

How do actors coordinate for value creation? A signaling and screening perspective on resource integration

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Abstract

Purpose – Although service research typically asserts that institutions coordinate actors' value creation processes, institutions and resources are not necessarily transparent, aligned, or pre-existing. This paper aims to develop a more granular perspective on how actors coordinate for value.

Design/methodology/approach – Drawing on the established concepts of signaling and screening theory, this paper adopts a service marketing perspective to explore how independent heterogeneous actors coordinate for value creation at the individual level. Illustrative cases of corporate startup collaborations are presented in support of the proposed conceptual framework.

Findings – Actors share and acquire information through signaling and screening activities in a coordinative dialogue with other actors. These resource integration activities (for resource creation and matching) affect actors' valuations and future actions.

Originality/value – The one-sided explanations of coordination in the existing literature reflect the dominance of the institutional theory. By contrast, the proposed agency-oriented perspective based on the integration of signaling and screening functions offers a more granular conceptualization of the resource integration process. As well as capturing how actors use coordinating dialogue to match resources and institutions, this account also shows that matching is a core element of resource integration rather than an antecedent. The findings indicate paths for future research that focus on the actor.

Keywords Resource integration, Coordination, Signaling, Screening, Matching, Resource asymmetry, Value creation

Paper type Conceptual paper

Introduction

According to the service marketing literature, the joint activities or interactions that emerge during any service exchange represent a source of value for the actors involved (Vargo and Lusch, 2017). This perspective conceptualizes interactions as a process of integrating resources, embedded within the broader domain of interactive value formation (Caridà *et al.*, 2019; Echeverri and Skålén, 2021). Existing research characterizes institutions as rules of the game that enable or constrain actors' resource integration activities and so influence how actors co-create value (Vargo and Lusch, 2016). However, institutions are not deterministic; nor are they necessarily transparent, fully shared, or pre-existing (Karpen and Kleinaltenkamp, 2018; Lusch and Watts, 2018; Vargo and Lusch, 2016), and actors'

access to resources like competencies, relationships, institutions, past experience or information about one another is generally unequal. This complex condition of *resource asymmetry*, which emerges in any existing or potential exchange relationship, leads actors to intentionally or unintentionally misuse, misalign or fail to use available resources (Cabiddu *et al.*, 2019; Laud *et al.*, 2019; Plé and Caceres, 2010; Prior and Marcos-Cuevas, 2016). For that reason, there is a need for an

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actor-centric explanation of how actors coordinate to facilitate value co-creation rather than value co-destruction within the process of interactive value formation (Echeverri and Skålén, 2021; Edvardsson *et al.*, 2014; Karpen and Kleinaltenkamp, 2018). In the absence of a more granular view of resource integration as an embedded core process of interactive value formation, the current literature fails to explain how actors coordinate for value creation.

The goal of resource integration is to create and match resources (actors, institutions, processes and practices) for optimal co-creation of value (Gummesson and Mele, 2010). To facilitate such outcomes, actors must manage dependencies between activities and resources (actors, institutions) through information sharing. Building on this idea, the present paper uses the well-established concepts of *signaling* and *screening* (e.g. in information economics) to explain actors' coordinative behaviors in addressing aspects of resource asymmetry such as information asymmetry (Hult, 2011). Signaling refers to intentional actions (sometimes with unintended consequences) to disclose qualities (e.g. competencies) or intentions (e.g. preference for rule-following) that may not be recognizable, aligned or realized without some degree of effort (Connelly *et al.*, 2011; Spence, 1974). Screening, on the other hand, refers to intentional actions to identify and acquire resources such as information (Bergh *et al.*, 2020; Spence, 1974).

In demonstrating the relevance of an actor-driven explanation of coordinating for value creation, the paper extends the conceptualization of resource integration to incorporate signaling and screening as naturally embedded functions and coordinative competences. We also show how signaling and screening to address resource asymmetry by creating and matching resources shapes actors' valuations and subsequent levels of resistance and interaction. To contextualize this extended framework, the paper describes illustrative cases of collaborative innovation that required comprehensive coordinative dialogue to address resource asymmetries among the involved actors. The paper responds to calls for more research on asymmetric relationships (Tadajewski and Jones, 2021), coordination strategies (Karpen and Kleinaltenkamp, 2018) and the nature of value creation in service marketing (Brodie *et al.*, 2019; Pohlmann and Kaartemo, 2017; Wilden and Gudergan, 2017).

