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Platform Service Designs: A Comparative Case Analysis of Technology Features, Affordances, and Constraints for Ridesharing

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Abstract: Ridesharing platforms have gained a strong foothold as an alternative transportation option to vehicle ownership for consumers while being contested for causing widespread market disruption. They continue to foster business model innovation and unveil new opportunities for delivering goods and services within the broader sharing economy. However, relatively little is known about the comparative value of services provided by the numerous ridesharing platforms available today. We, therefore, analyze three exemplars within the broader sharing economy: Uber®, BlaBlaCar®, and Zimride®. We find that these ridesharing platforms are unique service systems with different designs for facilitating peer-to-peer service interactions, which are reflected in their technology features, affordances, and constraints. Our analysis offers researchers and platform owners new ways to conceptualize and understand these two-sided, digital markets with a range of participants, user goals, and service experiences. In particular, we demonstrate that platforms can be designed to cultivate entrepreneur dependency or enable prosumer communication and collaborative consumption. Given pending legislation to regulate platform-based work, platform owners should be mindful about creating an asymmetrical power imbalance with providers given assumptions about service interactions and technology features. Furthermore, researchers should account for service design differences, as well as the technology affordances and constraints, of platforms.

Keywords: sharing economy; service interactions; platform-dependent entrepreneurship; peer-to-peer collaborative consumption

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1. Introduction

Ridesharing platforms have gained a strong foothold as an alternative transportation option to vehicle ownership for consumers [1]. They leverage information technology to enable two-sided, peer-to-peer markets with drivers representing the sell (provider) side and riders representing the buy (consumer) side [2]. By and large, ridesharing platforms establish the market rules and mechanisms that support service interactions between drivers and riders. They facilitate service delivery by enabling collaborative value creation through the application and exchange of resources and competencies by one party (side) for the benefit of the other [3]. Ridesharing platforms are, therefore, service systems comprised of entities that "interact by granting access rights to one another's resources" [4] with specific configurations of collaborative exchanges, resources, and competencies [4]. They typically offer seamless online and mobile coordination of shared rides facilitated by ride-matching algorithms, digital payment processing, and reciprocal user ratings [5].

In many large metropolitan cities, the availability and accessibility of platform-based ridesharing services has exploded because they now enjoy widespread support from both government and business sectors [6]. Some companies and universities today are even providing incentives for their members (i.e., employees and students) to use ridesharing services sponsored by their organizations in collaboration with platform owners [7]. As

a result, ridesharing platforms have caused widespread market disruption because they have taken market share away from traditional taxi services, reduced ridership on public transportation, and decreased car ownership among city dwellers [1]. They have also fostered business model innovation within the transportation sector by expanding consumers' access to more efficient and cost-effective services. For example, consumers can now rent cars on an hourly basis from Enterprise® in addition to its traditional daily and weekly rental options. These types of market developments unveil new opportunities that lie within the broader sharing economy [8], which refers to platform-facilitated, peer-to-peer sharing of underutilized goods and service capacity without a transfer of ownership [9]. Even established sharing economy platforms have expanded their peer-to-peer service offerings, which is fueling expansion of the sharing economy. For example, people can now get restaurant food and groceries delivered to their homes by Uber® drivers, which is a new service branded as Uber Eats®.

Nevertheless, relatively little is known about the comparative value of services provided by the numerous ridesharing platforms available today [6,10]. If these platforms leverage unique resources and competencies or configure the exchange of similar resources and competencies differently, they will create inherently distinct service systems [10]. Therefore, more research on the differences between ridesharing platforms is needed because anecdotal evidence suggests that consumers' service experiences differ drastically across ridesharing platforms [10]. In other words, ridesharing platforms host peer-to-peer service interactions that take many forms and include a variety of driver and rider motives. Variation in their service designs can also influence the power dynamics between the ridesharing platform and drivers, leading to calls for a deeper contextual understanding of platforms as marketplaces [11], especially theoretical perspectives [8].

