

1 **Management control structures and performance implications in international**
2 **construction joint ventures: critical survey and conceptual framework**

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33 **Declaration of competing interest**

34
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36 control structures and performance implications in international construction joint ventures:
37 critical survey and conceptual framework" has not been published neither is it under
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41
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Management control structures and performance implications in international construction joint ventures: critical survey and conceptual framework

Abstract

Purpose – Management control is needed in international joint ventures (IJVs) for successful management and performance. While IJV management control and performance concept has been widely explored, in the construction sector, the core understanding of the design of the two concepts is still lacking. This has resulted in the neglect of important questions and directions for research and practice improvement. This study aims to conduct a critical survey of prior studies addressing the conceptualization of management control and performance in IJVs and to propose a framework for studying the performance implications of management control in international construction joint ventures (ICJVs).

Design/methodology/approach – Using Scopus database and search terms, a systematic desktop search was conducted to retrieve empirically related peer-reviewed papers for this study.

Findings – Drawing on the transaction cost, institutional and relational logic, the first inclusive hypothetical model for studying the relationship between different dimensions of management control mechanism and multiple performance criteria in ICJVs is presented. The model proposes a measurement method for both the management control and performance and explains how they can be established in ICJVs.

Practical implications – The proposed framework provides a methodology to understand the dynamics of management control and performance implications in ICJV. Specifically, uncovering the critical paths will assist ICJV front-liners to approach management control in a more holistic and systematic way to promote achievement of ICJV goals.

Originality/value – The study gives a firm ground to the construction industry, which is accurate and educational for related fields concentrating on several other forms of cooperative relationships.

Keywords: Construction management, international joint venture, international construction joint venture, management control; performance measures.

1. Introduction

International joint ventures (IJVs) are a hybrid collaborative form considered as an efficient entry mode to an overseas or highly competitive market (Chen and Messner, 2011; Liu et al. 2020). An IJV is defined as a marriage between two or more legally distinct firms with their headquarters dispersedly located (Geringer and Herbert, 1989). Once the parties engage to undertake Architectural, Engineering, and Construction (AEC) projects, then we have an international construction joint venture (ICJV) (Girmscheid and Brockmann, 2010; Hong and Chan, 2014). ICJV adoption enables the hybridization of partnering firms' technology, an opportunity to learn, minimize potential risks and challenges, access to low-cost production factors, etc. (Ozorhon et al. 2010a; Chan et al. 2020). Despite their myriad benefits and opportunities, they often do not perform as expected and fail to achieve both strategic and financial goals of partnering firms (Lin and Ho, 2012; Han et al. 2019). Their poor performance could be connected to key challenges in the complex interorganizational relationships – for example, the control structures available for use (Wang et al. 2017; Han et al. 2019). Studies have shown that with management control, firms can improve performance (Ghuri et al. 2013; Maqsoom et al. 2020), manage risks effectively (Bing and Tiong, 1999), bring to success strategic goals (Yan and Gray, 2001b), and exploit complete advantage (Ozorhon et al. 2010b). Thus, management control acts as a significant determinant of performance in ICJVs.

145 Management control characterizes a process through which an entity influences the behaviour
146 and performance of another entity to varying degrees through bureaucracy, power, or informal
147 mechanisms (Geringer and Herbert, 1989).

148 The concept of management control and performance relationship within IJVs is not new.
149 While varied definitions and conceptualizations of management control and performance
150 criteria exist, numerous frameworks and models exhibiting the correlation between the two
151 concepts have been developed (Yan and Gray, 1994; Ding, 1998; Lin and Ho, 2012). Hence,
152 inconsistent results have proliferated. For example, while Ding (1998) provided outcomes
153 evidencing the altercation for one-partner-dominant, Yan and Gray (1994) found evidence
154 supporting the shared management argument. The transaction cost and strategy-structure
155 theoretic logic proposed by Geringer and Herbert (1989) has been adopted in many studies for
156 investigating the performance implications of management control in IJVs, yet there exist some
157 controversies today (Le Nguyen and Larimo, 2008; Ghauri et al. 2013). The lack of a common
158 theoretical background has contributed to the empirical inconsistencies (Yan and Gray, 2001b).
159 Arguably, due to the multidimensional nature of management control and performance criteria,
160 researchers are exposed to different dimensions and measures, which makes it difficult to
161 assess the contributions of related studies.

162 In ICJVs, aside from the limited number of studies, the core understanding of the design of
163 the two concepts is still lacking. Prior related studies have transferred findings from the
164 management field, but then failed to define, position and characterized ICJVs performance
165 measures and management control (Luo, 2001; Ho et al. 2009a; Girmscheid and Brockmann,
166 2010). Besides, the conceptualized management control models borrowed from the
167 management field present some limitations when applied to ICJVs. Thus, the models are too
168 theoretical which Kamminga and Meer-Kooistra (2007) described as “abstract models”
169 because they failed to consider the operational characteristics of organizations. Accordingly,
170 an integrated perspective of mapping diverse management control to multiple performance
171 dimensions has yet to be accomplished (Tetteh and Chan, 2019). The duration precision
172 coupled with the complex contractual, environmental, organizational, and technical
173 characteristics of an ICJV means different performance and management control views.
174 Against this background, this paper aims to conduct a critical survey of prior studies addressing
175 the conceptualization of management control and performance in IJVs, and to propose a
176 framework for studying the performance implications of management control in ICJVs. The
177 proposed framework has been carefully discussed to demonstrate its innovation and
178 applicability.

179 This study contributes to and extends the literature examining management control and
180 performance relationships in both IJVs and ICJVs. Drawing on the transaction-cost-
181 economizing, institutional and relational characteristics, this study adds up to knowledge by
182 revealing that the exercise of management control does not solely depend on transaction cost
183 and relational characteristics; but, also rooted in the societal or institutional custom of
184 corporations. Thus, it increases the understanding of how different mechanisms of management
185 control can be established by drawing on these theoretical grounds. The framework proposes
186 an assessment method for ICJV management control and performance and explains how they
187 can be established. The first inclusive hypothetical framework for studying the interrelationship
188 between different dimensions of management control and multiple performance criteria in
189 ICJVs is presented. This will stimulate future research and enhance the debate on the
190 performance implications of different management control structures of an ICJV. Specifically,
191 subjecting the hypothetical framework to empirical tests in different locations will bring to
192 light the critical paths that can guide managers and practitioners who are operating or intend to
193 pursue ICJVs build their management control structures accordingly to improve their
194 performance goal. Corollaries from obtaining this will ultimately provide support for ICJVs

195 during the creation and negotiation process. Further, this study may potentially help reconcile
196 the controversy related to the management control and performance relationship in ICJVs as it
197 would offer researchers and practitioners a framework and a methodology to understand the
198 dynamics of the two concepts in ICJV application. Finally, the study gives a firm ground to the
199 construction industry, which is accurate and educational for related fields concentrating on
200 several other forms of cooperative relationships.