After describing the complex conditions governing how actors integrate resources, we identify the gaps in existing conceptualizations of resource integration. Signaling and screening are introduced as a means of explaining the coordinative activities and interactions associated with resource integration. The paper advances a comprehensive conceptual framework supported by illustrative cases of innovation collaboration and concludes by discussing the paper's main contributions and limitations, along with directions for future research.

Coordinating for value creation

The empirical fact of unequal distribution of resources (such as knowledge, skills, land and capital) begets the economic truth that actors specialize and enter profitable exchange relationships to better themselves. From a service marketing perspective, this means that heterogeneous actors engage in

interactive value formation processes and exchange services through resource integration (Caridà *et al.*, 2019; Vargo and Lusch, 2016). However, while the existing literature recognizes the asymmetric nature of service exchange between heterogeneous actors (Edvardsson *et al.*, 2011), it fails to take account of how the coordination of existing institutional arrangements in complex or problematic situations or the availability of complementary resources is at best minimal and usually temporary (Tadajewski and Jones, 2021; Vargo and Lusch, 2017).

To address this gap, we look beyond a simple view of resource asymmetry as a matter of differential quantitative endowment (e.g. more financial resources) and instead define it as a lack of equivalence between actors' access, interpretation/valuation and application of resources. This complex condition and associated dependencies among heterogeneous actors is seen to emerge before, during and after a cycle of interaction and valuation (i.e. resource integration) As in Akaka, Vargo and Lusch's (2012) discussion of resource adoption, resource access, valuation and use are understood here as ongoing processes of interactive value formation. As indicated earlier, *coordinating for value creation* is part of the wider domain of interactive value formation, and possible outcomes include value co-creation and value co-destruction (Echeverri and Skålén, 2021). Here, coordination refers to the (inter-)actions that contribute to the achievement of intended value outcomes during interactive value formation.

Principles of resource asymmetry and challenges for resource integration

In their elaboration of service-dominant (S-D) logic, Lusch and Vargo (2014) contend that anything that actors draw on or use through interaction can become a resource – something intended and expected to enable value creation. Understanding resources as states of becoming rather than as fixed entities foregrounds the subjectivity of individual actors' valuations and lends relevance to the view that resources are integrated through interaction and *become* with other resources in a given context (Chandler and Vargo, 2011; Lusch and Vargo, 2014). It follows that resources have potential value as context-dependent abstractions that reflect individual actors' sense of "resourceness" or utility in context (Koskela-Huotari and Vargo, 2016; Lusch and Vargo, 2014).

It becomes clear, then, that the unique subjective interpretation of constellations of resources or relations (actors, institutions and other resources) in a particular time- and place-dependent situation contributes to resource asymmetry between actors. Additionally, the empirical fact of non-transparent, misaligned or non-existing resources (such as institutions or competencies) means that some effort may be required to recognize the potential resourceness within a particular context. Actors may also perform different roles in different situations (Chandler and Vargo, 2011), and public, private and market-facing sources of value may overlap, adding to the complexity of deciding who should play which role (Vargo and Lusch, 2011). As actors' embeddedness in a particular exchange context also mediates resource access, interpretation and integration (Laud *et al.*, 2015), altered access or availability affects subjective *valuation* and *interaction* as elements of the resource integration cycle and sources of

Figure 1 Principles of resource asymmetry

Resource asymmetry	Elements affecting and affected by resource asymmetry	Interdependence of elements
<p>Definition: Actors' non-equivalent access to and integration of resources.</p> <p>Classification: Complexity and interdependence of resources emerging before, during, and after any cycle of interaction and valuation (i.e., resource integration) among heterogeneous actors.</p> <p>Consequences: Resource asymmetry affects actors' valuation of resources and is affected by ongoing interactions and outcomes that shape the state of those resources.</p>	<p>Valuation: Non-equivalent access to resources affects actors' subjective valuations and vice versa.</p> <p>Interaction: Non-equivalent access to resources affects actors' interaction styles, skills, and roles in practice.</p> <p>Outcomes: Expected or emergent, intended or unintended, outcomes contribute to actors' non-equivalent access to resources. As newly generated resources (i.e., information), outcomes change or maintain actors' valuations and interactions.</p>	

resource asymmetry, presenting challenges for coordination. A third source of resource asymmetry is the *outcomes* generated by interactions and valuations, which in turn become new resources and influence resource asymmetry. Figure 1 provides a conceptual overview of resource asymmetry as a permanently changing condition of resource integration.