The strategy literature on digital entrepreneurship [11–13] assumes that platforms are designed to facilitate business ventures run by entrepreneurs. For example, Cutolo and Kenney [11] focus on platform-dependent entrepreneurs who resemble the poverty entrepreneurs described by Neumeyer, Santos, and Morris [13]. Cutolo and Kenney [11] outline the power asymmetries between these providers and platforms to effectively demonstrate the risks involved with the provisioning of goods and services in this entrepreneurial context. They point out that platforms are predominantly designed to lock in providers and avoid disintermediation, which creates an asymmetrical power imbalance with providers. Neumeyer, Santos, and Morris [13] further detail how poverty entrepreneurs are rendered powerless because of their lack of financial resources and digital literacy. However, there is no discussion in this literature of providers who are not entrepreneurs. We therefore need more conceptual frameworks to better understand the range of participants, user goals, and service experiences across ridesharing platforms [8].

In this paper, we draw from the extant literature on service science [4] and conduct a comparative case analysis of service interactions on ridesharing platforms in order to determine whether they represent distinct service systems. A service interaction between a provider and consumer on a platform is defined as the act of selling, renting, or lending a good, or using one to deliver a service [14]. In order to gain more insight into these platforms' underlying designs for service delivery, we draw from service-dominant logic [15,16] because it is a paradigm for understanding value creation in service systems. Within this perspective, service is defined as value that is created collaboratively through the application and exchange of resources and competencies by one party for the benefit of another [3]. On a ridesharing platform, a driver co-creates value with a rider when they use a car to provide transportation to a rider who helps to offset their related costs through monetary compensation. They collaboratively apply their operant resources (e.g., communicated information, geographic knowledge, and driving skills) to the use of operand resources (e.g., platform technology, car, and paid fee) during each shared ride.

The remainder of our paper is structured as follows. We begin by reviewing key concepts for understanding service systems and characterizing the design of service interactions, as well as technology features, affordances, and constraints, which provides

theoretical scaffolding for describing value creation on two-sided platforms. We then describe our methodology and data collection for our comparative case analysis of three exemplar ridesharing platforms: Uber®, BlaBlaCar®, and Zimride®. This is followed by a discussion of our findings, which demonstrate how the technology features, affordances, and constraints of ridesharing platforms enact different service designs that shape the relationship between a platform and the providers and consumers who use it. Next, we discuss the implications of our findings by developing a typology of platform service systems. Finally, we conclude with suggestions for platform owners, researchers, and policy makers.

2. C-O-P Service Designs

To better understand how ridesharing platforms can differentially design service interactions, we rely on the C-O-P triangle [17,18]. It provides a conceptual framework for understanding how service delivery can be structured as a single-episode or repeated-play game, which accounts for both self-interest and the shadow of the future among interacting parties [19]. The C-O-P triangle conceptualizes all service interactions in terms of loose or tight links between three parties: the individual consumer (C) of the service, the organization (O) that facilitates delivery of the service, and the individual provider (P) of the service (see Figure 1). Tight links between any two of these three parties indicate that they have had "repeated and/or intensive contact" [20]. Similarly, loose links imply that the parties have not had any sustained interpersonal contact. In applying the C-O-P triangle to ridesharing platforms, we note that users can be either a consumer (rider) or a provider (driver) in a given service interaction but can then switch roles across subsequent peer-to-peer shared rides. The ridesharing platform is the organization that brokers their service interactions.