201

202 *1.1 Structure of an IJV and ICJV*

203

204 In the international business literature, an IJV is defined as a long-term arrangement between
205 two or more firms from different countries who combine complementary resources to a semi-
206 autonomous legally separate entity in pursuit of a common goal (Geringer, 1988). An IJV takes
207 the form of an equity joint venture and independent of its parent company through the
208 establishment of a corporate and a joint venture contract (Girmscheid and Brockmann, 2010).
209 The goals of the venture (i.e. contract duration, amount of equity, the IJV objective, etc.) are
210 described in the joint venture contract. With this arrangement, the key features are the long-
211 term relationship and single (mutual) goal. Therefore, the opportunistic behaviour of corporate
212 firms is reduced as they engage to realize a common goal and with a long-term focus. On the
213 other hand, an ICJV is temporary and primarily used for undertaking mega infrastructure
214 projects (Cui et al. 2019). Kreitl et al. (2002) argued that it can also be formed with a limited
215 objective. However, Girmscheid and Brockmann (2010) emphasized that aside from the equity
216 contract that determines the internal relations between the parties involved, there exists also an
217 external contract signed with the client, which defines the construction contract. This contract,
218 therefore, puts pressure on the ICJV making it project-based – ‘complete and dissolve’ in
219 nature. In short, ICJVs directly serve two sides, the joint venture contract, and the client.
220 Opportunistic behaviour in this hybrid arrangement is very high as a result of the goal
221 incongruence between partnering firms. Responding to this critical concern is by motivating
222 the other party to achieve satisfying or predetermined objectives, which management control
223 is suggested as an important governance tool (Han et al. 2019). Certainly, this fact does not
224 allow us to transfer findings without proof (Girmscheid and Brockmann, 2010). This
225 information necessitates our discussion and reinforces the condition that diverse performance
226 dimensions and management control structures are required in ICJVs. The figure below (Figure
227 1) displays the differences between ICJVs and IJVs. For more information about the
228 dissimilarities, the reader is referred to Girmscheid and Brockmann (2010) and Tetteh and
229 Chan (2019).

230

<Please Insert Figure 1 here>

231

232 **2. Theoretical background of management control in IJVs**

233

234 An understanding of the emergence and configuration of management control determinants in
235 IJVs from first principles is critical in studying the performance implications. The transaction
236 cost economics (TCE) and relational characteristics such as parental differences, trust,
237 bargaining power, etc. have been used for providing a general knowledge base for analysing
238 management control in IJVs. According to the TCE logic of cost minimization, management
239 control in inter-firm relationships is greatly dependant on three transaction characteristics (asset
240 specificity, uncertainty, and frequency) (Williamson, 1985). Investments that have a high level
241 of asset specificity (tangible or intangible) may lose their value if the involved contracting
242 relationship is dissolved (Kamminga and Van der Meer-Kooistra, 2007). Thus, parent

243 companies use management control to protect or promote their specific investments in an IJV
244 (Yan, 2000; Chalos and O'Connor, 2004). Uncertainties arising from both behavioural risk of
245 the transacting parties and erratic environment produces opportunistic behaviour, which
246 requires parents to invest more management control to mitigate any potential hazards (Han et
247 al. 2019). Transaction frequency refers to the rate of occurrence of repetitive transactions
248 (Duan, 2007). Corporations create a strong corporate culture that generates long-term
249 organizational commitment via control. Kamminga and Van der Meer-Kooistra (2007)
250 mentioned that transaction frequency is an important feature when comparing governance
251 structures, as it considers whether the frequency of transactions justifies investments in
252 governance structures.

253 In addition to TCE logic, Van der Meer-Kooistra and Vosselman (2000) argue that it is the
254 characteristics of the cooperating parties that shape control. Hence, four relational
255 characteristics are discussed: parental differences, information asymmetry, trust, and
256 bargaining power. With regards to parental differences, as the omnipresent, goal incongruence,
257 between IJV parties, remains high, extra effort in terms of management control will be required
258 to reduce the impact (Parkhe, 1991). As different yet complementary interests of parents form
259 a successful IJV relationship, management control becomes relevant in explaining each other's
260 interest and/or coordinating diverse parental contributions. According to Kamminga and Van
261 der Meer-Kooistra (2007), the result of parental difference is information asymmetry, which
262 extends management control. For example, the differences in knowledge and expertise often
263 require tight control by parents at the expense of the venture's flexibility. In an environment
264 with a high level of uncertainty, for example, the loss of flexibility may be a problem, since
265 quick adjustments are highly important (Merchant, 1998). In such a case, parents must give
266 management autonomy and exercise lose control. Trust is another relational characteristic that
267 has received much attention in interfirm relationships (Fryxell et al. 2002; Boersma et al. 2003;
268 Girmscheid and Brockmann, 2010). It is a useful mechanism employed to cope with
269 uncertainty creating behavioral risks and reduce the costs of coordination in interfirm
270 relationships (Madhok, 2006). Any interfirm relationship that is built on trust possess the spirit
271 of awareness to become aware of rules, routines, and procedures as Gulati and Singh (1998)
272 point out. Lastly, the extent to which parents can exercise management control over an IJV is
273 regarded as an outcome of a bargaining process (Lu and Hebert, 2005; Li et al. 2009).
274 According to Yan and Gray (1994), the bargaining power of a parent can be divided into two
275 groups: context-based, and resource-based. The first derivative of the power dependency theory
276 stresses the context-dependent relationships between the bargaining parties. It argues that the
277 relative bargaining power of a party depends on the mutual dependence of the parties,
278 especially, the exclusivity of the dependence; and this power is determined by the alternatives
279 available to it, as well as the relevance of the stakes possess in the present relationship, and the
280 potential outcome of the bargaining (Yan and Luo, 2016). In an IJV relationship, the partner
281 having more potential or alternative for entering a market has greater bargaining power. The
282 resource-dependent concerns the contributions or control of critical resources by parties in the
283 venture. According to Pfeffer and Salancik (2003), the critical the resources provided by a
284 parent to a venture, the ability to control and direct organizational action, and vice versa.
285 Therefore, a partner's contribution to critical resources will enhance its management control.
286 It is important to mention that these critical resources could be capital or noncapital resource-
287 based power. Whereas capital resource-based power includes financial or their equivalent in
288 physical or proprietary properties, noncapital resource-based bargaining power is made up of
289 critical tacit resources like technology, management expertise, political networks, marketing
290 channels, etc.