Given that actors make discriminatory valuations based on scarce resources and act as part of a service ecosystem, any interaction will generate some level of information or sensory experience; even non-interaction provides information. Resource integration, including mis-integration and non-integration, generates new resources and influences resource asymmetry by altering or maintaining relations between resources as seen by individual actors. Given the axiomatic condition of time passing, actors can evaluate qualitative and quantitative asymmetries by comparing perceived resource relations before and after an interaction, confirming that resource integration generates ongoing information that contributes to resource asymmetry, enabling or inhibiting interactive value formation.

In similar vein, Peters (2016) advanced the idea of two paths of resource integration that yield either summative outcomes (e.g. exchange of information) or emergent outcomes (e.g. dialogue and learning). Complementing this line of argument, Sitaloppi *et al.* (2016) proposed that novel resources are more likely to emerge from the interpretive flexibility afforded by complex institutions that are overlapping, not fully transparent, misaligned or not yet existing, which we consider part of the more general concept of resource asymmetry. Regarding emergent outcomes, Hughes *et al.* (2018) linked resource integration to learning, arguing that actors enhance their knowledge and skills through experience, which affects how they integrate resources in subsequent interactions. Equally, any outcome may create resource deficits that lead to misuse of resources and ultimately to a lack of trust (Vafeas *et al.*, 2016) or misaligned practices (Echeverri and Skålén, 2011).

Differing interpretations or access to information can also lead to value co-destruction as an aspect of ineffective or inefficient value formation (Echeverri and Skålén, 2021; Plé and Caceres, 2010). Regardless of whether the new perceived state of relations between resources is an intended outcome or an unintended emergent consequence, this remains an issue of

coordination, as it informs the subsequent valuations and actions of other engaged actors. In any event, information is clearly central to resource integration as throughput, input and output of the value processes that underpin service (Löbler, 2018; Lusch *et al.*, 2010; Vargo and Lusch, 2004).

We argue that effective coordination of value formation requires actors to fully understand the available resources and the intentions of their collaborators. Vargo and Lusch's (2014, 2017) parallel argument – that fully coordinated or managerial actions are a special case of resource integration, and that the general act of integrating resources is entrepreneurial – has not been further addressed in the literature. The prevailing perspective contends that, as collective cultural beliefs, social norms and practices, institutions provide a frame of reference that constrains the range of actions available to different groups of actors (Edvardsson *et al.*, 2014; Vargo and Lusch, 2016). Although a more recent account grounded in institutional work seems to acknowledge the agency element of coordination (Koskela-Huotari *et al.*, 2016; Vargo *et al.*, 2015), it focuses on the process of institutionalization rather than explaining how self-interested actors coordinate for value creation.

Interestingly, recent conceptualizations of resource integration refer to a preliminary matching phase as a coordinating activity that ensures the efficient and effective integration of resources in pursuit of value (Caridà *et al.*, 2019). Matching is understood as a dialogical process that aligns resources, practices and actors (Caridà *et al.*, 2019; Gummesson and Mele, 2010). While we acknowledge the relevance of this process of alignment and resource fitting, it remains unclear how matching occurs, but we accept that interactive value formation is a function of matching competence (Echeverri and Skålén, 2021).

Caridà *et al.* (2019) argued that matching is simply a prelude to the main process of resource integration: acting on resources, followed by valuing as the interpretation of resources and outcomes. In this three-phase account of resource integration, Caridà *et al.* (2019) characterize matching as interaction through dialogue in practice, mediated by social context and coordinated by institutional arrangements. While we fully agree that matching is a dialogical process, we contend that a more granular description of how matching actually occurs is needed,

in line with Gummesson and Mele (2010) and Alderson (1957).