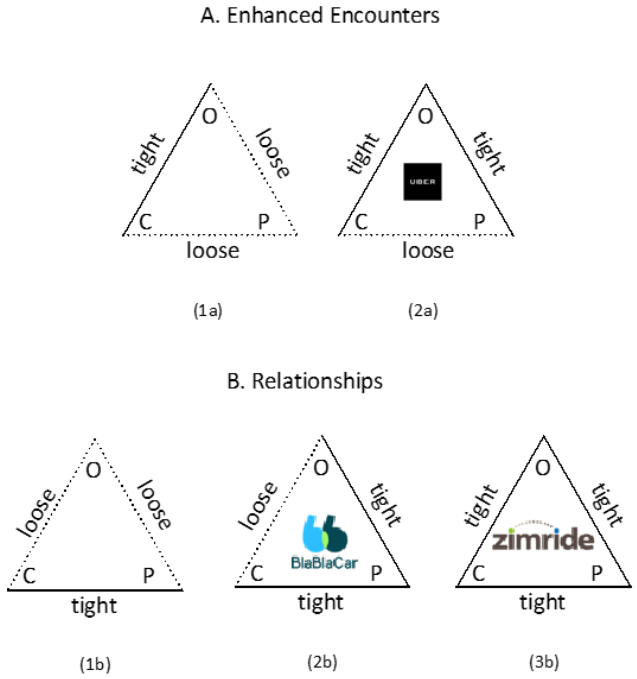

Figure 1. C-O-P Service Designs.

The two C-O-P service designs relevant to our comparative analysis of ridesharing platforms are called *enhanced encounters* and *relationships* [20]. These C-O-P service designs embody very different assumptions about the nature of service interactions between drivers and riders on a ridesharing platform, as well as the corresponding assumptions reflected in the platform's technology that enables service delivery [17]. Although there is no ideal C-O-P service design for providing ridesharing services, it is important to understand the

specific type that is assumed and afforded by the technology of two-sided platforms [20,21] so that all interacting parties have aligned expectations and understand associated benefits and costs.

In enhanced encounters, consumers have the opportunity for repeated service interactions with a specific organization rather than the same provider. A loyal consumer's successive service interactions with an organization involve different service providers employed or affiliated with the organization. Enhanced encounters are, therefore, always depicted with a tight C-O link (see design (1a) in Figure 1; [20]). This service design assumes that individual providers are functionally equivalent and interchangeable when collaborating. For example, banks typically have enhanced encounters with their clients who interact with different bank employees in their branch offices and call centers [19]. Similarly, a rider who repeatedly uses the same platform to connect with different drivers for ridesharing is engaged in an enhanced encounter with that platform. In both cases, however, the organization is assumed to have different resources and competencies relative to their market competitors that enable them to deliver unique banking or ridesharing services, which they highlight when branding and marketing their service offerings. Organizations also actively monitor employed or affiliated service providers, as well as the quality of delivered service experiences, which they often guarantee to build consumer loyalty.

Relationships, on the other hand, are characterized by the opportunity for repeated service interactions between the same consumer and provider [17,18]. This C-O-P service design assumes that individuals have unique needs, resources, and competencies when collaborating as a consumer or a provider. Through successive service interactions involving feedback that is both direct and informal, a consumer and a provider acquire knowledge about each other that enhances their value co-creation. For example, hairstylists typically cultivate relationships with individual clients [19]. Similarly, the service experience of a driver and a rider who repeatedly carpool becomes more customized and personalized over time. In both cases, the provider and the consumer develop trust and a sense of obligation, goodwill, and reciprocity towards each other. Relationships are, therefore, always depicted with a tight C-P link (see design (1b) in Figure 1; [20]). The growing interdependence between provider and consumer for value co-creation makes them less dependent on the organization or platform that initially connected them. In fact, they may stop using a platform to coordinate their ridesharing once they have established a relationship, which is the platform disintermediation discussed by Cutolo and Kenney [11].

Seminal research by Gutek and colleagues [19] found that customers who engaged in relationships had more service interactions and were more satisfied than those who engaged in enhanced encounters. However, most people have a mix of service relationships, for example, with a physician, and enhanced encounters, for example, with a banker. Nevertheless, receiving a service from someone you know personally and expect to see in the future is fundamentally different than dealing with someone who is a stranger that you never expect to see again. "The difference affects the strategies, structures, marketing plans—nearly every aspect of how a service business is managed. Understanding how each type of interaction functions will help managers design a business [or platform] that fits the kind of service they are offering" [20].