291 Notwithstanding the above, the institutional characteristics of the venture operation country
292 also offer explanations for the levels of management control that investing companies will seek

293 when forming IJVs (Knoke, 2001). According to Meyer and Scott (1992), institutionalization
294 proceeds by the amplification of legal regulations and processes in which individuals must
295 comply to have the mandate and legitimacy. In the developing countries, for example, several
296 factors such as regulation constraints (Local Content Policies), partner culture and strategy,
297 and numerous contextual variables underlying the negotiation of partner's relative bargaining
298 power influences the operational control structures. Foreign firms are forced to accept a
299 minority position which is a frequently observed phenomenon in developing countries (Lee et
300 al. 2003). For example, in Ghana, the Local Content and Local Participation, Regulation 2013
301 L.I 2204, afford the local firms maximum equity participation. Similar practices exist in Libya,
302 where foreign companies are required to enter into joint ventures with local entities and where
303 the foreign company is only allowed to hold a maximum of 49% equity stake. This serves them
304 the dependence that enhances their power over the venture.

305

306 **3. Research Methodology**

307

308 This study employed the systematic mapping technique to critically survey prior studies
309 addressing the conceptualization of management control and performance implications in IJVs
310 and proposed a framework for studying the performance implications of management control
311 in ICJVs. Systematic mapping is "an approach that allows for relatively high procedural and
312 interpretive objectivity and replicability" (Ghobadi, 2015). Thus, results are easily traceable
313 and can be reproduced. Four major sequences were followed: 1) planning the study, 2)
314 identifying relevant publications for the study, 3) critically reviewing to survey the state-of-
315 the-art of management control and performance implications, including gaps and future needs,
316 and 4) propose a framework for studying performance implications of management control in
317 ICJVs. The methodological framework for this present research is illustrated in Figure 2.

318

319 <Please Insert Figure 2 here>

320

321 *3.1 Planning the study*

322

323 Due to the broad nature of IJV studies, a review protocol that clarified the phenomenon of
324 interest was defined as "*research that empirically examines the link between management
325 control and performance within IJVs and ICJVs*" following the goal of the study. To identify
326 related papers and develop a new model for studying management control and performance
327 relationship in ICJVs, a preliminary review of seminal works including that by Geringer and
328 Hebert (1989) and Luo (2001) in the construction domain was undertaken to identify relevant
329 and common terms. Next, a list of search terms was developed and then revised by consulting
330 three scholars in the area of ICJV with at least two papers. This increased the
331 comprehensiveness and minimized hypothetical preferences.

332

333 *3.2 Publications retrieval*

334

335 With the help of Scopus, articles capturing both management control and performance in IJVs
336 and ICJVs were analyzed in this study. The Scopus database contains many scientific
337 publications (Hong and Chan, 2014) as compared to the other databases such as *Web of Science*,
338 *PubMed*, *Engineering Village*, *Google Scholar*, etc. Similarly, Scopus has a comparatively
339 quicker indexing process, widening the likelihood of obtaining current publication (Meho and
340 Rogers, 2008), and has been extensively used in earlier review studies (Darko and Chan, 2016;
341 Nasirian et al. 2018). Keywords used for the search was: "management control" OR "control
342 mechanism" OR "control" OR "governance" AND "performance" and "International joint

343 venture" OR "Joint venture" OR "International construction joint venture", and the search
344 domain specified as "title/abstract/keywords". The date range was set to "1990 to 2020". Note
345 that IJVs gained prominence both in practice and academia in the early 90s (Hwang et al. 2017).
346 As for the "document type and language", it was limited to "Article" and "English",
347 respectively. This returned 138 papers (searched on April 24, 2020). However, not all the
348 returned papers empirically presented studies on the management control and performance link
349 in IJVs.

350

351 *3.2.1 Selection of Relevant Papers*

352

353 Articles resulting from the combination were filtered initially with title, abstract, and keywords
354 and. When needed, the introduction and the conclusion were closely examined to determine
355 whether they served the purpose of this review. Likewise, duplicated papers were eliminated.
356 Note that solely peer-reviewed articles were considered for this study. Thus, book reviews,
357 conference papers, editorials, etc. were discarded as they do not go through a comprehensive
358 examination, and thus, limit their wider dissemination in the academic community (Drott,
359 1995, Tetteh and Chan, 2019) Peer-reviewed articles characterize the most influential and
360 reputable research (Silva et al. 2019) and have been classified as "certified knowledge"
361 (Ramos-Rodríguez and Ruíz-Navarro, 2004). They are largely recognized in the academic
362 certain and useful for first-hand researchers to assess and gain knowledge of research
363 advancements on a selected research interest for exploration (Tsai and Lydia Wen, 2005). After
364 this preliminary screening, a total of 98 articles were retained for further analysis. To facilitate
365 the identification of the most relevant articles, the criteria were that: 1) exclusively and wholly
366 published papers examining the connection between management control and performance in
367 IJVs were considered, and 2) articles must be grounded on empirical arguments (i.e. articles
368 must be based on either qualitative and/or quantitative data collection from the industry via
369 questionnaire survey, case studies and interviews). Literature review grounded on empirical
370 papers provide an understanding of the real-life situation as they are based mainly on the
371 opinions of experts and/real-world issues (Darko et al. 2017). A total of 26 papers were found
372 valid following the above inclusion parameters. The next step involved the snowballing
373 sampling technique (i.e. checking the reference lists of the retained papers against the selection
374 criteria to identify papers that were not found using the search string previously). Note that
375 already identified papers were not included in this round. This resulted in including an
376 additional five papers. Therefore, 31 papers were used in this study. Table 1 provides the
377 journal information of selected papers for the review.

378 The 31 papers objectively stand in a better position to provide an understanding of
379 management control and performance relationship in IJVs, as it is comparable to other
380 literature review studies in the construction management field. For instance, using 26 articles,
381 Yu et al. (2018) developed a conceptual framework for analyzing key issues of social
382 responsibility in PPP projects. Similarly, Dwaikat and Ali (2016) analyzed empirically related
383 issues of green building costs using 17 papers. Also, using 27 publications, Osei-Kyei and Chan
384 (2015) methodologically reviewed studies on the critical success factors for implementing PPP
385 projects. Therefore, it merits the attention that the 31 papers reliably and conclusively provided
386 knowledgeable information and gaps in this study.

