. While these cases were carefully selected to represent distinct stages in the commercialization process, the findings may not generalize across all platform types or industries. Future studies should explore whether similar dynamics hold in other domains such as open-source software, social media, or other platforms.

Second, each empirical study carries context-specific limitations. In the Duolingo study, productivity was measured using activity-based metrics rather than the qualitative impact or value of contributions. While activity is a valid proxy for engagement, future research could explore how professionalization affects the quality or depth of contributions—particularly where meaningful qualitative measures exist. In addition, because the study relied on observational data, the operationalization of psychological constructs such as organizational commitment warrants further validation. Triangulating with qualitative data—such as interviews or survey responses—could strengthen the theoretical interpretation of behavioral proxies.

Third, the Huffington Post study lacked direct qualitative insights from

contributors, making it difficult to assess contributors' subjective reactions to the acquisition. While behavioral patterns revealed heterogeneous disengagement, deeper understanding of the mechanisms behind these patterns (e.g., perceptions of fairness, loss of control, or shifting platform identity) remains an important direction for future research. In particular, analyzing contributor-generated text through content analysis, topic modeling, or textual embeddings before and after the acquisition could shed light on evolving sentiments, thematic shifts, or emerging concerns within the contributor community.

More broadly, future research could explore how different types of volunteer motivations—ranging from intrinsic mission-driven goals to extrinsic professional ambitions—moderate contributors' responses to diverse commercialization strategies. The findings from Duolingo and The Huffington Post suggest that contributor reactions to platform changes are not uniform but are shaped by initial motivations and expectations. Systematic investigations across different platform types and commercialization events could provide deeper insights into when and why contributors are more likely to resist, adapt, or disengage following governance transitions.

Building on the limitations and findings presented in this dissertation, several promising directions for future research emerge. First, while Chapter One offers a conceptual framework that identifies and categorizes commercialization mechanisms in contribution-dependent platforms, further theoretical refinement is warranted. In-depth qualitative studies—particularly those using grounded theory or process-tracing methods—could deepen our understanding of how commercialization unfolds over time

and how unpaid contributors interpret and respond to these changes. Richer case studies grounded in longitudinal data or ethnographic observation would allow scholars to theorize the process of commercialization more inductively and rigorously, offering insights into contributor motivations, tensions, and coping mechanisms that are not easily captured through large-scale behavioral data alone.

In addition, future work could examine how platforms manage hybrid labor ecosystems in which paid and unpaid contributors coexist. As more platforms professionalize portions of their communities while still relying on volunteer input, understanding the organizational, technical, and cultural mechanisms that enable this balance becomes increasingly important. Platforms like GitLab offer compelling empirical settings to explore how coordination and trust are maintained between professional contributors and community volunteers operating on synchronized development schedules. A related research direction involves identifying symbolic, social, or behavioral mechanisms—short of financial compensation—that sustain unpaid labor after commercialization events. Platforms such as Viki (Rakuten), which continue to rely on volunteer subtitlers despite firm ownership and monetization, offer valuable opportunities to investigate how recognition, autonomy, and community status might substitute for monetary incentives. Such studies could help illuminate the conditions under which contributors remain engaged even when commercialization benefits are not shared directly with them.

Another important area of inquiry concerns the diversity of commercialization milestones and how contributors respond to them. While this dissertation focuses on

professionalization and acquisition, future studies could explore a broader range of events, such as IPOs, API monetization, or governance restructuring. Reddit's decision to reserve IPO shares for its most active moderators, for example, presents a unique case through which to examine how partial inclusion in value capture affects contributor motivation, engagement, and perceptions of fairness.

Finally, as more for-profit platforms extract value from unpaid contributors, ethical and legal questions become increasingly salient. Scholars could investigate the boundaries of value appropriation, including issues of recognition, consent, and legal ownership of digital labor. Comparative studies of for-profit versus nonprofit platform models could further clarify how institutional context shapes contributor expectations, platform strategy, and legitimacy. Research into platform governance mechanisms—especially those that preserve contributor engagement while supporting sustainable commercialization—could help chart viable paths forward for platforms seeking to balance openness and control.