3. Technology Affordances and Constraints

Past research suggests that the C-O-P service designs and their corresponding assumptions are reflected in technology that enables service delivery [17]. Therefore, it is important to understand how technology is used during service delivery in addition to the design of service interactions between consumers and providers. This requires an examination of how individuals interact with a ridesharing platform's technological features [21], which are the material properties of a service system that are commonly experienced by all actors who engage with it. Here, it is important to make a distinction between the technological features of the platform and platform users' interpretations of these features. Whereas a technology has certain features that are common to every person

who comes into contact with them, the affordances and constraints posed by a technology can differ greatly depending on the perceptions of each individual [22,23]. By affordances and constraints, we are referring to the perceived opportunities and limitations, as well as enacted behavior, of individuals who engage with technological features [23], whether they are built into a ridesharing platform by design or accident. In order to interact with a technology, prosumers—everyday consumers who also provide peer services in the sharing economy [7]—need to make sense of it. They form assumptions, knowledge, and expectations towards this material artifact [24], and these often implicit and taken-for-granted "technological frames" [24] are significant in enabling or constraining users' actions.

What this means is that individuals' assumptions and expectations about how a technology feature can be used determine how they will interact with it [21]. Given that there are no pre-determined ways in which the technological features of a service system will be used, what is essential to know is how they are perceived by prosumers who interact with them. Therefore, a ridesharing platform's features can be enacted in numerous ways and can have a variety of effects on user behavior depending on the meanings that prosumers attach to them [24]. Having a contextualized understanding of how technology features may be used during service delivery is, therefore, central to determining how users will interact with a platform. Focusing on affordances and constraints opens the black box of technology and allows for analytically examining the intertwined nature of human behavior, technology, and organization [25] in order to better understand the connections between the relational and material aspects of ridesharing platforms—human agency and material agency [22].

4. Methodology and Data Collection

To further investigate the technology affordances and constraints of ridesharing platforms, as well as their service designs, we conducted a comparative case analysis, which is well suited for studying differences and commonalities between organizations [26] and examining phenomena in their contexts [27]. The aim of this research was to expand our current understanding of how different types of C-O-P service interactions on various ridesharing platforms are enacted by prosumers using technology features given their motivations, as well as their perceived opportunities and risks during service delivery. This enabled us to answer our research question: Do different ridesharing platforms represent distinct service systems?

As previously described, the two C-O-P service designs embody very different assumptions about the nature of service interactions between prosumers. We, therefore, used theoretical sampling [28] to select three ridesharing platforms that appeared to embody such differences and enabled us to conduct meaningful comparisons between ride sharing platforms. We identified Uber®, BlaBlaCar®, and Zimride® as exemplar platforms and selected them as our comparative cases. Whereas Zimride® is an organization-sponsored ridesharing platform that provides members of the same organization with exclusive access to peer-to-peer carpooling available in their community [29], Uber® and BlaBlaCar® are platforms that provide consumers with access to similar ridesharing services within broader markets; drivers and riders on the latter two platforms do not need to be members of the same organization. The three ridesharing platforms also differ in terms of the type of transportation that they offer [10]. BlaBlaCar® strategically focuses on providing longer rides between cities whereas Uber® focuses on providing shorter rides within cities, although drivers on both platforms can actually deliver long or short rides. Zimride®, however, only facilitates ridesharing among members of private organizational communities, both within and between cities.

Table 1 presents an initial depiction of the three selected platforms based on their visual branding and the related narrative communication on their websites. As indicated in Table 1, each platform communicated different value propositions for their users at the time of our comparative case study. Interestingly, Uber®'s branding was quite distinct when

compared to BlaBlaCar® and Zimride®. We found that this provided a meaningful starting point for a deeper analysis.

Table 1. Branding of Ridesharing Platforms.

	Uber®	**BlaBlaCar®**	**Zimride®**
Visual Branding	*Individuals acting independently*	*Two individuals embracing each other*	*Group of individuals ridesharing together*
Promoted Value	*Individual autonomy*	*Interpersonal interaction*	*Community engagement*

As such, we conducted a more in-depth analysis by reviewing in detail the websites and mobile applications of each ridesharing platform. We also read numerous media articles and public discussion threads about the platforms as a way to contextualize each of them in their societal context. We first categorized our notes into four general themes: (a) technology features, (b) service design, (c) branding, and (d) business operations. We then built tables that captured the differences between the platforms focusing on factors relevant to our comparative case analysis such as C-O-P service designs, as well as technology affordances and constraints. We further refined our tables by progressing from descriptive elaborations to more abstract summarizations. Table 2 outlines our noted differences in the technology features of the three selected platforms, whereas Table 3 presents our analysis of their technology affordances and constraints, as well as their design assumptions for service interactions.