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388

<Please Insert Table 1 here>

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390 **4. The hypothetical model configuration**

391 *4.1 Background of management control patterns in IJVs*

392

393 The conceptualization and operationalization of management control in IJVs is problematic,
394 due to the unparalleled and multivariate nature of the control concept. Generally, management
395 control in IJVs' studies can be viewed from two different perspectives. Whereas some scholars
396 investigate the determinants of management control (e.g., Tomlinson, 1970; Stopford and
397 Haberich, 1976; Yan and Gray, 2001b; Chalos and O'Connor, 2004), the mechanisms of
398 management control have also been studied (e.g., Ouchi and Maguire, 1975; Flamholtz et al.
399 1985; Geringer and Herbert, 1989). Geringer and Herbert (1989) conclude that IJV
400 management control has been studied from three different perspectives: mechanism of control,
401 the focus of control, and extent of control. The *mechanism* refers to how control is exercised.
402 From this perspective, earlier research stressed the control determinants (e.g., ownership and
403 voting rights), and other non-equity mechanisms which include cultural, behavioral, and
404 outcome control (Groot and Merchant, 2000; Whitelock and Yang, 2007). Also, subsequent
405 works have widened the breadth of control mechanisms to include socialization practices, IJV
406 board of directors' role, staffing, etc. (Yan and Gray, 2001b; Chalos and O'Connor, 2004).
407 Several studies have defined these as either positive or negative mechanisms depending on the
408 purpose of control (Schaan, 1988; Kamminga and Meer-Kooistra, 2007). Geringer and Herbert
409 (1989) further classified the mechanisms of control into three groups. They include content-
410 oriented mechanisms – more direct and reliant on top managers or key members on board;
411 context-oriented mechanisms – informal and cultural means to achieve strategic objectives of
412 firms; and process-oriented mechanisms – influencing IJV planning and decision-making
413 process by supporting and reporting relationships. Huang et al. (2015) represented these
414 mechanisms as formalization, socialization, and centralization, respectively. Ghauri et al.
415 (2013) concluded that aside from the direct reliant on key personnel, strategic institutional or
416 systematic implanted strategies, which are partially reliant on the individuals themselves
417 (policy mechanisms), can relate to the process or way the IJV is conducted.

418 The *focus* of control represents the area or scope of activities over which an IJV partner
419 exercise control. The application is either in a broad aspect or more specific, i.e. narrow, focus
420 (Ghauri et al. 2013). Kauser and Shaw (2004) viewed the focus of control as either strategic or
421 operational. Whereas strategic control focuses on specific activities at the IJV management
422 level, operational control focuses on the day-to-day activities, making decisions at the
423 operational level, regulating across functional areas, etc. (Whitelock and Yang, 2007).

424 The degree of control exerted over a specific control mechanism denotes the *extent* of
425 control. Thus, for each specific or operational area individual partners may exercise control on
426 a range from “none” to “total” or “loose” to “tight”. Following this definition, Killing (1983)
427 defined joint ventures (JVs) grounded on the amount of control shared with an IJV partner.
428 They include management shared by the parents, management dominated by a single parent,
429 and management independent of both parents. Split control was added by Choi and Beamish
430 (2004) to represent the control over distinct functional activities. Recognizing the complex,
431 dynamic and multidimensional nature of management control, Geringer and Herbert (1989)
432 concluded that studying IJV control as an integrative concept in which the three dimensions
433 incorporated could provide a solid explanation to the performance implications of control.
434 Figure 3 shows the interrelationships between the three dimensions of control.

435

<Please Insert Figure 3 here>

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438

4.2 Management control and performance relationship in IJVs

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The control exercised by corporate firms over an IJV significantly determines its performance
(Yan and Child, Liu et al. 2014). Aside from the direct impact of management control on
performance within IJVs, there is also a realization of competitive advantage by partnering

443 firms within their market (Le and Nhu, 2009). Management control becomes particularly
444 important when studied in parallel with performance as the structures implanted by corporate
445 firms provide the direction of the venture. Where control is lacking over an IJV can limit,
446 respectively, partners' ability to completely exploit and successfully implement their resources
447 and strategy (Ghauri et al. 2013). Thus, management control in IJVs is very important in
448 explaining IJVs performance and success. Performance implications of management control
449 have been an extremely interesting topic for researchers and practitioners alike. However, the
450 complete understanding and design of the two concepts have yet to be achieved. Consequently,
451 this has yielded conflicting and non-comparable results. The interpretation of this situation is
452 a result of the use of different constructs of management control and performance measures
453 (Table 2 summarizes a list of research on management control and performance relationship
454 within IJVs). Also, previous studies have partially considered the three control dimensions
455 (Luo, 2001). Another questionable concern is from whose perspective (general managers,
456 foreign or local partners), and which type of industry is studied. Interestingly, even studies in
457 the same country have produced noncomparable results. For example, in Taiwan, Lee et al.
458 (2011), Lin and Ho (2012), and Huang and Chiu (2014) found results supporting the
459 performance implication of control, however, with different constructs and from different
460 perspectives. Whereas some used jointly and separately managed JVs as control constructs,
461 and client satisfaction as performance construct, others employed desired and exercise control,
462 and overall satisfaction, respectively. Similarly, in China, while Yan and Gray (1994) found
463 evidence supporting the shared management argument, Ding (1997; 1998) provided results
464 supporting the argument for one-partner-dominant. Further, some studies have also built their
465 argument using different theoretical underlying concepts, which makes it difficult to compare
466 results. Geringer and Herbert (1989); Zhang and Li (2001) and Choi and Beamish (2004)
467 elaborate more on these critical issues in previous studies.

468 In the construction environment, aside from the very few related studies, the core design of
469 management control and performance is incomplete. For example, Luo (2001) examined the
470 interconnection between management control and performance in Sino-foreign construction
471 joint ventures in China by mapping management control to performance goals (profitability,
472 and government satisfaction) condemned to be inappropriate in reflecting the overall ICJVs
473 success. Grounded on Ho et al.'s (2009) contingency factor approach in determining the
474 governance structure (jointly and separately managed JVs) of ICJVs, Lin and Ho (2012)
475 empirically examined its impact on client satisfaction as the major proxy for the performance
476 in ICJVs, which is also judged to represent a minute of ICJVs performance. In short, a complete
477 understanding of the performance implication of management control within ICJVs has yet to
478 be established, tested, and explained.

479

<Please Insert Table 2 here>

480

481 4.2 IJVs performance evaluation

482

483 The incomplete picture of IJV performance evaluation criteria coupled with the fragmented
484 status of related studies co-exists, yielding a unanimous conclusion. The case is worse in the
485 construction setting due to the complex contractual structures and dynamic environmental
486 conditions. Researchers and practitioners always find it difficult to assess the performance of
487 ICJVs. Whereas practitioners find it difficult considering the angle from which measure
488 performance, researchers are always challenged with factors to use as indicators (Ozorhon et
489 al., 2007a). Earlier studies used either subjective, objective, or both measures for evaluating
490 ICJVs performance (Mohamed, 2003; Lin and Ho, 2012). Yet, these indicators poorly mirror
491 the overall goal of ICJVs (Ozorhon et al., 2007). Important exceptions are that by Ozorhon et
492

493 al. (2010a; 2010b) which is considered the multidimensional goal of ICJVs. These studies
494 classified ICJVs performance measures into four constructs, namely: company/partner
495 performance, the performance of ICJV management, perceived satisfaction, and project-based
496 performance. Overall, while these indicators may partially or wholly reflect the operational
497 success of ICJVs, Tetteh et al. (2019) argued that a holistic ICJVs performance assessment is
498 still lacking. They proposed a fifth dimension called socio-environmental performance
499 (corporate sustainability measures) to reflect an all-inclusive performance goal of ICJVs.