APPENDIX

Appendix A: Typology of Commercialization in Contribution-Dependent Platforms

Commercialization Stage	Type	Mechanism
Monetization	Display Advertising	Selling ad space around volunteer-created content
	Freemium Features	Monetizing access to features created or curated by volunteers
	API Monetization	Charging third parties for access to community-generated content and behavioral data, including use in AI training
Commercialization Enablers	Delegated Organizational Roles	Assigning volunteers formal tasks equivalent to those typically performed by paid employees, without compensation
	Corporate Takeover of Content	Firm assumes control over high-value volunteer-created digital artifacts, displacing volunteer autonomy
	Market-Driven Prioritization	Allocating resources based on cost-benefit analysis and market potential, often marginalizing lower-demand volunteer-generated digital artifacts
	Professionalization	Formalizing or replacing volunteer labor with paid roles, reducing community autonomy and increasing firm control—often as a preparatory step for monetization or investor exit.
Business Milestones	Acquisition	Sale of platform after accumulating value from volunteer-driven growth
	IPO	Public offering built on assets and growth shaped by unpaid contributions

Appendix B. Classification of Archival Articles by Company

Platform	Resource Title	Author / Source
Huffington Post	Tasini et al. v. AOL, Inc. et al., No. 1:2011cv02472 - Document 33	S.D.N.Y. Court
Huffington Post	Tasini v. AOL, Inc., 851 F. Supp. 2d 734	S.D.N.Y. Court
Huffington Post	About That Lawsuit…	Arianna Huffington
Huffington Post	Newspaper Guild calls on HuffPo's unpaid writers to withhold their work	Jim Romenesko / Poynter
Huffington Post	Huffington Post sold to AOL for $315m	Richard Adams / The Guardian
Viki	Racing Against Rivals and Robots on Viki's Translation Assembly Line	Jennifer Zhan / Vulture
Viki	Viki: By the Fans, for the Fans	Mark Chong, Kevin Sproule / HBR
Viki	Viki Disgusts Me (Forum)	Reddit
Viki	Why all the Viki hate?	Viki Discussions
Viki	Rakuten to Acquire Viki	Rakuten
Viki	Rakuten Confirms Acquisition of Viki	Catherine Shu / TechCrunch
Viki	Sale of Viki to Rakuten (Forum)	Viki Community
Duolingo	Duolingo 'incubator' aims to crowdsource language teaching	Juan Andres Munoz / CNN
Duolingo	Massive-scale online collaboration (TED Talk)	Luis von Ahn / TEDxCMU
Duolingo	How Duolingo became fluent in monetization (EC-1 Part 3)	Natasha Mascarenhas / TechCrunch
Duolingo	Duolingo EC-1 (All Parts: Origin, Growth, Monetization, Future)	Danny Crichton, Natasha Mascarenhas
Duolingo	Ending & honoring our volunteer Contributor program	Myra Awodey, Karin Tsai / Duolingo Blog
Duolingo	Duolingo can't teach you how to speak a language, but now it wants to try	Natasha Mascarenhas / TechCrunch
Stack Overflow	Moderation Strike: SO Inc. cannot consistently ignore volunteers	Meta StackOverflow

Stack Overflow	Stack Overflow Users Revolting Against OpenAI Deal	Benj Edwards / Wired
Stack Overflow	OpenAI API Partnership Announcement	OpenAI
Stack Overflow	Stack Overflow bans users en masse for rebelling against OpenAI	Dallin Grimm / Tom's Hardware
Stack Overflow	Developers upset over OpenAI deal	Hasan Chowdhury / Business Insider
Stack Overflow	Users sabotage posts after OpenAI deal	Benj Edwards / Ars Technica
Stack Overflow	Community reactions and protest discussions	Hacker News, Meta StackExchange, Reddit
Reddit	AI is learning from your posts on Reddit, SO, Facebook	ABC Action News
Reddit	Addressing the community about API changes	spez / Reddit
Reddit	Reddit moderator protest & blackout	Kari Paul / The Guardian
Reddit	Reddit CEO defiant on moderator strike	Fortune, Associated Press
Reddit	Reddit follows Goodwill's playbook	Washington Post
Reddit	Reddit blackout explained	AP News
Reddit	OpenAI strikes Reddit deal	Emilia David / The Verge

REFERENCES

Akerlof, G. A., & Kranton, R. E. (2005). Identity and the economics of organizations. *Journal of Economic Perspectives, 19*(1), 9–32.

Altman EJ, Nagle F, Tushman ML (2022) The Translucent Hand of Managed Ecosystems: Engaging Communities for Value Creation and Capture. *Academy of Management Annals,* 16(1), 70–101.

Arazy, O., Daxenberger, J., Lifshitz-Assaf, H., Nov, O., & Gurevych, I. (2016). Turbulent stability of emergent roles: The dualistic nature of self-organizing knowledge coproduction. *Information Systems Research, 27*(4), 792–812.