Table 2. Technology Features of Ridesharing Platforms.

Uber®	**BlaBlaCar®**	**Zimride®**
• *Rider chooses among vehicle type/price options.* • *Platform assigns a singular driver and rider to each shared ride request.* • *No rider or driver information is shared prior to acceptance of assigned ride match.* • *Platform fully mediates payment between riders and drivers.* • *Riders and drivers can rate but not contact each other after shared ride is completed.* • *Different mobile app for riders and drivers.*	• *Platform matches all available riders and drivers to a shared ride request.* • *Riders and drivers can contact ride matches, as well as examine their ratings and profiles prior to choice.* • *Platform facilitates direct payment between riders and drivers with an offline option.* • *Same mobile app for riders and drivers.*	• *Platform matches all available riders and drivers within a private community to a shared ride request.* • *Riders and drivers can contact ride matches prior to choice, as well as examine their profiles, but there are no ratings.* • *Riders and drivers can opt to link their Facebook profile.* • *Platform facilitates direct payment between riders and drivers with an offline option.* • *Same mobile app for riders and drivers.*

Table 3. Technology Affordances and Constraints of Ridesharing Platforms.

	Uber®	**BlaBlaCar®**	**Zimride®**
Service Interaction Assumptions	*Riders and drivers are not prosumers but functionally equivalent within each role.*	*Riders and drivers are prosumers with unique preferences and resources.*	*Riders and drivers are organizational members with unique preferences and resources.*
C-O-P Service Design	*Tight C-O and O-P links*	*Tight C-P and O-P links*	*Tight C-P, C-O, and O-P links*
Provider Type	*Platform Worker*	*Car Owner*	*Car Owner*
Provider Motive	*Entrepreneur*	*Consumer*	*Citizen*
Provider Benefit	*Financial*	*Relational*	*Reputational*

5. Discussion of Findings

We now discuss our analysis of comparative case data summarized in Tables 2 and 3. To demonstrate how our selected ridesharing platforms enact different service systems, we describe how their technology features, affordances, and constraints are intertwined with the service design of each platform.

On the Uber® platform, the profile photo and ratings of a driver and a rider seeking service are only made available to each other after they accept an algorithmically assigned ride match. This technology feature of maintaining individual anonymity until after acceptance of a singularly offered ride match highlights a key assumption of Uber® about drivers and riders, which is that individuals in each role are functionally equivalent for ridesharing. In other words, riders should be willing to engage in service interactions with any driver assigned by Uber®, and vice versa. Although drivers and riders can rate each other after their shared ride is completed, there is no way for them to directly contact each other through the platform once their shared ride has ended. Therefore, riders' successive service interactions with Uber® involve different affiliated drivers. In this way, Uber®'s technology features afford a tight C-O link but a loose C-P link, which is indicative of an enhanced encounter (see design (2b) in Figure 1). Furthermore, Uber®'s enactment of this C-O-P service design reflects its perceived threat of disintermediation, which underpins the power asymmetries on this platform as discussed by Cutolo and Kenney [11].

Interestingly, only Uber® has a different mobile application for riders and drivers. This unique technology feature indicates that Uber® assumes riders and drivers on its platform are not prosumers. In fact, Uber® actively manages its supply of drivers by offering them exclusive benefits (e.g., car leasing, emergency roadside assistance, and auto insurance), which effectively ties them to its platform and affords a tight O-P link (see design (2a) in Figure 1). Therefore, Uber® drivers are likely to be affiliated providers seeking income through freelance work regardless of whether they own the car that they drive. As platform workers [30], Uber® drivers anticipate and seek primarily financial benefits from providing ridesharing services on the platform, which aligns well with the description of platform-dependent entrepreneurs [11] and poverty entrepreneurs [13]. Unlike owners of business ventures, however, Uber® drivers have little control over their work activities or targeted customers because the latter are wholly dictated by the platform's algorithms. The Uber® mobile application for drivers actively directs and monitors their behavior during service interactions, which is similar to how many other organizations treat employees who work in call centers. Beyond enacting service delivery routines and policies, the Uber® mobile application for drivers preferentially rewards those who are available to provide algorithmically assigned shared rides on demand, rendering the promise of autonomy an illusion and reinforcing these service providers' dependence on its platform. Drivers receive additional incentives if they meet or exceed Uber's service utilization and customer