500

501 *4.3 Conceptual model development*

502

503 Of critical importance to the management of IJVs are how control is acquired, how it is
504 exercised, and how it influences IJV performance (Yan and Gray, 2001a). Notwithstanding, in
505 the management domain, previous studies have laid a rich conceptual foundation on which
506 management control and performance link research in IJVs has increased. Drawing on these
507 theoretical grounds to provide an explanation for related issues in the construction industry is
508 not wrong as the literature of existing construction-related studies is firmly grounded or
509 established on these studies (e.g., Luo, 2001; Girmscheid and Brockmann, 2010; Ozorhon et
510 al., 2010a; 2010b). It is important to note that IJV is a generic concept. Thus, it could be adopted
511 by different industries focussing on diverse operations or services such as research,
512 manufacturing, agriculture, etc. In the construction industry, the only difference is that it is
513 project-based – ‘complete and dissolve’ in nature as explained in detail (see, Section 1.1).
514 Generally, borrowing a theory from a different field with a clear definition and position of its
515 applicability in a different context to explain a phenomenon important to the field is not wrong
516 (Murray and Evers, 1989). The IJV concept has long existed and practiced in the management
517 fields and theories abound within these settings and the youth of interdisciplinary fields such
518 as construction or the infrastructure sector has benefited more from such disciplines. An
519 integrative approach for studying management control and performance relationship in ICJVs
520 from first principles is presented.

521 The exercise of management control and performance implication in IJV has been studied
522 from the following theoretical backgrounds: transaction-cost, , strategy-structure approach, and
523 relational characteristics (resource dependency, bargaining power). For instance, an early
524 framework by Geringer and Herbert (1989) was built on the transaction-cost and strategy-
525 structure approach. From the perspective of power dependence, agency and transaction cost
526 theories, and theories about trust, Yan and Gray (2001a) proposed a model of control in IJVs.
527 Likewise, from an integrated view, Kamminga and Meer-Kooistra (2007) proposed a
528 management control model by considering four relational characteristics (parental differences,
529 information asymmetry, trust, and bargaining power – both context- and resource-based) and
530 transaction cost approach. Although these studies have provided much theoretical insight into
531 IJV management control, they overlooked the fact that a complete theoretical explanation for
532 the determinants of control in IJV also relies on the institutional or the environmental context
533 in which the venture operates. Exceptional studies include the one by Luo et al. (2001) and Lee
534 et al. (2003) which considered the regulatory constraints and state-owned firms in host
535 countries as an institutional norm to determine management control in IJVs. These studies,
536 however, ignored the integrated view of the other theoretical stance in explaining management
537 control.

538 Practically, the need for control is not symmetric as Lee et al. (2003) emphasized. The
539 institutional norms and environment setting interact to create a unique set of managerial values
540 and control (Luo et al. 2001). In developing countries, for example, apart from the government
541 restrictions on ownership divisions, the local content and local participation regulation ensure
542 that the number of the local workforce in IJVs operations exceeds that of the foreign firms.

543 This regulation is more pronounced in the construction industry and often makes the level of
544 management control and performance more predictable. Acknowledging that both
545 management control and performance are multidimensional phenomena, relying on this
546 fundamental idea, a theoretical framework of management control determinants and
547 performance in ICJVs is first presented (Figure 4).

548

549

<Please insert Figure 4 here>

550

551 *4.3.1 Constructs definition*

552

553 By focusing on zone B of the theoretical framework presented above (Figure 4), a practical
554 translation of (the relationship between management control and performance) has been
555 presented in figure 5. In this study, the dimensions of control proposed by Geringer and Herbert
556 (1989) provided a useful understanding of management control dynamics in IJVs (i.e.,
557 mechanism, focus, and extent). Also, since performance in ICJVs is a multivariate construct
558 and cannot be represented by a single indicator, a multidimensional performance criterion
559 established by Tetteh et al. (2019) was adopted. In considering the legal, physical, or
560 administrative means that a partner uses to provide direction, personnel, and policy-driven
561 mechanisms proposed by Ghuari et al. (2013) were adopted. Fryxell et al. (2002) pointed out
562 that the most common or likely response to a fall in performance expectations is an adjustment
563 of the control mechanisms. Thus, the control mechanism represents an important dimension of
564 management control of an IJV by determining who is perceived to be in control of which
565 function (scope/area of activities). Primarily, in IJVs, as Giacobbe and Booth (2009)
566 highlighted, partners normally agree on the operational areas that they can control effectively,
567 and some critical areas in construction include procurement, general management, and
568 operation, supervision, etc. Above all, the tightness, or loose extent of control within IJVs
569 present to be subjective and overlooked in extant literature. To stimulate future research
570 studies, the extent of control could represent the number of people and how experienced they
571 are in every specific operation. This may give a direct linkage to measurements that are precise
572 and objective in ICJVs. Consequently, the interwoven between the two concepts as proposed
573 remains to be tested and discussed in the global construction environment, to further enhance
574 the development of the IJV theory.

575

576 *4.3.1.1 Personnel driven mechanisms*

577

578 Ghuari et al. (2013) defined this construct as the staffing of key members on board, or place in
579 positions from which they can exercise direct influence, both managerial and operational.
580 Generally, most direct, and persuasive positions are on the board of directors, and through
581 strategic, organizational, and operational decisions, they provide directions and facilitate
582 monitoring and coordination, which determines the IJV position. As rooted under managerial
583 control functions, the knowledge and skill-sets ability (both technical and managerial) of
584 partners play an important role in deciding on who should exercise this role (Park, 2010). In
585 the construction environment, for example, apart from staffing top management positions, key
586 functional and operational areas that are based upon the daily routines and performance-based
587 activities influence the venture goal massively. Certainly, this is one key area that does not
588 need or relate to the majority position in the venture, however, contingent on a clear area of
589 focus to be managed and influenced by the partners (e.g., daily supervision of construction
590 work, and workers on-site).

591

592 *4.3.1.2 Policy-driven mechanisms*

593

594 Ghauri et al. (2013) concluded that aside from the direct reliant on key personnel, strategic
595 institutional or systematic implanted strategies that are less reliant on the individuals
596 themselves are used. This creates a natural separation between the personnel provided to the
597 IJV and the manner or process in which the venture is operated. This construct is defined by
598 support in the policy and planning process, as well as training and learning opportunities. In
599 the construction environment, providing support in making development plans, human right
600 policies during project planning, monitoring and reporting project performance, reporting on
601 construction progress and schedules, provision of knowledge about host country's culture and
602 government issues, etc. can be captured under Geringer and Herbert's (1989) process-oriented
603 and context-oriented mechanisms.