Ashforth, B. E., & Mael, F. (1989). Social identity theory and the organization. *Academy of Management Review, 14*(1), 20–39.

Ashforth, B. E. (2001). *Role transitions in organizational life: An identity-based perspective*. Lawrence Erlbaum Associates.

Awodey, M., & Tsai, K. (2021, March 10). Ending & honoring our volunteer contributor program. *Duolingo Blog*. https://blog.duolingo.com/ending-honoring-our-volunteer-contributor-program-2/

Ballinger, G., Craig, E., Cross, R., & Gray, P. (2011). A stitch in time saves nine: Leveraging networks to reduce the costs of turnover. *California Management Review, 53*(4), 111–133.

Bateman, P. J., Gray, P. H., & Butler, B. S. (2011). The impact of community commitment on participation in online communities. *Information Systems Research, 22*(4), 841–854. https://doi.org/10.1287/isre.1090.0265

Becker, H. S. (1960). Notes on the concept of commitment. *American Journal of Sociology, 66*(1), 32–42.

Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom*. Yale University Press.

Benkler, Y., & Nissenbaum, H. (2006). Commons-based peer production and virtue. *Journal of Political Philosophy, 14*(4), 394–419.

Boudreau, K. J. (2017). Platform boundary choices & governance: Opening-up while still coordinating and orchestrating. In A. Gawer (Ed.), *Platforms, markets and innovation* (pp. 227–252). Edward Elgar Publishing.

Brockner, J., Tyler, T. R., Cooper-Schneider, R., Kapalan, S., Piterman, H., Reed, T., & Webster, J. (1992). The influence of prior commitment to an institution on reactions to perceived unfairness: The higher they are, the harder they fall. *Administrative Science Quarterly, 37*(2), 241–261.

Butler, B., Sproull, L., Kiesler, S., & Kraut, R. (2008). Community effort in online groups: Who does the work and why? In S. Weisband (Ed.), *Leadership at a distance: Research in technologically-supported work* (pp. 171–194). Lawrence Erlbaum Associates/Taylor & Francis

Cambridge University Press. (n.d.). Commitment. In Cambridge Dictionary. Retrieved March 13, 2025, from https://dictionary.cambridge.org/dictionary/english/commitment

Cao, X., Zhang, D., & Huang, L. (2022). The impact of the COVID-19 pandemic on the behavior of online gig workers. *Manufacturing & Service Operations Management, 24*(5), 2611–2628.

Collier, L. (2000, August). Becoming a community leader. *Smart Computing, 8,* 133–134.

Cook, J., & Wall, T. (1980). New work attitude measures of trust, organizational commitment, and personal need non-fulfilment. *Journal of Occupational Psychology, 53*(1), 39–52.

Dawley, D. D., Stephens, R. D., & Stephens, D. B. (2005). Dimensionality of organizational commitment in volunteer workers: Chamber of commerce board members and role fulfillment. *Journal of Vocational Behavior, 67*(3), 511–525.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Berlin: Springer Science & Business Media.

Drive Capital. (2020, January). Duolingo Looks Inward for Competition [Video file]. YouTube. https://www.youtube.com/watch?v=bCmuveWaD_s&t=148s

Ember, S. (2018, January 18). HuffPost, breaking from its roots, ends unpaid contributions. *The New York Times*.

Faraj, S., Jarvenpaa, S. L., & Majchrzak, A. (2011). Knowledge collaboration in online communities. *Organization Science, 22*(5), 1224–1239.

Faraj, S., Kudaravalli, S., & Wasko, M. (2015). Leading collaboration in online communities. *MIS Quarterly, 39*(2), 393–412.

Faraj S, von Krogh G, Monteiro E, Lakhani KR (2016) Online Community as Space for Knowledge Flows. *Information Systems Research, 7047*, 1–17.

Frey, B. S., & Jegen, R. (2002). Motivation crowding theory. *Journal of Economic Surveys, 15*(5), 589–611. https://doi.org/10.1111/1467-6419.00150

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review, 25*(2), 161–178.

Grote, L., Mayer, J., Penzel, T., Cassel, W., Krzyzanek, E., Peter, J. H., & von Wichert, P. (1994). Nocturnal hypertension and cardiovascular risk: Consequences for diagnosis and treatment. *Journal of Cardiovascular Pharmacology, 24*(2), S26–S38.