First, as matching by definition depends on interaction, it is conceptually inseparable from resourcing. Second, as matching involves identifying and aligning collaborating resource-integrating actors, it is inseparable from valuing (the interpretation or judgment of resources). In general, valuing depends on actors' competencies and past experiences, as well as institutions and other resources, which shows that conceptually valuing is based on resource integration as is matching. In short, Caridà *et al.*'s (2019) conceptual separation of resource integration into separate phases is not theoretically consistent but is conflated with an empirical description. For example, in a coffee shop, matching occurs when a customer looks at the blackboard and asks the barista for suggestions; resourcing is the act of ordering and paying; and valuing is the decision to buy and the customer's judgment of the coffee's value as a subjective matter of taste. Against this, resource integration as a theoretical concept is defined and positioned here as the process underlying all three phases of interaction and evaluation.

In summary, we conceive of resource asymmetry as a complex information problem that renders the existing institutional view insufficient because it lacks an actor- or agency-driven element. To complement existing frameworks and to properly ground the concept of matching, it seems necessary to accommodate actors' competencies and activities for coordinating value formation. Following suggestions for conceptual development in marketing contexts (MacInnis, 2011), we look beyond the institutional theory-driven service marketing perspective to the concepts of signaling and screening; in the substantive domain of service marketing (Jaakkola, 2020), these concepts offer a means of explaining individual actors' responses to the challenges of coordination.

Signaling and screening as coordinative function and competence

The present study is grounded in the concepts of *signaling* and *screening*, which have proved useful in a range of disciplines, including economics, biology and sociology. Hult (2011) argued that these concepts can contribute to (service) marketing theory because they help to explain how actors cope with information asymmetry in exchange relationships (Akerlof, 1970; Bergh *et al.*, 2019; Connelly *et al.*, 2011). The concept of resource asymmetry as defined here is more inclusive than information asymmetry. In our view, information extends beyond market information to the issue of subjective differences; as the core input and output of resource integration, information flows through all the processes of value formation (Vargo and Lusch, 2004).

Spence (1973) defined signaling as one means of transferring information to other actors by disclosing (intentionally or unintentionally) quality characteristics or action intentions that might not be identifiable in the absence of prior interaction (Connelly *et al.*, 2011). Screening refers to activities designed to identify qualities and intentions that are not knowable without some effort (Spence, 1974; Stiglitz, 1975). To that end, actors emit a range of signals and allow others to self-select where and how to respond (Arrow, 1986).

Both of these concepts address the effort or cost of generating, sharing or acquiring information (Gambetta and Bacharach, 2001; Spence, 1973; Zahavi, 1975). Costly or not, every observable action or non-action embedded in a multi-actor social context – in this case, a service ecosystem – can be interpreted as a signal or remain a simple sign. In general, costly signals are not imitable without some effort and have more persuasive power in differentiating actors' valuations of resources (Riley, 2001; Spence, 1974). Connelly *et al.* (2011) argued that less trustworthy information about another and the effort required to distinguish between signal and noise makes actors reluctant to interact (Perkins and Hendry, 2005).

Screening and signaling are multifaceted competencies that actors develop over time for interpreting and using signals. In a dialogue to facilitate value creation, one sequence of intentional actions may prove more useful, and knowledgeable and skilled (i.e. competent) actors facilitate efficient and effective dialogue to coordinate value formation in complex conditions of resource asymmetry. In such a dialogue, signaling and screening enables competent actors to detect relevant signals and to respond or countersignal, so providing feedback that confirms or improves the interpretation (Connelly *et al.*, 2011) or confuses it (Bergh *et al.*, 2019). In short, signaling and screening shape coordinative dialogue through the feedback loop of observing and evaluating the results of one's own and others' actions and responding through further action or non-action.

Through interpretation and comparison, actors try to match newly created or disclosed resources with existing resources (e.g. knowledge, institutions) by determining whether certain actions facilitate value, comply with institutions, explicate the implicit and enhance orientation and interpretation. Successful matching drives the alignment or configuration of resources within an exchange context (Caridà *et al.*, 2019; Gummesson and Mele, 2010; Nenonen and Storbacka, 2010). In furthering mutual expectations or understanding, this can be understood as a competence and therefore also as a resource. Similarly, actors learn which actions distract others from specific resources or generate noise. These cheap actions accompanying the primary signal are used to disturb that signal (Branzei *et al.*, 2004), making a resource visible only to a particular group of actors that are believed to recognize it despite the accompanying noise.