604

605 4.3.1.3 Project-based performance

606

607 Because ICJVs are launched on a project basis, project goal indicators are normally used to
608 measure their operational success (Ozorhon et al. 2007). The most commonly recognized
609 project goals indicators include cost, time, quality, and client/customer satisfaction (Ozorhon
610 et al. 2010a). Moving beyond the traditional measures of assessing project performance,
611 McLeod et al. (2012) mentioned that other premeditated objective measures such as excellent
612 records related to management, profits, etc. should be included. In this regard, maintaining
613 excellent safety performance, excellent risks and issues management, and financial stability
614 (profitability) has become relevant to organizations. Likewise, Almohsen and Ruwanpura
615 (2016) pointed out that the number of occurrences of dispute resolution in an organization may
616 represent a sustainable measure, which cannot be influenced by human perception at the project
617 level.

618

619 4.3.1.4 Company/partner performance

620

621 The conflicting goals of partnering firms in ICJV clearly show that ICJVs performance relates
622 directly to the partner firms (Han et al. 2018). Therefore, this perspective is viewed as the extent
623 to which pre-set company's goals are successfully realized dependent on the ICJV project
624 undertaken (Ozorhon et al., 2010a). Apart from bringing to success the traditional project
625 objectives including operational or financial objectives, distinct firms join hands to learn from
626 each other, become local champions, to be internationally recognized, share financial risks,
627 acquire both technical and managerial skills, build a strong company reputation, (Girmscheid
628 and Brockmann, 2010), etc. An empirical investigation showed that partner performance
629 remains critical among the other constructs defining the multidimensionality of ICJV
630 performance.

631

632 4.3.1.5 Performance of the ICJV management

633

634 This perspective of measuring ICJVs performance characterizes the success of controlling
635 ICJVs operation (Ozorhon et al. 2010b). Thus, the power of participating in official duties
636 related to management and contingent on superiority in management and technical skills of
637 partners. Based on Yan and Gray (2001a) definition of management control, Ozorhon et al.
638 (2010b) used operational control which defines control at the general management level,
639 strategic control at the board of directors' level, and organizational control by the daily routines
640 and processes. While many studies view strategic control to be influenced by dominant
641 ownership (Fryxell et al., 2002; Lee et al., 2011), operational and organizational control does
642 not require dominant ownership within the IJV.

643
644

<Please Insert Figure 5 here>

645 *4.3.1.6 Perceived satisfaction*

646

647 This is one of the most frequently adopted performance measures in IJV literature. It measures
648 the extent of attaining the overall objectives of an ICJV (including survival, monetary, or
649 growth, or any other objectives) (Ozorhon et al., 2007). This construct is treated as a
650 compilation of IJV performance measures in extant literature. Nonetheless, Ren et al. (2009)
651 emphasized that this measure of success for an ICJV is biased towards objectivity because a
652 stand-alone entity raises the threat of validity. This is because different respondents perceive
653 satisfaction differently. Hence, reflecting firms' representative perception about the IJVs,
654 Ozorhon et al. (2010b) proposed that "overall satisfaction" may represent the satisfaction of
655 corporate organizations with the venture. Thus, it gives an overall impression of an ICJV
656 success beyond all monetary and objective measures.

657

658 *4.3.1.7 Socio-environmental performance*

659

660 Among the five constructs, this construct measures the extent to which an ICJV organization
661 has realized its corporate sustainability potentials (Tetteh et al. 2019). Whereas the social
662 feature reflects the satisfaction of the community, stakeholder engagement, sustainable job
663 creation, labour practice/relation, capacity development, health, and safety performance, etc.,
664 environmental focus underlines compliance to environmental performance, environmental
665 reporting, pollution, etc. The pressure on corporations to embrace social and environmental
666 development in their operational routines necessitate great attention and must form part of
667 ICJVs' goal.

668

669 *4.4 The innovation of the proposed framework*

670

671 Generally, in IJV studies, the complete design of management control and performance
672 relationship is limited, and a worse case is seen in the construction domain. The innovativeness
673 of this study is that it provides a conceptual model to systematically address these three issues.
674 Thus, this study helps to project what functions would be most critical to a venture's overall
675 success. First, the model helps to overcome the controversy and extend extant literature about
676 how management control is acquired, how it is exercised, and how it impacts ICJV
677 performance by building on the transaction cost, institutional, and relational logic. Second, an
678 integrative definition and measurement method of the two concepts practically reflect the
679 nature of management control dynamics and performance implication in ICJVs. Third, the
680 paper proposes hypotheses regarding multiple performance implications of diverse
681 management control in ICJVs, which remains to be tested and discussed. This may stimulate
682 future research and enhance the debate on the performance implication of different
683 management control aspects of an ICJV. Invariably, more generalizable findings may be
684 achieved, which may potentially help reconcile the controversy related to the management
685 control and performance relationship.

686

687 **5. Future research directions**

688 As a key direction for future research, the established hypotheses are yet to be tested and
689 explained. Thus, future studies could empirically test and analyze the performance implications
690 of management control with complete measurement items to understand and build up the
691 objectivity of the research findings. This could be achieved through multiple case studies and

692 quantitative research designs while incorporating a greater volume of secondary data from
693 multiple completed and ongoing ICJV projects to drive a better triangulation of the results. By
694 doing so, more rigorous statistical methods and analytical tools such as the Partial Least
695 Squares – Structural Equation Modelling (PLS-SEM), Artificial Neural Network (ANN), etc.
696 could also be employed in testing and validating the established framework. Second, the
697 stagewise progression of ICJVs growth means dynamic control mechanisms and performance
698 implications. Therefore, in future research, it may be interesting to examine the management
699 control and performance link against the dynamic growth stages using simulation-based
700 techniques such as system dynamics. Third, the existing literature empirically presents many
701 views on this study from the foreign partners' perspective and has neglected the overall
702 influence of local partners in ICJVs operations. Therefore, considering the views of the local
703 partners in ICJVs studies is a promising research focus. This would help draw objective
704 conclusions, to develop a comprehensive framework that provides guidelines and reference to
705 construction stakeholders on how best to control ICJVs operations to enhance the overall
706 performance. Finally, the nonlinear link of management control and performance in IJV studies
707 can also suggest that it is influenced by other moderating variables. Thus, exploring their
708 moderating roles would probably refine the understanding of the linkage between management
709 control and performance.

