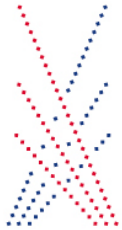

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Characterising Inter-Organisational Relationships within Organisational Ecosystems: Towards a New Data Structure

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Jacqueline Jing You

Christopher Williams

Durham University Business School,

Mill Hill Lane,

Durham, DH1 3LB

United Kingdom

Tel : +44-191-334-5314

Email: jing.you@durham.ac.uk

Email: chris.williams@durham.ac.uk

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Abstract

Organisations often collaborate with stakeholder groups such as suppliers, customers, regulators and other diverse groups to pursue shared goals that would otherwise be difficult to achieve internally. Partnerships in a wide variety of forms are known to provide opportunities for and constraints on organisations' survival and growth. While this phenomenon is increasingly examined in a variety of literatures, individual theories are insufficient to capture the phenomenological complexities of inter-organisational relationships, where formation involves a wide range of motives and intentions and operation comes with a plethora of contingencies. We adopt inductive theorising based on qualitative in-depth interview data from twenty-two cases in China in order to derive a new characterisation of inter-organisational relationships. In our study, we firstly construct organisational ecosystem maps and secondly identify five key dimensions for inter-organisational relationship formation and contingency: *controlling*, *aligning*, *energising*, *internalising* and *committing*. The resulting data structure contributes by highlighting the need for theoretical sythesis in research on organisational ecosystems while providing a basis for future empirical work using a variety of methods.

Key words: Inter-organisational relationships; organisational boundaries; organisational ecosystems; China

INTRODUCTION

The study of inter-organisational relationships (IORs) is well-provided for but fragmented. It is rooted in several theoretical paradigms, ranging from economic theories to behavioural theories (Barringer & Harrison, 2000). Each theoretical approach, however, is seperately developed by means of incompatible approaches (Burrell & Morgan, 1979) each of which only captures a partial account of IOR issues (Barringer & Harrison, 2000). These include transaction costs (e.g., TCE), autonomy (e.g., Resource Depedence Theory), and institutional pressure (e.g., IT) logics. Scholars have noted how IORs are a complex organisational phenomenon, involving various levels of motives, commitment and investment from a wide wariety of partners in different domains (e.g., functional and geographic units) to pursue specific goals (e.g., Albers et al., 2016; Barringer & Harrison, 2000). Some scholars have attempted to synthesise various theoretical paradigms to examine IORs but these tend to focus on a narrower subset, such as a dyadic relationships (e.g., buyer-supplier relationships) (Kim et al., 2010). The pervasive theme focuses on either the positive aspects of IORs (Cropper et al., 2008; Mesquita et al., 2017), such as value creation through accessing to critical resources and knowledge (Doz & Hamel, 1998), or negative aspects (Spekman et al., 1998; Oliveira & Lumineau, 2018), such as failure rates (Porter, 1987) and unethical practices (Carter, 2000).

While these research efforts have advanced understanding of IORs, limited insights are offered as regards key strategic and operational concerns of IORs across organisations. IOR scholars face a number of inherent tensions and challenges. Firstly, IORs involve two or more organisations interacting in a patterned way over time. This creates complexity in theorising about relationships because it requires scholars to explicitly define the unit of analysis, for example, whether they prioritise one organisation, both, or more. Secondly, relationships comprise interactions or connections which are dynamic in nature. Oliver (1990:

241) defined IORs as being 'the relatively enduring transactions, flows, and linkages that occur among or between an organisation and one or more organisations in its environment'. This requires a consideration of why and how relationships form, develop, maintain or terminate over time. Thirdly, IORs span multiple levels of analysis across organisational boundaries, involving individuals, teams and organisations that provide an important bridge across the complex layers of organisations. The relationships and the interactions can be described as function (e.g., instrumental or expressive [Casciaro & Lobo, 2008]), outcomes (e.g., resource, emotions, products, services [Quinn & Dutton, 2005; Weick & Roberts, 1993]), quality (e.g., positive or negative [Dutton & Ragins, 2007]), and structure (e.g., social network [Perry-Smith & Shalley, 2003]).

In reviewing the literature, there appears still to be general neglect of IORs by scholars and yet, William (1965:B-218), opined that 'organizations are embedded in an enviornment of other organizations as well as a complex norms, values, and collectivities of the society at large'. We emphasise that relationships between any formal organisation and its environment, both de jure and de facto, centers on the degree of firms' dependence upon their environment. The environment is described as *ecosystem* or *'business ecosystem'* (Jacobides et al., 2018)*;* a 'community of organizations, institutions, and individuals that impact the enterprise and the enterprise's customers and suppliers' (Teece, 2007: 1325). The primary emphasis of ecosystem is on the heterogeneous actors (i.e., suppliers, customers and regulatories) that affect each other through activities as well as their ability for value creation.

Our approach is to inductively explore IORs within organisational ecosystems in order to identify their characteristics in a new way. We conduct in-depth qualitative research (Gioia et al., 2013) with twenty-two firms in ecosystems across various industries in China. Based on primary interview data and extensive secondary data, we first construct system maps for each case in order to identify structural features of each firm within its ecosystem.

We then utilise the qualitative method to build a new data structure of IOR attributes within ecosystems, culminating in five dimensions of IORs: *controlling, aligning, energising, internalising* and *committing*. This data structure can be used to guide future work on the dynamics and contingencies of IOR formation and effect within organisational ecosystems.

THEORETICAL BACKGROUND

The term 'ecosystem' in management and organisational studies is used as a metaphor to describe a system of interconnected actors depending on each other to 'ensure the overall effectiveness of the system' (Iansiti & Levien, 2004: 5). In recent years, the concept of ecosystems has increasingly appeared in journals such as the Strategic Journal Management (e.g., Teece, 2007; Gulati et al., 2012; Hannah & Eisenhardt, 2018; Jacobides et al., 2018), Entrepreneurship Theory and Practice (e.g., Spigel, 2017) and the Journal of Management (e.g., Adner, 2017), as well as Academy of Management Journal (e.g., Dattee et al., 2018). Dattee et al. (2018: 468) point out that 'moving to an ecosystem perspective may fundamentally broaden the heterogeneity of actors a company may address and hence, the value the firm may create'. The ecosystems approach, therefore, has been seen as a novel and fresh way to depict 'a range of value creating interactions and relationships between sets of interconnected organizations' (Autio & Thomas, 2004: 204).