Hall, H., & Graham, D. (2004). Creation and recreation: Motivating collaboration to generate knowledge capital in online communities. *International Journal of Information Management, 24*(3), 235–246.

Hirschman, A. O. (1970). *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press.

Homans, G. C. (1961). *Social behavior: Its elementary forms*. Harcourt, Brace & World

Hyde, M. K., Dunn, J., Bax, C., & Chambers, S. K. (2016). Episodic volunteering and retention: An integrated theoretical approach. *Nonprofit and Voluntary Sector Quarterly, 45*(1), 45–63.

Jaros, S. J., Jermier, J. M., Koehler, J. W., & Sincich, T. (1993). Effects of continuance, affective, and moral commitment on the withdrawal process: An evaluation of eight structural equation models. *Academy of Management Journal, 36*(5), 951–995.

Johnson, S. L., Safadi, H., & Faraj, S. (2015). The emergence of online community leadership. *Information Systems Research, 26*(1), 165–187.

Kahn, W. A. (1998). Relational systems at work. *Research in Organizational Behavior, 20*, 39–76.

Kane, G. C., & Ransbotham, S. (2016). Content as community regulator: The recursive relationship between consumption and contribution in open collaboration communities. *Organization Science, 27*(5), 1258–1274.

Kanter, R. M. (1968). Commitment and social organization: A study of commitment mechanisms in utopian communities. *American Sociological Review, 33*(4), 499–517.

Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations* (2nd ed.). Wiley.

Kesavan, S., Lambert, S. J., Williams, J. C., & Pendem, P. K. (2022). Doing well by doing good: Improving retail store performance with responsible scheduling practices at the Gap, Inc. *Management Science, 68*(11), 7818–7836.

Kraut, R., Maher, M. L., Olson, J., Malone, T. W., Pirolli, P., & Thomas, J. C. (2010). Scientific foundations: A case for technology-mediated social participation theory. *Computer, 43*(11), 22–28.

Kraut, R. E., Resnick, P., with Kiesler, S., Burke, M., Chen, Y., Kittur, N., Konstan, J., Ren, Y., & Riedl, J. (2011). *Building successful online communities: Evidence-based social design.* Boston, MA: MIT Press.

Lakhani, K. R., & von Hippel, E. (2003). How open source software works: "Free" user-to-user assistance. *Research Policy, 32*(6), 923–943.

Lee, G. K., & Cole, R. E. (2003). From a firm-based to a community-based model of knowledge creation: The case of the Linux kernel development. *Organization Science, 14*(6), 633–649. https://doi.org/10.1287/orsc.14.6.633.24866

Lee, J., Zalmanson, L., Dellarocas, C., & Burtch, G. (2025, April 16). *How to monetize volunteer-driven platforms*. Harvard Business Review. https://hbr.org/2025/04/how-to-monetize-volunteer-driven-platforms

Levine, S. S., & Prietula, M. J. (2014). Open collaboration for innovation: Principles and performance. *Organization Science, 25*(5), 1414–1433.

Lewin, K. (1951) *Field Theory in Social Science: Selected Theoretical Papers* (ed. Cartwright, D.). Harper & Row, New York.

Li, H., Hecht, B., & Chancellor, S. (2022). Measuring the monetary value of online volunteer work. *Proceedings of the International AAAI Conference on Web and Social Media, 16*(1), 596–606. https://doi.org/10.1609/icwsm.v16i1.19318

Liang, C., Peng, J., Hong, Y., & Gu, B. (2022). The Hidden Costs and Benefits of Monitoring in the Gig Economy. *Information Systems Research, 34*(1).

Lu, G., Du, R. Y., & Peng, X. D. (2022). The impact of schedule consistency on shift worker productivity: An empirical investigation. *Manufacturing & Service Operations Management, 24*(5), 2780–2796.

Marsh, R. M., & Mannari, H. (1977). Organizational commitment and turnover: A prediction study. *Administrative Science Quarterly, 22*(1), 57–75.

Mathieu, J. E., & Zajac, D. M. (1990). A review and meta-analysis of the antecedents, correlates, and consequences of organizational commitment. *Psychological Bulletin, 108*(2), 171–194.

McArdle, M. (2023, June 15). Reddit followed Goodwill's playbook. Now Redditors are on strike. *The Washington Post*.

Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review, 1*(1), 61–89.

Meyer, J. P., & Gardner, R. C. (1994, March). Assessment of change in organizational commitment during the first year of employment: An application of confirmatory factor analysis. Paper presented at the Academy of Management, Research Methods Division, Conference on Causal Modelling, West Lafayette, IN.