710

711 **6. Conclusions and Limitations**

712

713 The lack of a complete understanding of management control and performance concept in
714 ICJVs, explains the increasing controversy in the extant literature on their interrelation. In this
715 study, an extensive review of the pertinent literature was conducted to synthesize prior studies
716 addressing the conceptualization, and interrelationship between management control and
717 performance in IJVs. Also, a conceptual model for studying the performance implications of
718 management control in ICJVs is presented. The model shows how control is acquired, how it
719 is exercised, and how it impacts ICJV performance. This study contributes to knowledge and
720 practice. Drawing on the transaction cost, institutional, and relational logic, this study adds to
721 knowledge by revealing that the exercise of management control does not solely depend on
722 transaction cost and rational characteristics; but, also rooted in the societal or institutionalized
723 custom of corporations in IJVs. The first inclusive hypothetical model for studying the
724 relationship between different dimensions of management control and multiple performance
725 criteria in ICJVs is presented. This study also has important implications for ICJV front-liners
726 – policymakers to keep up and improve overall performance. The assessment of the
727 hypothesized model will bring to light the control structures having the greatest paths that can
728 be employed to boost the performance of ICJVs. Thus, uncovering the critical paths will assist
729 front-liners to approach management control holistically and systematically to promote the
730 achievement of ICJV goals, and enhance the understanding of the decisions they make about
731 the activities to control and mechanisms to use. This will not only provide a strategic advantage
732 by helping them to understand the complexities of their venture but will also allow them to
733 critically evaluate their current management practices and policies and to develop alternatives
734 for improving overall performance and increasing the chances of success.

735 This study is not without limitations. First, whereas the process of identifying relevant
736 publications may be considered a restriction, the cross-systematic mapping technique
737 warranted wide exposure of the relevant literature. The method also contributed to the validity
738 of extensive coverage of high-impact peer-reviewed journals. Second, the keywords used may
739 be regarded as another limitation. However, based on the methodological approach and the
740 criteria for selecting relevant papers, the review highly stands in a better position to provide an
741 understanding of the management control and performance concept in ICJVs. Third, while this

742 study puts forward a hypothetical framework for studying management control and
743 performance relationships, critical variables operationalizing the measurement and evaluation
744 of the developed constructs are needed before the usefulness of the framework can be fully
745 appreciated. Although drawing on the transaction cost, institutional and relational logic the
746 framework appears particularly relevant for examining this relationship, there could be other
747 relevant theoretical bases which this study did not touched on. It is, therefore, in the remit of
748 further research to identify other relevant theories to support and enhance the development of
749 ICJV theory. Finally, another limitation worth mentioning is the validation of the framework.
750 As validation is key in demonstrating the applicability of the established framework; however,
751 it must be clarified that this is a conceptual study, which aims to develop a framework for
752 studying management control and performance implications in ICJVs. This limitation of the
753 study is, therefore, acknowledged and demonstrated how such a move could be achieved in the
754 previous section.

755

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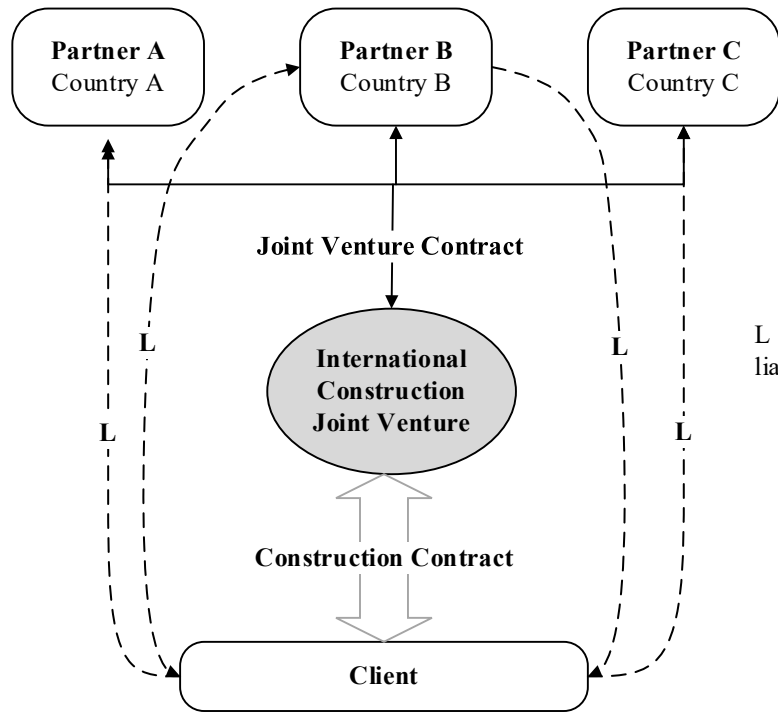
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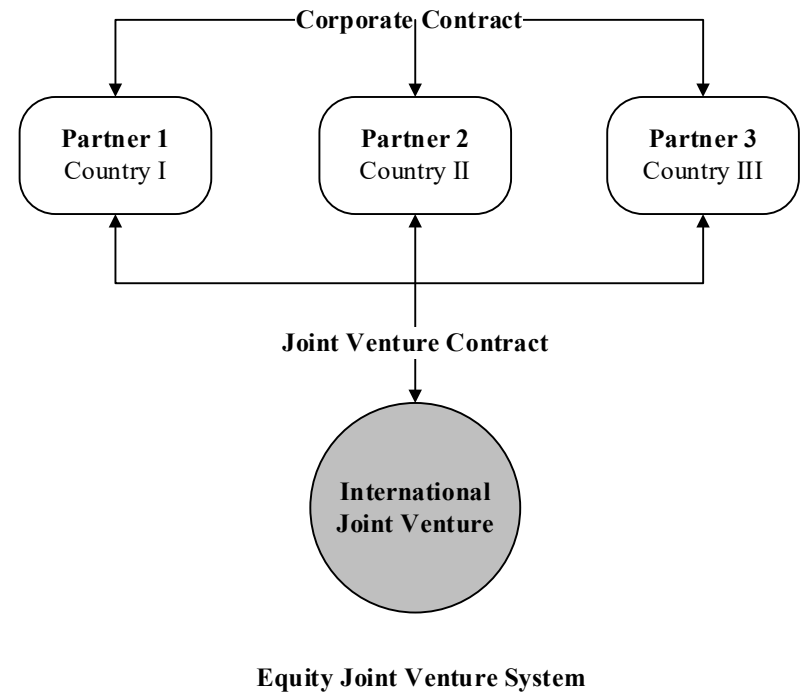
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Construction Joint Venture Ssystem