There are three broad aspects of ecosystems: a 'business ecosystem' aspect which focuses on a firm and its environment; an 'innovation ecosystem' aspect which emphasises a particular innovation and the actors around it; and a 'platform ecosystem' aspect which studies how actors organise themselves around a platform (Jacobides et al, 2018). Despite the recent surge of research on ecosystems with theoretical underpinnings (i.e., value creation), the concept is still viewed as a conceptual umbrella rather than a coherent theory (Spigel, 2017). A criticism of the ecosystems approach concerns the lack of theory to explain what determines the level and form of control in an ecosystem and how mechanisms governing the

ecosystem emerge and evolve (Adner, 2017; Jacobides et al., 2018). In addition to these academic works on ecosystems, most usage of the term appears in the popular practical and business press in a variety of contexts such as finance, manufacturing, and entrepreneurship (i.e., Deloitte, 2015; Jacobides et al., 2018).

Consistent with prior work (Adner, 2017; Jacobides et al., 2018), we draw on the Open Systems Theory (OST) to conceptualise organisational ecosystems in this study. OST, emerging in the 1950s, is a paradigm that conceptualises organisations as open systems (Bertalanffy, 1950; Boulding, 1956; Ashby, 1956). They are considered as a system because an organisation encompasses a number of components or sub-systems that are interdepedent and interrelated (e.g., sales department, human resources department, and accounting department). Furthermore, they are open because organisations acquire various inputs (e.g., materials, labour, capital, information and emotions) from their environments or supra-systems, of which they are a part and then transform them into outputs (e.g., finished goods or services) that are eventually exported to the enviornment (Katz & Kahn, 1978) for exchanging for a fresh round of inputs. The new inputs, however, are discontinued when the outputs of a system no longer create value for the environment (Shrivastava et al., 2009). The cycle of inputs-transformation-outputs (I-T-O) is a dynamic exchange process (Stacey, 2007) that happens at the boundaries of each subsystem within a system and each system within its supra-system; these boundaries are permeable, fuzzy and 'dynamic rather than spatial' (Bertalanffy, 1972: 422).

The Open Systems concept has proved to be influential, in part becauses it provides a general framework to understand how an organisation engages in its inter-relationships with its environment (Miller, 1972; Evan, 1993), in particular focusing on (1) 'the nature of the boundary around a subsystem or system'; (2) 'the nature of the relationships across the boundaries between subsystems and systems'; (3) 'the behaviour of people within a

subsystem or system'; (4) 'the requirements of managing the boundary' (Stacey, 2007: 110). Under the umbrella of OST, IORs refer to any relationships formed at the boundary between (1) the parts and the whole organisation; (2) the whole organisation and the enviornment; (3) the technical and the social aspects of an organisation. In this study, the focus is on the second category of interrelationships that are germane to any interactions between inter-organisations, including inter-subsystems and inter-subsystem and organisation, such as a subsystem in organisation A interacting with organisation B.

Drawing on the organisation-set model (Merton, 1957), this study defines an Organisational Ecosystem (OE) as a system that is composed of the nodes representing actors (i.e. the focal organisation, suppliers, customers, regulators, etc) and the ties that connect to the actors and refer to the particular content of relationships amongst actors or IORs, as well as the boundaries demarcating the actor and its environment. The underlying assumption is that an organisation is embedded within a system of interconnected relationships that provides opportunities for - and constraints on - its survival or growth, such as access to critical resources and information, 'sharing risks and outsourcing value-chain stages and organizational functions' (Gulati et al., 2000: 203).

In the literature, there are two contrasting models (Figure 1) to describe the actors. The first, based on the input-output model, divides actors into input contributors including investors, suppliers and employees, the focal firm which transforms the inputs to outputs, and customers which receive the benefit from the transformation. Although input contributors receive appropriate compensation, this is only at the margin and a great deal of the benefit goes to the customers or investors (Donaldson & Preston , 1995). In contrast to the input-output model, the stakeholder model defines the actors as all being individuals or groups with legitimate interests in obtaining benefits through interacting with the focal firm. The distinctive feature in contrast to the input-output model is that there is no prima facie priority

of one group of interests and benefits over another. Inherent to these two models, the actor in this study refers to any individual or group that interacts with the focal organisation, either formally or informally, but is conceived as a necessity for the focal organisation to obtain what it needs.

Insert Figure 1 here

Graph theory has been used to visually construct interactions amongst organisations in order to measure the level of interdependence of the focal organisation to other organisations (Evan , 1965). One of outcomes has been three highly simplified configurations of IORs: a wheel, a chain and an all channel network (Bavelas, 1951; Leavitt 1964). Broadly speaking, there are three typologies of IORs in the literature (Albers et al., 2016: 585). The legal-structure-based IORs focus on the governance structure of relationships amongst organisations with a legal foundation: contracts and equity investments. This includes formal contractual agreements (Reuer & Arino, 2007) and partnership involving equity investment (Gulati & Singh, 1998) and so on. The activity-domain-based IORs focus on the tasks and activities partners jointly pursue, such as R&D, co-marketing and such like. The partner-characteristics-based IORs emphasises attributes of the individual organisations in the system, including industrial affiliation and position in the value chain. Albers et al. (2016: 585) identified five parameters in designing the structure of IORs, these being 'the structural interface betwineen partners', 'the structural "intraface" with partners', 'specialization', 'formalization', and 'centralization'.

Interactions amongst organisations in OEs happen but are also constrained at boundaries. Santos & Eisenhardt (2005) identified four types of organisational boundary: efficiency, power, competence and identity, respectively dealing with cost, autonomy, growth and coherence. Each boundary offers both vertical boundaries, reflecting the industrial value

chain activities and horizontal boundaries, refering to geographic areas or economies of scope.

The concept of efficiency is grounded in an understanding of differences between market and hierarchy that govern transactions or activities amongst organisations. The assumption is that (1) there are costs involved in managing IORs, such as transaction costs (Williamson, 1985), measurement costs (Holmstrom, 1999) and coordination costs (Conner & Prahalad, 1996); (2) organisations have rights to choose governance structure – market or hierarchy – to efficiently manage IORs. The boundaries amongst organisations, therefore, are defined at the point that minimise the cost when governing activities.