experience standards, which it guarantees to riders. Furthermore, Uber® visualizes drivers' behavior on its mobile application for riders, which represents a co-created competitive advantage of its uniquely configured service system.

BlaBlaCar®, on the other hand, assumes that riders and drivers on its platform are indeed prosumers with unique preferences and resources. Both riders and drivers use the same BlaBlaCar® mobile application to request potential matches for a shared ride, which are algorithmically assigned. They can access the profiles of all matched prosumers before agreeing to share a ride, which include a 'blabla' score indicating individuals' desired levels of chattiness in addition to other personal information such as their photo and phone number. These technology features of the BlaBlaCar® mobile application enable both riders and drivers to communicate and personalize their ridesharing experience, which affords a tight C-P indicative of the C-O-P service design for a relationship (see design (2b) in Figure 1). Individuals' profiles also include ratings from prosumers on the BlaBlaCar® platform to whom they had previously given a ride, which additionally affords a tight O-P link because drivers are able to build and benefit from a positive reputation as a service provider. Interestingly, there are no reputation ratings on the BlaBlaCar® platform for being a rider or consumer, which affords a loose C-O link.

BlaBlaCar®'s enactment of this C-O-P service design reflects that it does not aim to prevent platform disintermediation or exert control over affiliated drivers through a lock-in effect [11]. Instead, BlaBlaCar®'s technology features enable direct interaction and repeat ridesharing among prosumers, which facilitates the development of interpersonal connections between them. Furthermore, drivers only charge riders for costs associated with their shared ride, which are calculated by the platform's algorithm. Therefore, the BlaBlaCar® platform is a poor fit for drivers who want to generate income, namely platform-dependent entrepreneurs [11] and poverty entrepreneurs [13]. Instead, providers on the BlaBlaCar® platform are more likely to be car owners seeking relational benefits from ridesharing while partially recovering costs related to owning and consuming their asset. Therefore, BlaBlaCar®'s assumption that its platform users are prosumers is reinforced by both its C-O-P service design and technology features.

Zimride®, however, assumes that its users are all members of organizations that pay subscription fees to sponsor a private ridesharing community on its platform. Zimride®'s platform has to integrate with each organization's information technology infrastructure (e.g., single sign-on authentication) so that it can restrict access to their private ridesharing community [7]. This unique technology feature is why users perceive Zimride® as an extension of their organization [7], and Zimride® is not concerned about disintermediation. Just like BlaBlaCar®, Zimride® shows riders and drivers all the potential matches for their shared ride request. Riders and drivers can review and communicate directly with other organizational members in their network before agreeing to share a ride. They can even link their Facebook page to their Zimride® profile, in addition to providing other social information (e.g., music preferences). All these Zimride® technology features afford tight C-P, C-O, and O-P links among prosumers, which is indicative of the C-O-P service design for a relationship (see design (1c) in Figure 1) and reinforces that their service interactions are embedded in an organizational community.

By facilitating social connections among riders and drivers who belong to the same private ridesharing network, Zimride® makes use of and strengthens interpersonal trust within existing organizational communities as opposed to other two-sided platforms that "utilize algorithmic mechanisms to foster trust between anonymous parties" [11]. Therefore, it is their organizational attachment that locks these prosumers to their private ridesharing network on the Zimride® platform, which they perceive as being safer and more desirable than other shared transportation options [7]. Nevertheless, drivers' ability to earn income from ridesharing is constrained on Zimride® because riders are only expected to pay a nominal fee to help offset costs associated with their shared ride, which is calculated by the platform's algorithm. This technology feature suggests that drivers on Zimride®

are more likely to be car owners with citizen motives [31] than platform-dependent entrepreneurs [11] or poverty entrepreneurs [13].