Meyer, J. P., & Allen, N. J. (1997). *Commitment in the workplace: Theory, research, and application.* Sage Publications, Inc.

Meyer, J. P., & Herscovitch, L. (2001). Commitment in the workplace: Toward a general model. *Human Resource Management Review, 11*(3), 299–326.

Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior, 61*(1), 20–52.

Meyer, J. P., & Parfyonova, N. M. (2010). Normative commitment in the workplace: A theoretical analysis and re-conceptualization. *Human Resource Management Review, 20*(4), 283–294.

Meyer, J. P., & Hamilton, L. K. (2013). Commitment to organizational change: Theory, research, principles, and practice. In S. Oreg, A. Michel, & R. T. By (Eds.), *The psychology of organizational change: Viewing change from the employee's perspective* (pp. 43–64). Cambridge University Press.

Monteiro, E., Constantinides, P., Scott, S. V., Shaikh, M., & Burton-Jones, A. (2022). Qualitative research methods in information systems: A call for phenomenon-focused problematization. *MIS Quarterly, 46*(4), iii–xix.

Moon, J. Y., & Sproull, L. S. (2008). The role of feedback in managing the Internet-based volunteer work force. *Information Systems Research, 19*(4), 494–515.

Mowday, R. T., Steers, R. M., & Porter, L. W. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior, 14*(2), 224–247.

O'Mahony, S. (2006). Developing community software in a commodity world. In M. S. Fisher & G. Downey (Eds.), *Frontiers of capital: Ethnographic reflections on the new economy* (pp. 237–266). Duke University Press. https://doi.org/10.1515/9780822388234-011

O'Mahony, S., & Ferraro, F. (2007). The emergence of governance in an open-source community. *Academy of Management Journal, 50*(5), 1079–1106.

O'Reilly, C. A., III, & Chatman, J. (1986). Organizational commitment and psychological attachment: The effects of compliance, identification, and internalization on prosocial behavior. *Journal of Applied Psychology, 71*(3), 492–499.

Organ, D. W. (1997). Organizational citizenship behavior: It's construct clean-up time. *Human Performance, 10*(2), 85–97.

Patton, M.Q. (2002). Qualitative Research and Evaluation Methods Sage Publications. Chapter 5 Purposeful sampling: pp 230 – 244.

Pearce, J. L. (1980). Apathy or self-interest? The volunteer's avoidance of leadership roles. *Journal of Voluntary Action Research, 9*(1–4), 85–94.

Pearce, J. L. (1983). Job attitude and motivation differences between volunteers and employees from comparable organizations. *Journal of Applied Psychology, 68*(4), 646–652.

Pearce, J. L. (1993). Volunteers: The organizational behavior of unpaid workers. Retrieved from https://escholarship.org/uc/item/3wc412t4

Puranam, P., Alexy, O., & Reitzig, M. (2014). What's "new" about new forms of organizing? *Academy of Management Review, 39*(2), 162–180.

Ransbotham, S., & Kane, G. C. (2011). Membership Turnover and Collaboration Success in Online Communities: Explaining Rises and Falls from Grace in Wikipedia. *MIS Quarterly, 35*(3), 613–627.

Reischauer G, Mair J (2018) How Organizations Strategically Govern Online Communities: Lessons from the Sharing Economy. *Academy of Management Discoveries,* 4(3):220–247. https://doi.org/10.5465/amd.2016.0164

Ren, Y., Kraut, R., & Kiesler, S. (2007). Applying Common Identity and Bond Theory to Design of Online Communities. *Organization Studies, 28*(3), 377–408.

Ren, Y., Kraut, R. E., Kiesler, S., & Resnick, P. (2011). Encouraging commitment in online communities. In R. E. Kraut, P. Resnick, S. Kiesler, M. Burke, Y. Chen, N.

Kittur, J. Konstan, Y. Ren, & J. Riedl (Eds.), *Building successful online communities: Evidence-based social design* (pp. 77–124). MIT Press.

Ren, Y., Harper, F. M., Drenner, S., Terveen, L., Kiesler, S., Riedl, J., & Kraut, R. E. (2012). Building Member Attachment in Online Communities: Applying Theories of Group Identity and Interpersonal Bonds. *MIS Quarterly, 36*(3), 841–864.