Interestingly, as a function of any deliberate action of this kind, signaling and screening can also be understood as a meta-competence across a range of scenarios and roles. While research has focused mainly on how signaling and screening improve market exchanges by reducing information problems, actors may also resort to opportunistic behavior to create value for themselves while neglecting potential adverse effects for other actors or the natural environment (Edvardsson *et al.*, 2011; Plé, 2016; Williamson, 1985). On a more positive note, signaling and screening inform trial-and-error learning about new resources, new resource combinations and their use in interactive value formation. This is closer to what has been conceptualized as institutional work (Sitaloppi *et al.*, 2016).

Acknowledging the multifaceted subjectivity of resource asymmetry, our theoretical framework conceptualizes signaling and screening as embedded functions of resource integration. If used intentionally and with due effort, this competence

contributes to coordination for value by facilitating resource alignment and matching. Building on the theoretical underpinnings above, we can now elaborate the extended framework before turning to some practical illustrations of its application in practice.

Conceptual framework

Extended conceptual framework

In this first step of our extended conceptual framework (Figure 2), resource integration is envisaged as a cycle of valuation and interaction that affects and is affected by resource asymmetry – actors' non-equivalent access to resources. By incorporating resource asymmetry in our account of resource integration, we aim to show how each cycle creates resources by emitting information that changes or maintains resource asymmetry for the actors involved. As well as limiting or enabling these actors' valuations and integration of resources, resource asymmetry contributes to the evolutionary nature of resource integration. By constantly creating "new" resources (i.e. emitting information), resource integration is an inherently coordinative process – not just in the sense that the involved actors combine resources but because the ongoing emergence of information has consequences for future cycles of resource integration. This coordinative function persists even in the absence of intentional coordination practices.

Unlike other conceptualizations, the first step of our framework excludes matching as an antecedent of the resource integration cycle or as a sequence or separate element. In Figure 3, the second step of the framework extends our account of how actors coordinate for value outcomes.

At the center of Figure 3, matching is the outcome of a goal-oriented approach to coordinating for value based on the signaling and screening functions of resource integration.

Figure 2 Interdependence of resource asymmetry and resource integration

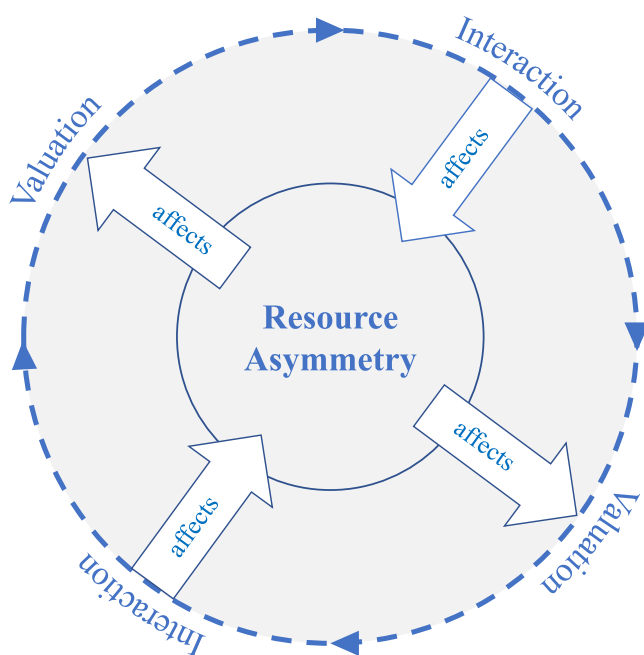
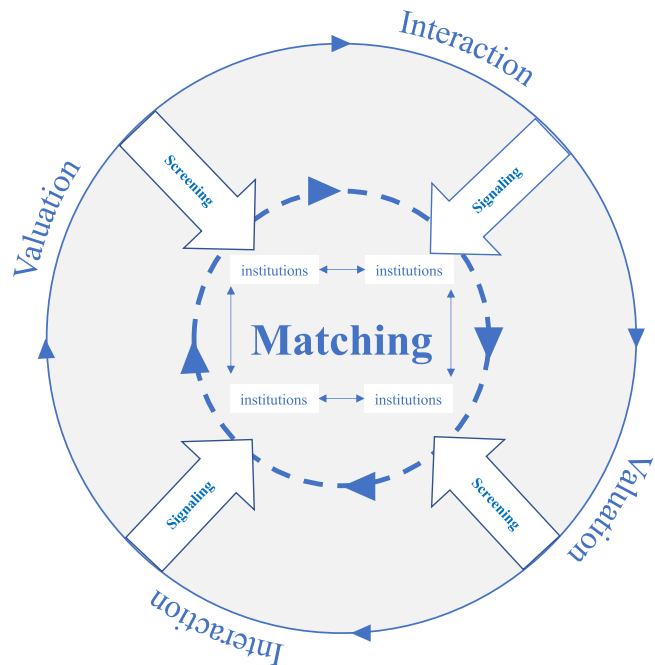