The concept of power is rooted in the concept of external control of organisations, such as resource dependency theory (Pfeffer & Salancik, 2003) and industrial organisation (Porter, 1980). An organisation is viewed as an entity embedded in an interconnected network where the organisation needs to coordinate cooperative and competitive relationships to obtain resources and information. In order to handle uncertainty and improve performance (Thompson, 2003), organisations attempt to exercise power to influence or control others in exchange relations. The boundaries of power are at the point where strategic relationships can be used to increase organisations' power and control over vital external forces (Porter, 1980).

The competence concept is rooted in contingency theory (Chandler, 1962) and resource-based view (Barney, 1991). Given that organisations possess a variety of resources, aligning organisational resources with environmental opportunities in an evolving environment is essnetial for organisations to gain a competitive advantage. The boundaries of competence focus on how organisational resources (e.g., path-breaking and path-dependent resources) can be ultilised or maximised to seize opportunities emerging in an evolving environment. Boundaries are set at the point of maximising the value of the organisational resource portfolio. In an uncertain envrionment, ambiguity becomes a primary driver in

encouraging organisations to adopt a novel approch by combining path-breaking and path-depedent resources.

The identity concept emanates from managerial cognition (Weick, 1995; Prahalad & Bettis, 1986) and organisational identity (Albert & Whetten, 1985; Dutton & Dukerich, 1991). The underlying assumption is that interpretating and making sense of environmental changes are basic tasks of organisational members (Daft & Weick, 1984). When enviornments become complex or ambiguous, organisational members collectively arrive at cognition of any new information they receive and where appropriate, utilise this in any subsequent action they take (Walsh, 1995; Bogner & Barr, 2000; Weick, 1995). Organisational identity helps members to make sense of their situations and provides emotional coherence for members and guides their direction (Kogut, 2000). The boundaries of identity should be set at the point that achieves cognitive coherence between the identity of the organisation and its activities.

METHODOLOGY

Given the broad array of differing theoretical perspectives in the literature on IORs, we adopt an inductive approach to explore the characteristics of IORs within OEs. Our analysis is set in the Chinese context. In order to capture diverse variations and processes in organisational relationship formation and contingency, the study employed a heterogeneous approach (Saunders, Thornhill, & Lewis, 2009) in theoretical sampling (Denzin, 1989). Theoretical sampling differs from random sampling, the latter often being considered appropriate to theory-testing research, as it is purposive and feasible for theory elaboration (Yin, 2009). Patton (2002) argued that, despite being based on a small sample, the heterogeneous approach can significantly amplify the value of the research by involving completely different cases. Following this approach, key criteria for the selection of the cases revolve around the type of ownership, the relevance of the industry, the positioning of the

different cases within the industry sector and location within China, as well as company size measured by turnover and employees, including small sized company (< £6.5 M turnover and < 50 employees), medium sized company (< £25.9 M turnover and < 250 employees), large sized company (> £25.9 M turnover and > 250 employee). Twenty-two companies met the criteria and agreed to participate in the interviews.

Data Collection

As the data collection required extensive travel to accommodate the hectic schedules of senior executives, with an average of 18 years' work experience, all relevant individuals, prior to interview, were contacted by a standard contact letter, providing the objectives of the research, the interview questions and how their input would be used. Written consent was obtained from interviewees. Where necessary a non-disclosure declaration was offered and signed by all relevant parties. All interviewees participated voluntarily and all organisation names remain confidential. To address some of the issues related to semi-structured interviews such as reliability and validity (Sanders et al., 2009), an interview protocol with a standardised question set was designed and developed in such a way that researchers can replicate the same approach and questions across all interviews and all participants should be able to answer all questions and reflect their own views (Yin, 2009).

Interviews were held on a face-to-face basis, guided by the interview protocol, at the premises of the organisations in: Beijing, Shanghai, Chengdu, Hangzhou and Nanjing in China. Using this technique ensured the interviews were not led arbitrarily (Bryman & Bell, 2007). There was a pre-interview meeting, lasting from between 30 minutes to 60 minutes, with each interviewee, in order to ensure that they understood the research topics and the interview questions. All interviews, ranging from 30 minutes to 90 minutes, were digitally recorded and subsequently transcribed, to limit any confusion of context and to mitigate the risk of losing data (Bryman & Bell, 2007; Saunders et al, 2009). As most interviewees were

bilingual (Mandarin and English), Mandarin was the main language used in interviews, this being supplemented with English, in order to improve the understanding of some terminologies, which were not available in Mandarin. A field notebook was also used to record any additional data and information, including wrap-up and clarifications in post-interview, as well as critical and analytical thoughts about the work being undertaken. Beyond the initial collection of data, several follow up telephone interviews were held, for additional questions arising during data analysis or otherwise.

To improve both internal and external reliability of the analysis, data was collected from other sources in addition to that at the interviews. These included publicly available archival resources, such as media articles, snapshots of corporate websites, academic papers, and other sources of data shared by interviewees, including presentations materials, company reports and emails.

Data Analysis

To maintain data reliability and validity, all transcripts, prior to data analysis, were sent back to the respondents for checking and correction (Eisenhardt, 1989). Consistent with the tenets of grounded theory (Strauss & Corbin, 1990), the data analysis followed an inductive and interactive approach described by (Gioia, Corley, & Hamilton, 2013).

Step 1a: Empirical codes. The first step of the data analysis started with open coding (Strauss & Corbin, 1990), to identify key empirical codes that describe (1) key factors being considered when forming and maintaining IORs; (2) key actors being engaged or interacted within the relationship; (3) key strategic activities for exchange within the relationship. This level of coding involved themes found in the literature (e.g., economic or emotional reciprocity) and emerging codes from data (e.g., Kou Bei 口碑; Cheng Xin 诚信). To ensure

the faithfulness of emerging codes, codes that were close to informants' vocabulary were used. All coding processes and coding structures were undertaken with the coding software MAXQDA. At this stage of analysis, it was still not clear how to make theoretical sense of these empirical themes. Hence, the second stage of data analysis was aimed at organising the empirical themes.