6. Typology of Platform Service Systems

Reflecting on the implications of our findings and considering how they relate to the prior research on ridesharing platforms [7,17,18], as well as the strategy literature on digital entrepreneurship [11–13], we propose a typology of two different platform service systems (see Table 4) that we now summarize conceptually.

Table 4. Typology of Platform Service Systems.

	Transactional Service System	**Relational Service System**
C-O-P Service Design	*Enhanced Encounters*	*Relationships*
Platform Governance	*Algorithmic Control*	*Social Control*
Provider Type	*Entrepreneur*	*Prosumer*
Provider Goal	*Survival or Lifestyle Venture*	*Cost Sharing or Social Interaction*
Provider Risk	*Platform Lock-In*	*Platform Critical Mass*

Platforms that support enhanced encounters such as Uber® focus on facilitating a high volume of service interactions with tight C-O and O-P links through algorithmic control. Their technology features afford consumers and providers transaction efficiency and transparency without the need for social interaction or relational contracting. As such, they are particularly well suited for platform-dependent entrepreneurs [11] looking to build survival or lifestyle ventures [13]. Poverty entrepreneurs [13], in particular, may benefit from access to these platforms' ecosystem benefits and resources [12], such as car leasing and technology training in the case of Uber®. That being said, the main risk for these entrepreneurs stems from their embeddedness and dependence on the platform, which gives it increasingly asymmetrical power over their business venture and locks them into the platform. We label these platforms as transactional service systems.

In contrast, platforms that support relationships such as BlaBlaCar® focus on facilitating personalized service interactions with tight C-P links that are governed by social control. Their technology features afford consumers and providers the opportunity for repeated social interaction and relational contracting with the ability to use their platform to coordinate service delivery details. As such, they are well suited for prosumers looking to share the costs of owning an asset such as a car, to be socially responsible citizens and employees, or simply meet more people. The main risk for these prosumers is the platform's ability to attract a critical mass of peer providers with a sufficient supply of assets and service offerings to satisfy the demand diversity of engaged peer consumers [32]. We label these platforms as relational service systems.

7. Conclusions

Our comparative case analysis of Uber®, BlaBlaCar®, and Zimride® offers researchers and platform owners new ways to conceptualize and understand two-sided platforms with a range of participants, user goals, and service experiences. Our typology of transactional and relational platform service systems offers a way to better understand service interactions that take place on these platforms, in particular how they are shaped by technology features and provider motivations. Much of the current literature on digital platforms e.g., [33–35] has been focused on more direct depictions of control mechanisms, market strategies, technology features, and interfaces, whereas the nature of prosumer interactions on such platforms has been scarcely conceptualized. This is also an interesting lacuna in the literature on the sharing economy considering the integral nature of social action in that market domain cf. [36,37]. That is not to say that the importance of trust-building, collective motivations, or collaborative action have not been recognized in the existing

literature. However, there is a lack of depth in conceptually integrating social interaction on two-sided platforms when examining their market strategies and technology design.

Our typology considers the social interactional environment on digital platforms and integrates it with a more strategic analysis of service design and value creation. As such, we add to current categorizations put forth by Gawer [33] and Constantinou, Marton, and Tuunainen [36] by offering a behavioral and motivational view on platform organization and value creation. Furthermore, our typology contributes to recent discussions in the literature about value co-creation on digital platforms e.g., [38,39] by identifying a further complexity. As we have demonstrated, platforms must consider whether they wish to establish a transactional or relational service system in addition to offering attractive value propositions for different user groups. Henceforth, we must acknowledge how value creation is influenced by fundamental differences in the social interactional environments of platforms, both theoretically and practically.