Resnick, P., & Kraut, R. (2012). Evidence-based social design: Introduction. In R. E. Kraut, P. Resnick, S. Kiesler, M. Burke, Y. Chen, N. Kittur, J. Konstan, Y. Ren, & J. Riedl (Eds.), *Building successful online communities: Evidence-based social design.* MIT Press.

Riketta, M., & Van Dick, R. (2005). Foci of attachment in organizations: A meta-analytic comparison of the strength and correlates of workgroup versus organizational identification and commitment. *Journal of Vocational Behavior, 67*(3), 490–510.

Roberts, J. A., Hann, I.-H., & Slaughter, S. A. (2006). Understanding the motivations, participation, and performance of open-source software developers: A longitudinal study of the Apache projects. *Management Science, 52*(7), 984–999.

Safadi, H., Johnson, S. L., & Faraj, S. (2020). Who Contributes Knowledge? Core-Periphery Tension in Online Innovation Communities. *Organization Science, 32*(3), 752–775.

Safadi H, Skousen T, Karahanna E (2024) Firm-Sponsored Online Communities: Building Alignment Capabilities for Participatory Governance. *Information Systems Research, 36*(1), 419–439. https://doi.org/10.1287/isre.2021.0578

Siggelkow, N. (2007). Persuasion with case studies. *Academy of Management Journal, 50*(1), 20–24

Silberling, A. (2021, August 5). Creators can now monetize their expertise on Quora. *TechCrunch*. https://techcrunch.com/2021/08/05/creators-can-now-monetize-their-expertise-on-quora/

Thibaut, J. W., & Kelley, H. H. (1959). *The social psychology of groups*. Wiley.

Thiel, P., & Masters, B. (2014). *Zero to one: Notes on startups, or how to build the future*. Crown Business

Vandenberg, R. J., & Self, R. M. (1993). Assessing newcomers' changing commitments to the organization during the first 6 months of work. *Journal of Applied Psychology, 78*(4), 557–568.

Van Maanen, J., & Schein, E. H. (1979). Toward a theory of organizational socialization. *Research in Organizational Behavior, 1*, 209–264.

van Vuuren, M., de Jong, M. D. T., & Seydel, E. R. (2008). Commitment with or without a stick of paid work: Comparison of paid and unpaid workers in a nonprofit organization. *European Journal of Work and Organizational Psychology, 17*(3), 315–326.

von Krogh, G., Spaeth, S., & Lakhani, K. R. (2003). Community, joining, and specialization in open-source software innovation: A case study. *Research Policy, 32*(7), 1217–1241.

von Krogh G, Haefliger S, Spaeth S, Wallin MW (2012) Carrots and rainbows: Motivation and social practice in open source software development. *MIS Quarterly. 36*(2), 649–676.

Wasko, M. M., & Faraj, S. (2005). Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. *MIS Quarterly, 29*(1), 35–57.

Wiener, Y. (1982). Commitment in organizations: A normative view. *Academy of Management Review, 7*(3), 418–428.

Wilson, J. (2000). Volunteering. *Annual Review of Sociology, 26*(1), 215–240.

Wowak, A. J., Busenbark, J. R., & Hambrick, D. C. (2022). How do employees react when their CEO speaks out? Intra- and Extra-firm implications of CEO Sociopolitical activism. *Administrative Science Quarterly, 67*(2), 553–593.

Yoo, Y., Boland, R. J., Jr., Lyytinen, K., & Majchrzak, A. (2012). Organizing for innovation in the digitized world. *Organization Science, 23*(5), 1398–1408.

Yoo, Y., Henfridsson, O., Kallinikos, J., Gregory, R. W., Burtch, G., Chatterjee, S., & Sarker, S. (2024). The next frontiers of digital innovation research. *Information Systems Research, 35*(4), 1507–1523

Zaccaro, S. J., & Dobbins, G. H. (1989). Contrasting group and organizational commitment: Evidence for differences among multilevel attachments. *Journal of Organizational Behavior, 10*(3), 267–273. https://doi.org/10.1002/job.4030100306

Zhang, C., Hahn, J., & De, P. (2013). Continued Participation in Online Innovation Communities: Does Community Response Matter Equally for Everyone? *Information Systems Research, 24*(4), 1112–1130.

Zhu, K., Shi, Q., & Banerjee, S. (in press). Monetizing platforms: An empirical analysis of supply and demand responses to entry costs in two-sided markets. *Management Science*. Available at SSRN: https://ssrn.com/abstract=4440563 or http://dx.doi.org/10.2139/ssrn.4440563

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