Step 1b: Empirical codes – Constructing system maps. The fundamental notion in building a system map for each case is to present visual thinking about an organisation and its interactions with other organisations that are primarily connected by key strategic activities. Adapted from the 'causal loop diagram' (Casadesus-Masanell & Ricart, 2010) and cognitive map (Eden, 2004), the first-order codes labelled as 'key actors' and 'key strategic activities' in the focal organisation for each case, were assembled. To this end, there were twenty-two system maps constructed. To further illustrate the assumed approach in building the OEs, Case F (shown in Figure 2) is used, as an example.

Step 2: Conceptual categories – Characterising IORs. In the second stage of data analysis, axial coding was involved, which is an inductive and recursive process, through which similar first-order codes are reduced by combining closely related codes. This is an abductive approach, moving back and forth between data and research framing on the attributes of IORs (Oliver, 1990). To illustrate this, when comparing the first order code "Necessary legal or regulatory requirements" with other first-order codes: "resource exclusively dependence", "the state of being unavoidable" and "external forces to form relationship", it was observed that these codes concerned mandated relationships with other organisations. The result was that all were grouped into the second-order construct, labelled as 'Necessity'. At this stage both first-order codes and second-order constructs were generated based on representative data from both interviews and documents (Miles & Huberman, 1984).

FINDINGS

Organisational Ecosystems

Based on the first-order codes, twenty-two heterogeneous system maps were produced. Each map represents the connections of a focal organisation to its key partners in both upstream and downstream markets. The key partners are defined as the ones with which the focal organisation perceives it is necessary to work, in order to encourage business survival or growth. Thus, the focus of the system map illustrates a number of actors, key strategic activities being engaged in amongst actors, and the flow of services, goods, capital and information in each system. Figure 2 is an example.

Insert Figure 2 here

Aggregate Theoretical Dimensions of IORs

Controlling. As organisations are not self-sufficient in generating all the necessary resources to survive internally, they have to engage in exchanges with other organisations. To acquire these resources (Pfeffer & Salancik, 1978) also involves conforming to the dictates of such higher authorities that set the rules governing exchange. These higher authorities include organisations that possess critical resources, industrial and professional associations, and government agencies. It is necessary to comply with the demands of these rules in the environment because non-compliance may cause failure in acquiring resources, or the loss of existing resources and even expulsion from the field (Leblebici & Salancik, 1982). The concept of controlling is reinforced by the assumption that forming IORs compels the loss of decision-making autonomy. IORs as regards to controlling refer to organisational behaviour being affected by power, either 'maximising dependence of other organisations on them' or 'minimising their dependence on other organisations' (Ulrich & Barney, 1984: 472) in order

to gain a degree of decision-making autonomy. This reflects on relationship formation either mandatorily or voluntarily.

Necessity. An organisation often has relationships with other organisations because of mandates from higher authorities, such as legal or regulatory requirements.

> *"We are one of 'big four' state-owned commercial banks. Although we operate independently, we are managed by the central bank of China. So, the relationship between us is control - being controlled"* – Case 6

> "*After the reform of 'Plant-Grid Separation' in China's power industry, we have become the largest electric utility company, not only in China but also in the world. However, we can't choose our power suppliers by ourselves because of national regulatory requirements of central stated-owned enterprises." – Case 5*

In addition, the attribute of necessity includes situations of exclusive resource dependence on other organisations, including financial and raw materials. Some examples are listed below:

> *"As we are a subsidiary of state-owned enterprises, our relationship with other organisations are based on resources which the holding company possesses, especially capital." -Case 7*

> *"Although Google is an open source everyone can assess, our software development exclusively depends on Google's Android. This means that we must follow Google's version updates."–Case 7*

> *"We are in the Chemical industry, specialising in producing polyurethane for the automotive industry. In our production, we need ethylene oxide which is only supplied by a central state-owned enterprise…" – Case 1*

Asymmetry. Literature informs that organisational interactions produce new pattern of inter-organisational power, where such power has some effect on organisational behaviour. This may lead to inequality when one organisation exerts its power on other organisations by any means, such as setting up exchange rules.

> *"It's a buyer-market. We don't need to maintain our relationships with suppliers, as there are many suppliers from which we can select." – Case 21*

The benefits of forming IORs far exceed the disadvantages, such as the loss of decision-making autonomy and the cost of managing IORs.

> *"X supermarket is one of our main customers and its influential power is huge in many aspects: purchasing volumes, price and other strict terms and conditions. We can't afford to lose this customer even though we don't favour the terms and conditions." – Case 6*

***Energising*.** The concept of energising is grounded in the RBV of the firm (Barney, 1991). IOR formation is assumed to exploit and explore existing/new resources that can be matched with environmental opportunities. We find, in this respect, IORs hold a potential to help organisations gain sustainable competitive advantages in three aspects: reciprocity, quality and innovation.

Reciprocity. The rationale for IORs formation is to pursue mutually beneficial goals or interests.

> *"Fundamentally, establishing relationships with others is based on mutual-interest. It is a value that you can bring to your business partner or your business partners can bring to you to achieve a win-win situation."–Case 1*

In general, there are two types of reciprocity: social-oriented reciprocity and economic-oriented reciprocity, which co-exist in IORs.

> *"In my view, the determinant of forming a collaborative relationship is based on the premise of benefit. The benefit includes both social benefit and economic benefit. These two benefits interact and are interdependent. Economic benefit is the foundation of social benefit. Without economic benefit, a regulatory system becomes very fragile." – Case 15*

IORs formation between partners having similar status and power is designed to optimise or combine existing resources to maximise the benefits.

> *"We form relationships with other banks through inter-bank deposits. This is a process of maximising profits for all concerned."–Case 6*

> *"The reason we prefer collaborating with these large financial institutions or well-known companies is because they have their own resources and*

capabilities, such as the capability to acquire land and better manage mega projects, which we or other firms don't possess."–Case 7

Quality. Quality attributes in IORs reflect whether or not a product or service meets and/or exceeds a customer's expectations, with a focus on distinguishing features (e.g., appearance and taste).

"For us, maintaining our relationships with customers is very important and the most important factor is whether or not our products or services satisfy with their needs. If they are not satisfied, they will leave us." - Case 6

Quality in IORs refers to stability and dependability in relations with other organisations, especially in an uncertain environment.