Figure 3 Matching – function of signaling/screening and means for coordination



Actors signal through interactions linked to certain institutions (i.e. meanings), and they screen by comparing, linking or aligning emitted information with existing resources. In sharing and acquiring resources (i.e. information) with or from other actors, this dialogue generates matches. The intentional use of interactions to signal and screen generates matches and coordinates action in pursuit of desired value outcomes. Through ongoing interactions, actors can develop valuable resource combinations to produce complementary matches that more effectively facilitate positive value outcomes. The cycle of trial, error and learning continues until a match emerges. As signaling and screening are enacted in resource integration across multiple institutionalized practices, matching becomes a versatile competence and mediating resource.

Existing institutional perspectives typically neglect the agentic element and lack the necessary granularity to explain how actors coordinate for value amid the uncertainty of resource asymmetry. Our framework bridges this gap by incorporating signaling and screening as strategic tools and by positioning coordination as a competence. To contextualize this extended framework, the illustrative cases in the next section draw on the authors' professional experiences of resource asymmetry in dynamic innovation contexts.

Coordinating for value in corporate-startup collaborations

According to our theoretical framework, resource asymmetry is an aggregate condition of resource integration. Corporates and startups typically differ in their access to resources, and these differences clearly shape the relationship and interaction between such actors. For example, quantitative differences in financial resources prompt startups to seek corporate venture capital to finance growth or to pursue commercial

collaborations that facilitate market entry. Similarly, qualitative differences in credibility, trust or mutual understanding may affect relationships with other relevant actors. Because startups often have business-to-consumer (B2C) access to user groups they identify with, they can develop innovative offerings to address personal pain points and evolving service demands. By contrast, large incumbents that provide services to the same group may encounter complaints because the relationship is taken for granted as the service become a commodity.

In any collaboration, actors starting from different positions are likely to perceive their use of resources as natural and to assume that this is obvious to others. For that reason, despite some complementarity of resources, asymmetric collaborations can prove difficult to coordinate in pursuing desired outcomes. While complementary knowledge underpins the shared value of collaborating for innovation, differing market positions undermine shared understanding of each other's pain points and how best to achieve their common goal. For instance, a startup may need to make immediate short-term gains from collaboration because inefficient use of available resources could lead to financial difficulties or bankruptcy. By contrast, an incumbent may view the startup as one resource among many and sees no need for urgent action.

This lack of mutual understanding may fail them both. Diverging perceptions and lack of knowledge of each other's qualities and intentions can create uncertainty that hinders initiation of collaboration, cuts it short or renders it ineffective or inefficient. This significant asymmetry of resources differs sharply from a strategic alliance with peers or a supplier innovation project. The interaction dynamic is also different when collaborating with lead users as suppliers of ideas rather than with commercial partners working toward strategic goals. Regardless of any partial complementarity, a significant disparity in access to resources is likely to increase uncertainty about means and ends.

In these circumstances, signaling and screening serve as strategic tools for increasing the potential of collaboration to manifest and eventually facilitate value. Adopting a targeted approach, a signaling and screening dialogue can enhance mutual understanding through intentional actions to learn about characteristics and needs. In practice, startups and large market incumbents use signaling and screening to explore their shared resource asymmetry and how combining and integrating resources as collaborators might facilitate value for both. The feedback loop from these signaling and screening activities generates a minimum viable combination of resources that supports initial cooperation and may or may not develop over time into sustained value creation.