Our research also draws attention to the need to expand discussions of market action on platforms beyond platform-dependent entrepreneurs. These peer-to-peer, digital markets within the broader sharing economy are unique service systems that provide a context for individual consumption and organizational citizenship in addition to entrepreneurial action. The ridesharing platforms in our analysis attracted providers with consumer and citizen motives in addition to platform-dependent entrepreneurs [11]. Therefore, platform owners should evaluate the design of their service system in order to better assess their competitive advantage and highlight their comparative distinction. It may be that there is a strong fit between certain provider types and platforms with a particular C-O-P service design given varying provider goals. Furthermore, a provider may need to experiment with different platforms to find their preferred fit, which suggests that they should adopt the strategy of multi-homing [11] before locking into a particular platform. Future research could, for example, quantitatively assess whether two-sided platforms that are transactional service systems attract largely entrepreneurs whereas prosumers are more likely to populate those that are relational service systems, which is what we found in our comparative case analysis. As pointed out by Gawer [33], it is important to also recognize that platforms evolve over time, and some popular platforms such as Uber® and Airbnb® have moved from more relational interaction environments to efficiency and convenience-based value creation (see also [36]). This dynamic would also be an interesting avenue for further research.

Given that platform service designs impact the power dynamics and relational fabric of service interactions, future research should attend to the underlying technology affordances and constraints of two-sided platforms. It is important to note that disintermediation is not an "existential threat" [11] to all platform-based, service systems although it is often enacted as a technology feature of enhanced encounters and creates power imbalance in service interactions. Therefore, it is important for a platform owner to understand its C-O-P service design in order to effectively align the expectations of providers and consumers on it. Similarly, policy makers should consider the designed service experiences available to consumers and providers when regulating two-sided platforms. Policy interventions may be necessary to ensure that entrepreneurs and prosumers in the sharing economy have access to a variety of peer-to-peer, digital markets. For example, some riders may prefer the personalized service and social bonding afforded by the tight C-P links of service relationships enacted by BlaBlaCar® and Zimride®'s technology features. However, other drivers may prefer the low-involvement efficiency and convenience of the enhanced service encounters facilitated by Uber®'s platform technology. Ultimately, individuals are able to optimize value creation when they can choose among inherently different options for service interactions and experiences in a competitive market.

There is no one-size-fits-all policy solution when trying to protect the interests of providers and consumers in the new platform-enabled sharing economy. Given that all providers are not entrepreneurs and all two-sided platforms do not have the same service design, policy makers should be careful when regulating the nature of platform-

based work and/or the tightness of the platform-provider (O-P) link. Our comparative analysis suggests that platform service systems can be designed to cultivate entrepreneur dependency or enable prosumer communication and collaborative consumption. Given pending legislation to regulate platform-based work [40], platform owners should be mindful about creating an asymmetrical power imbalance with providers [11] through their chosen service design and underlying technology features, affordances, and constraints.

Last but not least, future research on two-sided platforms must account for varying service designs when theorizing them as contexts for market action and business model innovation. For example, ridesharing platforms could generate additional revenue or goodwill through data trading with third parties [35] if they transition to into multi-sided platforms. For example, city planners could benefit from ride pattern data collected by ridesharing platforms for a myriad of transportation planning and control activities. Given the tight C-O and O-P links enabled on the Uber® platform, it is well positioned to extract additional value from the data it collects for both ride matching and performance monitoring. Therefore, Uber® could sell or share its rider and driver data with third parties not directly involved in the service interactions that it facilitates. Although similar business model innovations may be available to BlaBlaCar® and Zimride®, the tight C-P links enacted on their platforms, along with the ability for drivers and riders to connect off the platform, generates lower quality (less complete) data for trading. In the case of Zimride®, there may even be legal or cultural barriers to sharing employee data with any organization other than the employer who is sponsoring the ridesharing community. We would, therefore, argue that the ability to achieve what Trabucchi and Buganza [35] describe as a "multi-sided epiphany" is biased towards platforms that are transactional service systems.

While the origins of all three ridesharing platforms in our comparative case analysis can be traced back to the rise of the sharing economy, they each have evolved to create value quite differently given their underlying technology features, affordances, and constraints. Therefore, including all two-sided platforms that connect consumers to providers under the same conceptual umbrella, even within a service domain (e.g., ridesharing), is no longer appropriate. As scholars, our future research should theorize and empirically explore additional distinctions among platforms in order to develop more nuanced and in-depth explanations for observed phenomena associated with these dynamic, peer-to-peer marketplaces.

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