"The most important factor in our supply chain with our partners is stability. To establish a long-term relationship, factors, such as a supplier's position in the industry, its relationship with our competitors and its knowledge, capability and resources, are very important." – Case 20

"As the project we are working on is not our speciality, we depend on our partners that have successfully done such mega-projects before and have rich experiences. Our partners are often large financial institutions and well-known property developers."– Case 22

The term 'Kou Bei', in the Chinese context is associated with the notion of value perceived by stakeholders when establishing relationships. This may be influenced by price, availability, reliability and other judgements of quality.

"From the perspective of the finance industry, 'Kou Bei' is a universal principle that leads to forming or ending relationships, either with your suppliers or customers. The good 'Kou Bei' is positive in our relationships with our partners and bad 'Kou Bei' is negative to our relationships." – Case 4

Innovation. The term of innovation is widely used and variously defined to reflect the characteristics and requirements at inter-organisational level. Innovation is considered as a capability of an organisation responding to change with from its partners, such as that involving technical system upgrade. Response to change also includes the time that the

organisation requires to implement the change because failures in timely response to such changes affect performance, especially when the changes are directly related to the primary work activity of the organisation.

> *"If you don't have R&D or if you have R&D but you can't keep up with the changing pace of Google's android, it's difficult to survive. This is also why many mobile phone manufactures which don't possess any advantages look for collaboration with us." – Case 7*

In distinguishing technological innovation, forming collaborative relationships is intended to improve the performance of the existing technical system of an organisation, by introducing new elements in the organisation's production or service operations.

> *"As part of our innovation, we formed a joint venture with an American firm, which is one of the top 10 companies in the US care-home services industry. In order to provide our customers with world-class experience, we would apply the US standard in our model and improve our professionalism and we will also re-design according to the local environment"– Case 22*

> *"We are very flexible in response to market change. For example, to improve our performance, we often redesign some of existing products in wealth management and re-launch in the market to meet our customers' needs." – Case 6*

Innovation occurs in the social system of an organisation where people interact to achieve a particular goal or task. This reflects on new rules, procedures and structures that are initiated, developed and implemented to improve the performance of the organisation.

> *"We are constantly looking for new business models and partnerships, in improving our operations and maximising our investment on return. You will find that people in finance or investment banking are very good at this." –Case 16*

Aligning. The aligning aspect of IORs, which is grounded in the concept of sense-making (Weick, 1995), emphasises that the process of IOR formation and maintenance is intended to achieve coherence amongst multiple actors in collaborative activities. From this

emanates the identity of the organisation, the way of communication and the level of consensus, which are three characteristics of IORs.

Identity. In the literature, organisational identity is defined as the shared values and norms that form an organisation's central and distinctive character (Albert & Whetten, 1985; Dutton & Dukerich, 1991). Aligning multiple identities in IORs is critical for success because identity misalignments can cause deleterious results.

> *"We are a state-owned financial enterprise (Guo Qi) but we are categorised as a central state-owned enterprise (Yang Qi) - it is very strict in controlling profit allocation, which is difficult to clearly explain to the private-owned enterprises. There are few projects which fail when we collaborate with the PoEs. And now we are very cautious when choosing our business partners, " – Case 7*

The identity of the organisation is imprinted by several sources, such as its founding institutions (e.g., government agencies), founders' belief, and industrial positions, which collectively or respectively shape organisational orientation when engaging with other organisations.

> *"There is an increasing number of private-owned banks since the financial license is open. These private-owned banks maximise customers' interests in order to gain a bigger market share and achieve their ultimate goals, while state-owned banks like us focus on the interests of shareholders."– Case 6*

> *"As we are a high-tech park developer, our targeting buyers are not only companies with capital but also well-known companies in industry"– Case 5*

Communication. Communication is indicated as a monitoring and interpretation of the ongoing dynamics occurring in inter-organisational contexts that helps to formulate strategies to align with environmental changes.

> *"One of major issues in the relationship is how and when to communicate with our partnerships. I am very confident that we can complete a project with a high quality because of our industrial experience. But we can fail if we poorly communicate. For example, misunderstanding or wrongly interpreting situations can occur, which results in our missing the best opportunities to win contracts or can cause delay in our projects." – Case 3*

The attribute of communication in IORs, to a large extent, is associated with interpersonal communication skills in managing the encoding and decoding process of situations and then highlighting the filtered message that can bridge the gap between the organisation and its stakeholders.

> *"Interpersonal communication skill is very important when dealing with customer complaints. Better communication will avoid things getting worse even although the problems can't be solved immediately." – Case 21*

> *"We certainly notice the difference between people. Some employees can deliver our services in a manner, but others can't. One factor reflecting on the high quality of people in this case is about individual communication skills or emotional intelligence, which are critical to develop and maintain relationships with our clients." – Case 9*

Consensus. The attribute of consensus in IORs reflects the organising and enacting process of selecting partners. Prior to forming IORs, this involves continual interactions between organisations and interpretation in order to achieve 'accuracy to get it right' (Weick et al., 2005: 415)

> *"We also consider some soft variables in selecting suppliers. For example, we often have the opportunity to make contact with the person from supplier side and, we would observe his/her working style and evaluate if it's compatible with us." – Case 5*

Consensus is a process of exploring plausibility in a particular environment concerning norms, values, and regulations. By incorporating more of the observed data or interpreting well an emerging story, this helps organisations to make strategic decisions in terms of level of collaboration with partners.

> *"As the oil industry in China is monopolised by three central state-owned enterprises, our collaboration with them is beyond business to business relationships, instead, it is a business to government relationship. The important factor in maintaining this relationship is about consensus. Our influence on them, for example, is that we provide them with advanced technology such as that required in oil extraction and advanced concepts of environmental management." – Case 8*

Although consensus is an ongoing perceptual process as regards interaction between organisations, it has a temporal dimension for managers in constructing perceptual inputs in a particular situation (e.g., what's going on here?) and making decisions (e.g., what do I do next?) to respond to the situation. Inaccurate perception, however, occurs, especially under time pressure, which can lead to a certain level of failure in establishing relationships.