This corporate-startup context is exemplary because the success of any such collaboration can be explained to a considerable extent in terms of signaling and screening activities. Through open innovation, large corporations can build on startup success in new markets by screening those markets to learn about value creation in a new context; simultaneously, they signal their innovativeness to investors, achieved through short-term collaboration. Similarly, startups can screen acceptance of their new service by using corporate distribution channels to achieve scale and to gather feedback beyond their own niche. This engagement with a major brand

also signals their power to scale and to dominate their competitors.

In practice, large incumbents are increasingly interested in collaborating with startups as part of an open innovation strategy. To that end, corporates may adapt their habitual legal provisions by moving toward a venture client agreement that allows startups to sell services and run paid pilot projects without the qualitative burden borne by established suppliers. This adaptation of legal agreements is a costly signal demonstrating the corporate's commitment and flexibility, which would not otherwise be apparent. By contrast, as startups have no legitimate achievements to signal competence, the additional uncertainty associated with their innovative technologies and business models makes it harder for incumbents to see how value can be realized through collaboration. For that reason, incumbents may decide to screen startups through low-cost, low-intensity pilot projects before committing fully to a commercial agreement.

Because of resource asymmetry, large incumbents may pay for pilot projects as a signal of fairness, which would not otherwise be observable given the corporation's greater power and independence. Indeed, incumbents may maintain a portfolio of engagement vehicles for startup collaborations, signaling different requirements and outcomes that range from quarterly events and hackathons to incubation or acceleration programs, pilot projects, venture client agreements and corporate venture capital investments. By sending comparable signals, startups can select an entry point to collaboration that reflects their abilities and needs and potentially enhances resource integration and value formation.

Screening and signaling behaviors change according to how potential collaborators approach and interpret each other. A startup may simply wish to use a big brand to enhance its reputation while having other plans for commercial engagement. Equally, a corporate may be more interested in learning about new markets than investing resources that would enable the startup to become a competitor. The lifecycles and primary contacts of both actors may also influence the signaling and screening dialogue. For example, startups run by industry-savvy former consultants rather than young entrepreneurial renegades signal and screen differently when interacting with large incumbents, and a large corporation with multiple departments and sponsors may pursue a wide range of open innovation strategies.

Signaling and screening can also reduce or overcome asymmetry through substitution or opportunistic exploitation of uncertainty. To reduce uncertainty in a given exchange context, a startup may seek to initiate a collaboration with a large corporation by offering a low-effort test of its resourceness (e.g. API access) to signal its quality. Similarly, a startup may overcome uncertainty about its lack of previous achievement by building its offering around a next-generation technology or engage in further proof-of-concept testing to signal its potential for value formation and future collaborations. To secure more funding from a corporate collaborator, a startup may use signaling to increase resource asymmetry after screening the limits of this strategy with the focal partner. The startup may signal a need for further funding by inventing development problems and delaying pilot projects.

On the other hand, startups may reverse to secure better outside investors. If an existing collaboration is proving problematic, the larger organization may seek to maintain a positive narrative to attract other startups, and those positive messages can be leveraged to increase resource asymmetry (i.e. innovation theater). Large organizations can also use signaling to hinder the development of certain relationships by increasing resource asymmetry – e.g. requiring sign-up to complex agreements before engagement sends a signal to startups that lack the necessary competence or commitment. All of these instances confirm the role of signaling and screening as a foundational strategic tool for coordinating value formation by matching resources and aligning mutual expectations.

Conclusion

The present analysis offers a more granular account of how actors coordinate for value. In particular, the proposed framework highlights the relevance of an actor- and action-driven explanation of coordinating by articulating the role of resource asymmetry in resource integration, which is neglected in the existing literature. On this view, resource integration is grounded in a closed cycle of valuation and interaction that plays a coordinative role by continuously generating new resources (notably information).