> *"We would miss the best opportunity to build a trust relationship with a new governor, if we couldn't 100% analyse and understand his demands including personal ones at the beginning. We would redouble our efforts to make it up or even sacrifice our benefits." – Case 3*

In addition, consensus is influenced by organisational culture that not only provides organisational members with emotional coherence, but also helps organisations to distinguish themselves from other organisations. Through the process of differentiation and categorisation, consensus helps to clarify situations and reduce ambiguities between organisations by simply addressing the question of 'are we the same or different?'.

> *"The difference in organisational culture between SoEs and PoEs is a considerable factor that affects our collaboration. This is because our ontologies are fundamentally different: we are responsible for national strategy, not only focusing on profit, whereas the PoEs are profit-oriented. It was difficult to reach congruence when private interest clashed with national interest." – Case 14*

Legitimacy. The attribute of legitimacy in the context of IORs emphasises a process of institutionalisation in which an organisation adopts or implements a new standard or process from other organisations in order to improve its own internal performance (commonly referred to the mimetic pressure).

> *"We prefer to collaborate with foreign-owned enterprises because of their rigor in quality control (e.g., Q-notes, Escape). This also helps us to improve our efficiency and reduce our unit costs as well." – Case 9*

Although organisations face institutional pressures (e.g., DiMaggio & Powell, 1983), the IORs with legitimacy attribute, compared to other mandatory IORs, is still on a basis of

voluntary exchange. Leveraging its partners' reputation and prestige that improves the organisation's congruence with the prevailing norms is a 'significant motive in the decision for organisations to interconnect.' (Oliver, 1990: 246).

> *"Selecting suppliers or being selected by suppliers, I think, is a two-selection process. But when we select suppliers, we would request them to supply industrial qualifications (like certificates) and evidences of similar projects they did in the past, which prove their capability to successfully complete this task." – Case 5*

> *"Chinese smartphone industry has become a completely competitive market, we need to find out our core competence and adjust our strategy by collaborating with the large firms." –Case 7*

Internalising. Grounded in Transaction Cost Economics (TCEs) (Williamson, 1991), internalising focuses on how an organisation should construct its boundary-spanning activities to minimise the likelihood arbitration and to improve its internal performance.

Cost. Cost in IORs refers to a 'price system' (Hennart, 2008: 343), which is an organising method regarding boundary activities between organisations. The price system provides organisations with the necessary information that can guide mutually beneficial actions in a particular transaction. This includes production cost (e.g., raw materials, labour and service), transaction cost (e.g., using markets to achieve economic efficiency) and coordination cost (Clemons et al., 2015; Santos & Eisenhardt, 2005), (e.g., exchanging information, numbers of bargaining and negotiations).

> *"Controlling our cost and maximising our profit are our principles for being in business. This affects our relationship with other organisations. For example, if a supplier increases its price that results in the loss of our profits, we would switch our suppliers." – Case 19*

Efficiency. The efficiency attribute focuses on a specific organising form, whereby, an organisation chooses to manage boundary activities with its business partners, in order to achieve tasks while minimising costs and reducing uncertainty. The concept of efficiency is to address a question – how should transactions between organisations be governed so as to

deliver the desired outcomes? The findings are in line with Williamson's theory of the choice of governance structures (Williamson, 1991): market, hybrid and hierarchy. In Williamson's model, it is suggested that the identity of partners is less of concern in market form. However, in the Chinese market, the identity of partners is highly relevant.

> *"There are plenty suppliers we can choose as our contractors on the project...we intend to work with a large-scale property developer. However, in some cases, we would form a joint venture with a foreign company which has the know-how to enhance our managerial oversights and fiats in accessing the knowledge and information that are necessary to our project." – Case 22*

The attribute of efficiency reflects on organisation's strategic decisions, such as 'make versus buy' decisions in supply chain management (e.g., Teece, 1984; Mclvor, 2009)

> *"We have two main types of suppliers – external manufacturer and component supplier. The difference between them is that the former one is to manufacture our products and the latter one is to supply materials or components we need in our production." – Case 5*

As the form of governance of IORs is characterised not only by classical contract law but also by 'mutual adaptation' (Hennart, 2007:353), the efficiency attribute, in some industries (e.g., automobile industry and retail industry), refers to the ability of partners' flexibility and agility in response to environmental changes.

> *"As we operate in a fast-changing market, our capability of quickly responding to technology and market change, I think, is the most important factor of our success…This is because we have established an information network between suppliers and clients where we can receive feedbacks timely from either the upstream market or downstream market." – Case 7*

Committing. Grounded in relationship marketing (e.g., Morgan & Hunt, 1994), an organisation has its relational exchanges with multiple constituencies in the OEs: suppliers, customers, financial providers, regulators and internal stakeholders. Committing in IORs emphasises mutual commitments between organisations in developing and maintaining a cyclical and valued relationship. Notably, though the mutual commitments vary (e.g., a

distinct beginning, duration) depending on discrete boundary activities amongst constituencies, the findings show three common components: integrity (Cheng Xin in Chinese), payment and on-time-delivery.

Payment and On-Time-Delivery. In the context of IORs, payment and On-Time-Delivery seem to be used to judge the outcomes of commitment. The negative outcomes lead to the delay or cancel of the projects, while the positive outcomes strengthen the IORs.

> *"As our business operates in less developed countries or the third countries, the local governments or authorities often make ambitious development plans and underestimate the associated costs. This causes their payments to us being delayed or cancelled, which seriously affect our cash flow. Situation like this, we have to delay the project until they pay us or completely cancel the projects with a loss." – Case 11*

> *"We prefer to work with the foreign enterprises because there is a guarantee of payment we receive from them…we have been working with our client for over nine years. It starts with a small order, probably less than value $100K, and now the annual order value is increased to $4 million." – Case 9*

These two attributes of IORs have an obligation character because, when unsuccessfully achieving the expected outcomes, the termination cost of IORs (commonly referred as liquidated damage clause) occurs.

> *"There is a risk that we would breach the contract to the properties we sold, if we couldn't solve the issues before the deadline on which the property needs to be handed over to legal owners." – Case 22*

Integrity (Cheng Xin). One aspect of integrity in IORs reflects the discrepancy between the expected outcome where a firm believes that its exchange partner will deliver and the actual outcome with negative outcomes, which lead to the termination of relationship.

> *"Finding out the right supplier takes a long time and is very costly. For example, we hired the patent lawyer for five patent applications. Two years later, we found that the lawyer is terrible and we have to terminate relationships with him" – Case 10*

The second aspect of integrity in IORs is a degree of confidence on which the trusting party has to the trustworthy party in terms of ethics and execution capability of a promise.

> *"In the process of selecting suppliers, we often consider some soft index, for example, about suppliers' moral principles and whether or not we could trust them." – Case 5*

> *"Cheng Xin (integrity), I think, is a solid foundation in our relationships with our clients. Our clients often come to us with their needs or requirements…we would provide them with a feasible plan and a promise. Cheng Xin here includes not only giving the promise to our clients on a specific task but also referring to our execution capability, which is also an important performance index." – Case 9*

The third aspect of integrity in IORs refers to a process of accumulation trust through interactions with others over time.

> *"We prefer to do business with someone whom we know, rather than those whom we don't, even though they offer a good deal. Because we believe that the trust is built on how well we know each other, followed by real business deals. It may take years to develop." – Case 16*

The resulting IOR data structure is showed in Figure 3.

Insert Figure 3

DISCUSSION

While scholars originally explained the formation of IORs mainly from coordination and cooperation perspectives (Schermerhorn, 1975; Whetten, 1981), a view emerged in the 1990s that different theoretical lenses would be needed to develop a general theory of IORs (Oliver, 1990). We revisit and broaden this in the current study by introducing a new characterisation of IOR formation. We identify 5 aggregate level dimensions of IORs that have some overlap with those identified in earlier studies but differ in terms of their higher order theoretical definition. IOR attributes are: Controlling, Energising, Aligning, Internalising, and Committing. Our analysis suggests that OEs exist because of a need for

organisations to control each other, energise with and from each other, align with each other, internalise from each other and commit to each other. This need is a consequence of the co-existence of IORs and actors across boundaries in organisation-sets but it also would arise through their co-evolution, i.e., how the activities at various boundaries between different types of actors in the OE develop over time with the nature of the relationship between those actors. While separate literatures have brought attention to boundary activities (Santos & Eisenhardt, 2005) and relationship attributes (Oliver, 1990; Schermerhorn, 1975; Whetten, 1981; Cropper et al., 2008; Mesquita et al., 2017;) respectively, our exploratory work based on firms in China shows differences in the prevalence of IORs in the cases.

The main area of contribution is the identification and definition of a new set of IOR dimensions. They differ from those given in the extant literature (e.g., Oliver, 1990) in important ways. Oliver's (1990) determinants of IOR formation are seen only as 2nd order themes in our analysis. And she identified fewer in number. What we find through our data is a wider set of IOR attributes that appear to have their roots in multiple theoretical bases. This is a broad array of theoretical bases that combine to explain IOR formation. No one single theoretical base is sufficient to explain the phenomenon of IOR formation. Secondly, we utilise Open System Theory to conceptualise an Organisational Ecosystem and add to our understanding of business systems in China by providing insight into the reasons for forming IORs within this context. While China represents an economic system where inter-organisational relationships are commonplace, little is known about how relational and boundary-activity specificities combine to characterise IORs in China. Our analysis suggests inter-organisational relationships form in different manifestations and that these choices will be determined by the particular nature of activity boundaries within the ecosystem.

There are a number of limitations with the present study and ideas for future research. Firstly, we only gathered our data from firms in one country. It will be necessary to exercise

some caution in generalising these results to other contexts, particularly in the Western sphere. Secondly, we used a purposive convenience sample. While we deliberately sought heterogeneity in the sample (by location, type of firm, ownership, industry) we did see a saturation as we approached the later cases during the data collection, especially in terms of prevalence of underlying first order themes and boundary activities. Thirdly, our approach is only suggestive of a differentiated need to co-evolve boundary activity and IOR dimensions. We did not capture data at the level of the boundary, rather at the level of the case. In terms of future research, we recommend additional work to address these issues, capturing and analysing IOR formation data from different countries and contexts. We also think it is plausible to run a large-scale questionnaire survey honing in on the boundary activity and how IOR dimensions relate to them during IOR formation. In addition, future research can look at the consequences from the data structure derived here. This can include outcomes and performance effects (financial and non-financial) of the different combinations of IORs to assess if there are certain combinations that lead to more beneficial outcomes for participating organisations. Overall, we hope further research will provide more insight into how IORs and associated boundary activities co-evolve and co-exist within inter-organisational ecosystems for the benefit of the organisations concerned.

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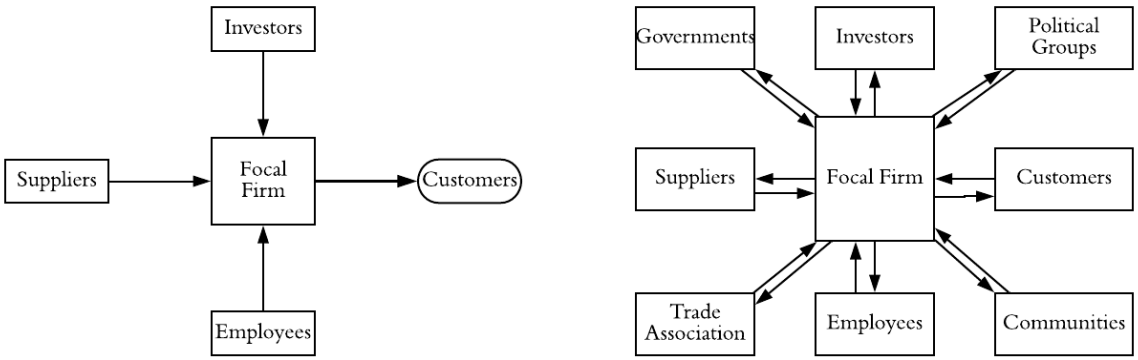
FIGURES



The Input-Output Model

The Stakeholder Model

Figure 1. Contrasting Models: The Stakeholder Model vs. The Input-output Model (Donaldson & Preston , 1995)