To complement the existing institutional perspective on the coordination of value formation, we adapt the concept of matching advanced by Caridà *et al.* (2019) and Gummesson and Mele (2010) to extend existing conceptualizations of resource integration. In particular, we conceptualize matching as a coordinative activity that informs the signaling and screening dialogue. The framework describes how actors deal with resource asymmetry, ranging from simple information deficits to a complex variance in rule following, through intentional actions that create, share or acquire information and explains how actors reduce, overcome or exploit resource asymmetry by matching resources to align and shape valuations, levels of resistance and modes of interaction. This actor-centric account restores agency and intention to the coordination of value processes, which is lacking in the existing socio-structural frameworks of S-D logic (Vargo and Lusch, 2016).

Future research – consolidation with seminal economic theories

Following MacInnis (2011), our integrative conceptual approach invites new questions that will further advance existing understanding of resource integration and value formation narratives in marketing contexts. Drawing on this paper's use of mid-range theory from the discipline of information economics, future research should identify and integrate other seminal economic theories at this level of abstraction. In particular, the heterodox Austrian school of economics, which explores the production and use of resources, subjective use-value, the market, spontaneous order and complexity, represents an undiscovered early framework for the value creation narrative and axioms now known as the S-D logic. This invites future theoretical reconciliation and integration around issues like emergence, supported by insights from complexity economics and agent-based modeling of value formation.

The existing emphasis on institutions also neglects the Austrian school's insights into the entrepreneur's use of judgment to identify new combinations of resources in the face of uncertainty. The lively discussion of uncertainty and value creation in the entrepreneurship literature also seem worth exploring; to the extent that effectuation and judgment inform the process of resource integration, the entrepreneurial perspective has much to offer.

The present study also confirms the relevance of concepts like uncertainty and resource asymmetry for future research. The new institutional economics seems a valuable addition to mid-range marketing theory regarding the effects of uncertainty on exchange relationships. Agency theory transaction cost analysis also contribute to explanations of actor coordination, and property rights theory completes this set by lending further depth to discussions of resource use and power.

In general, the more granular approach to uncertainty in the heterodox economics literature promises a better explanation of associated behaviors than the bounded rationality of the S-D logic. The existing value co-creation narrative also neglects the role of individual local and tacit knowledge and the explicit collective knowledge shared by multiple actors. Here, the issues of power and access to knowledge are closely entangled with perceived uncertainty and dominant institutions, indicating a possible direction for exploring decisions and behaviors during resource integration.

The concepts of signaling and screening offer a practical starting point for empirical investigations of interactive value formation and coordination challenges in various contexts. Although rooted in economics and biology, their profoundly social dimension may well illuminate the coordination of action in a multi-actor environment and the occurrence of actions that seem non-rational. In the age of social media, where resource deployment is increasingly complicated by short attention span and fake news, it seems important to explore how dialogue through signaling and screening facilitates matching of actors and resources. For example, to facilitate resource integration, actors may perform social roles at odds with their identity.

Further research on signaling and screening may also enhance our understanding of value co-destruction, asymmetric value outcomes and the decoupling of institutions and actions. Finally, an understanding of signaling and screening may help to explain the emergence, stability and decline of social institutions and service innovation. Some combination of signaling and social capital theory may also yield insights into the motives of individual actors in coordinating resource integration.

Some tentative managerial implications

A signaling and screening perspective on the coordination of value formation through resource integration has implications for managers, customers, and stakeholders in commercial, private, or public service exchanges, especially in traditional service industries. Service firms – which in our view means all firms – and individual service actors can strategically coordinate service exchanges by using signaling and screening for value creation. This may not always work in practice, leading to unintended consequences and even value co-destruction, but learning from such situations may prove useful for managing future service exchanges.

By understanding service exchanges as activities and interactions that emit or capture signals, service actors are reminded that their own actions and those of others have consequences, intended or otherwise. This is especially important at a time when the growth of ecosystem business strategy is attracting increased public criticism and service complaints on social media. Early recognition of strategic alignment and complementarity will enable service firms to target and engage more effectively with relevant actors.

By zooming out and understanding the role of signaling and screening dialogue in resource matching, service firms can shape relationships as one-stop or recurring exchanges. This dialogue is also a powerful strategic tool for driving service growth by extending collaborative networks and enhancing mutual understanding; without it, the well-known startup motto “Fake it till you make it” becomes wholly irrelevant. Finally, the signaling and screening dialogue serves as a long-term strategic tool for (de-)institutionalizing best practices and public policy.

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