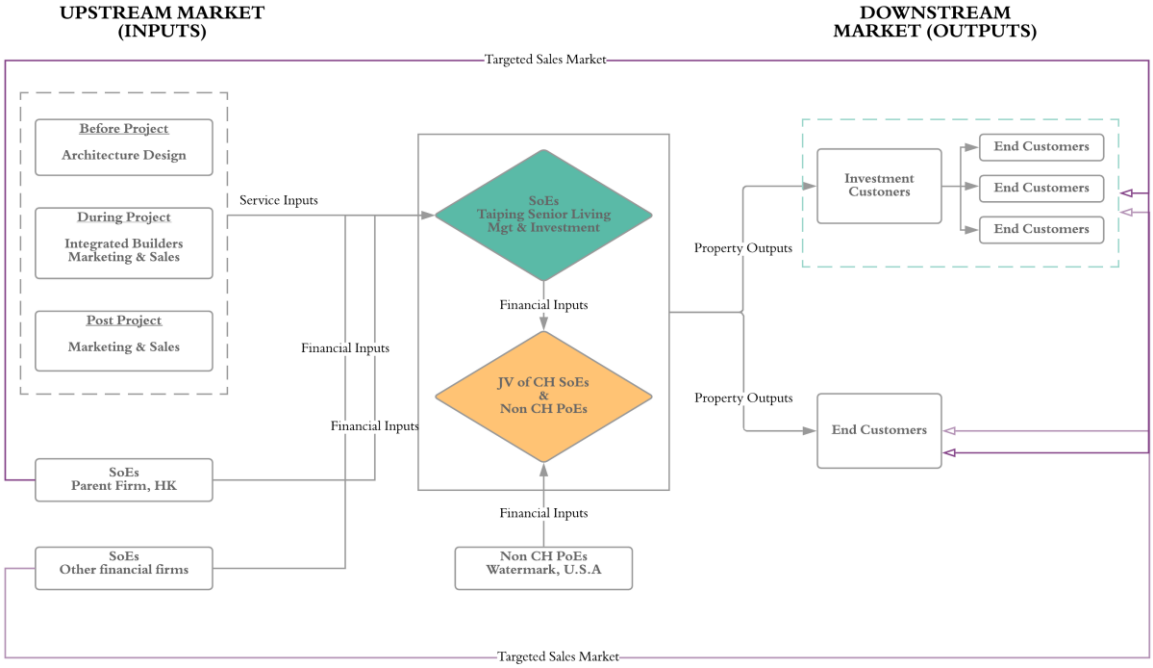


Figure 2. System Map Example (a total of 22 were obtained)

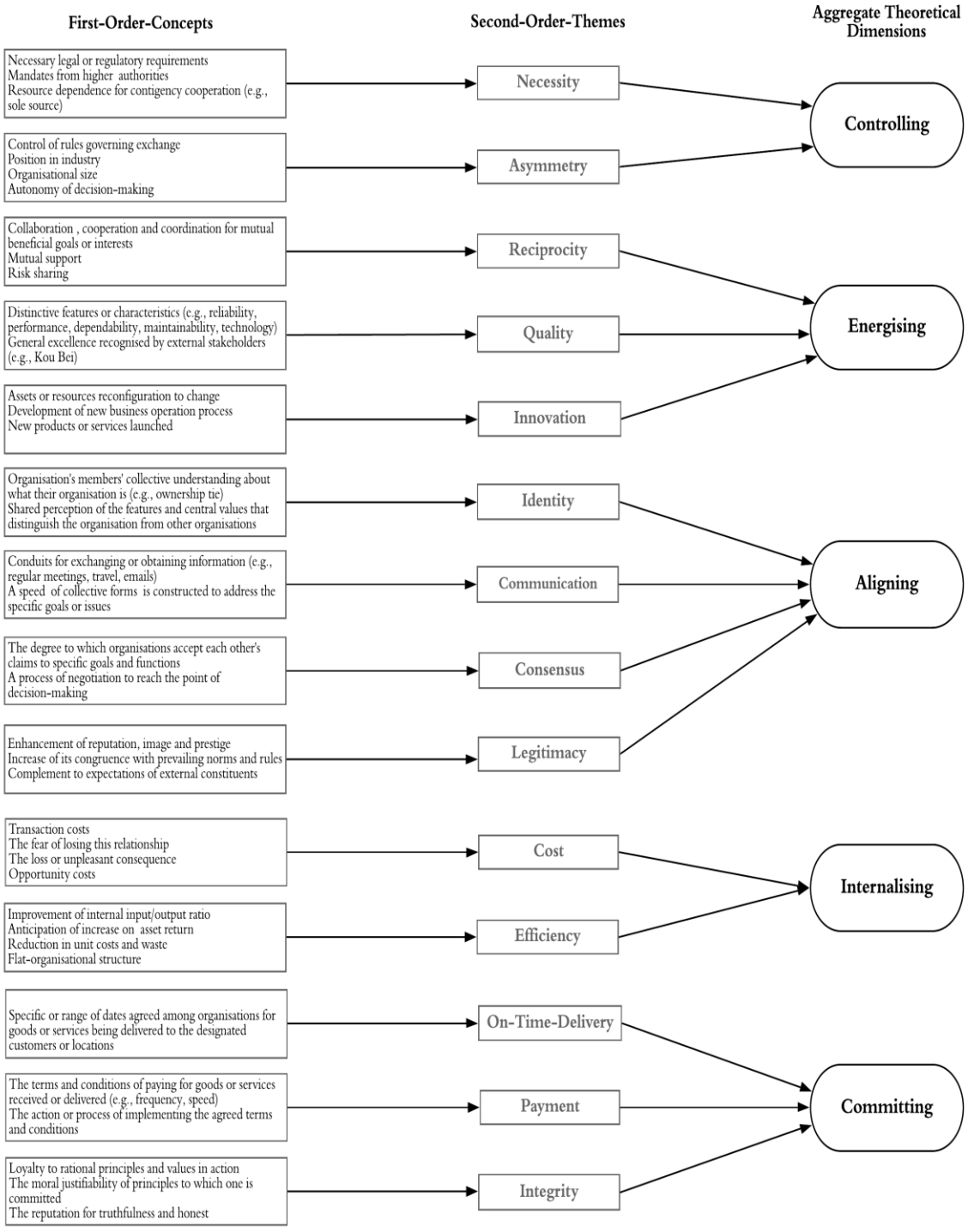


Figure 3. IOR Characterisation as an Emerging Data Structure