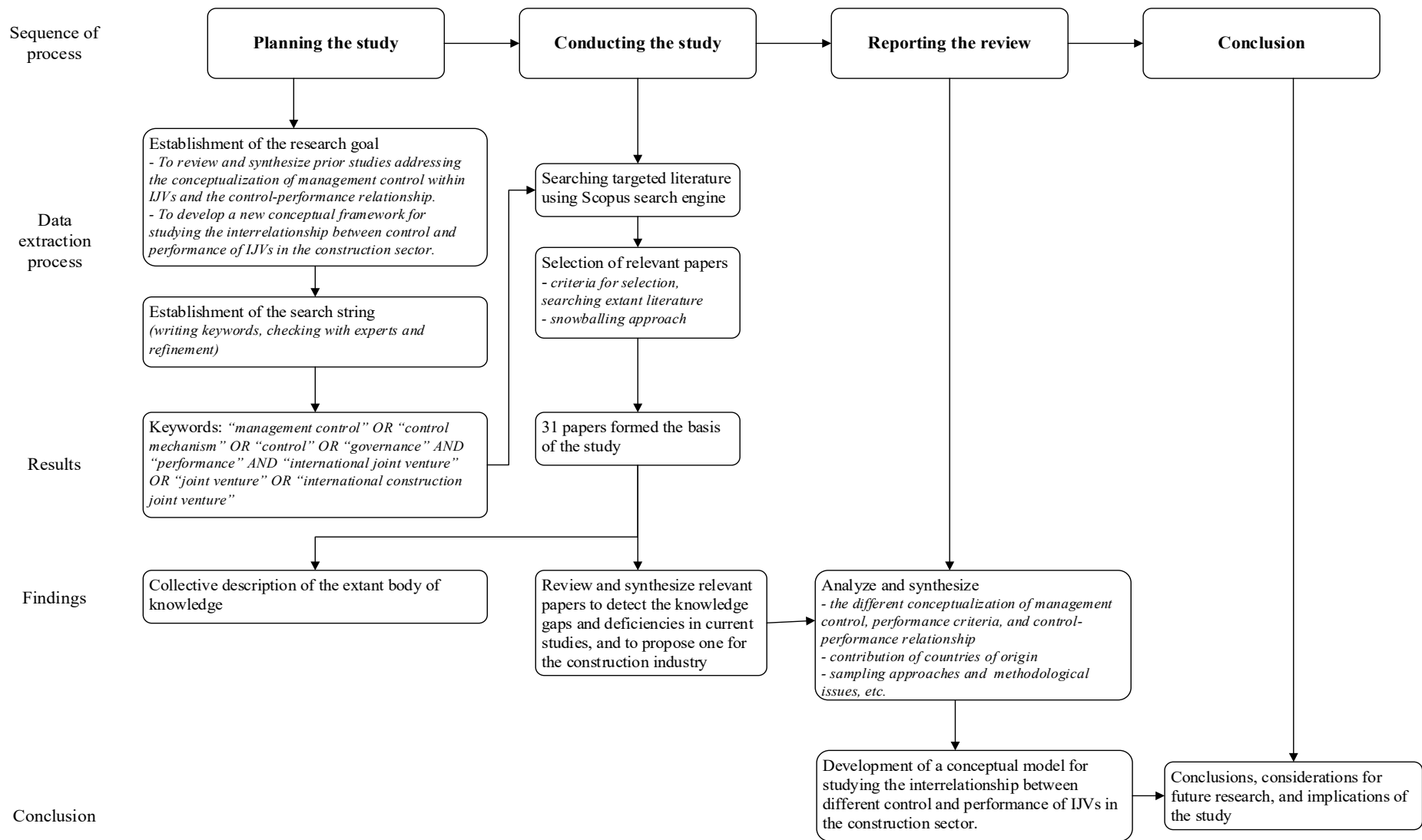


Equity Joint Venture System

L – Joint and several liabilities

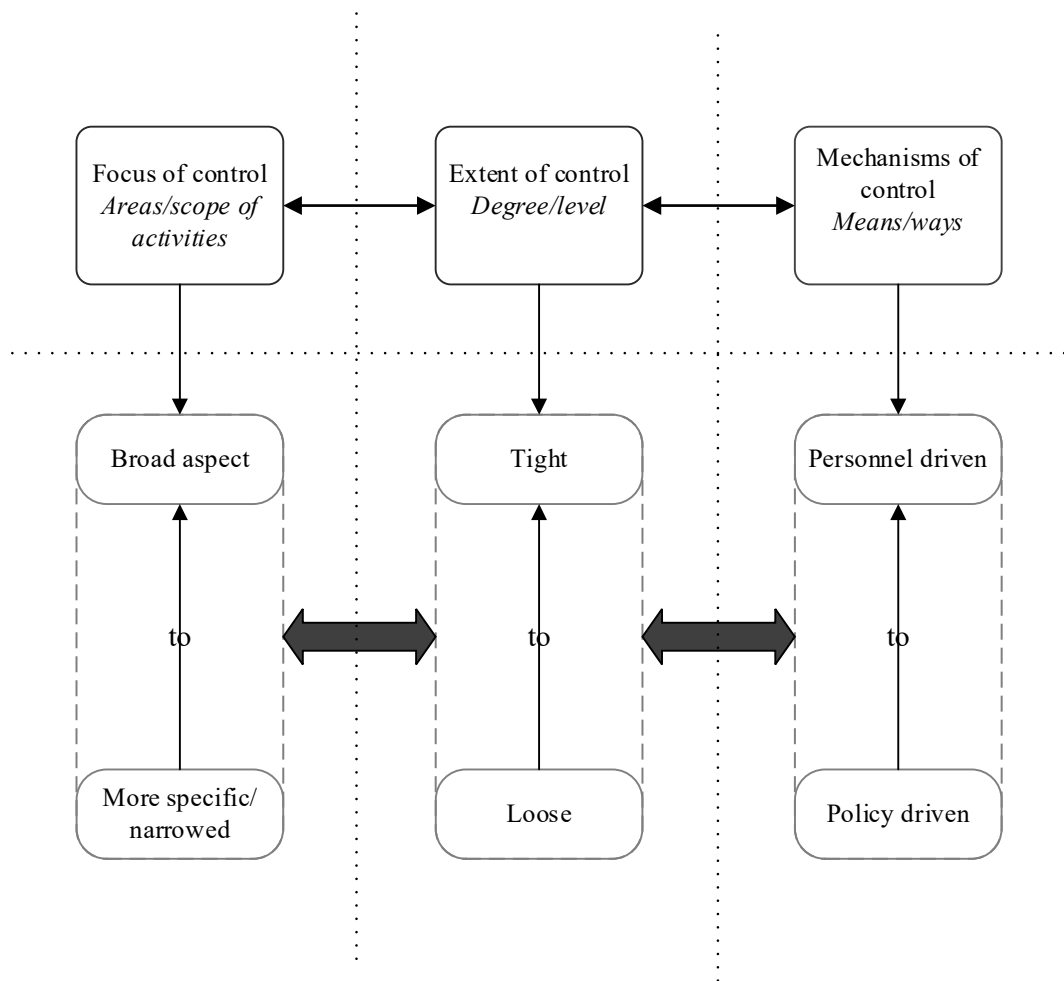
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Figure 1. Structure of an ICJV and IJV (Adapted from [Girmscheid and Brockmann \(2010\)](#) and [Tetteh and Chan \(2019\)](#))



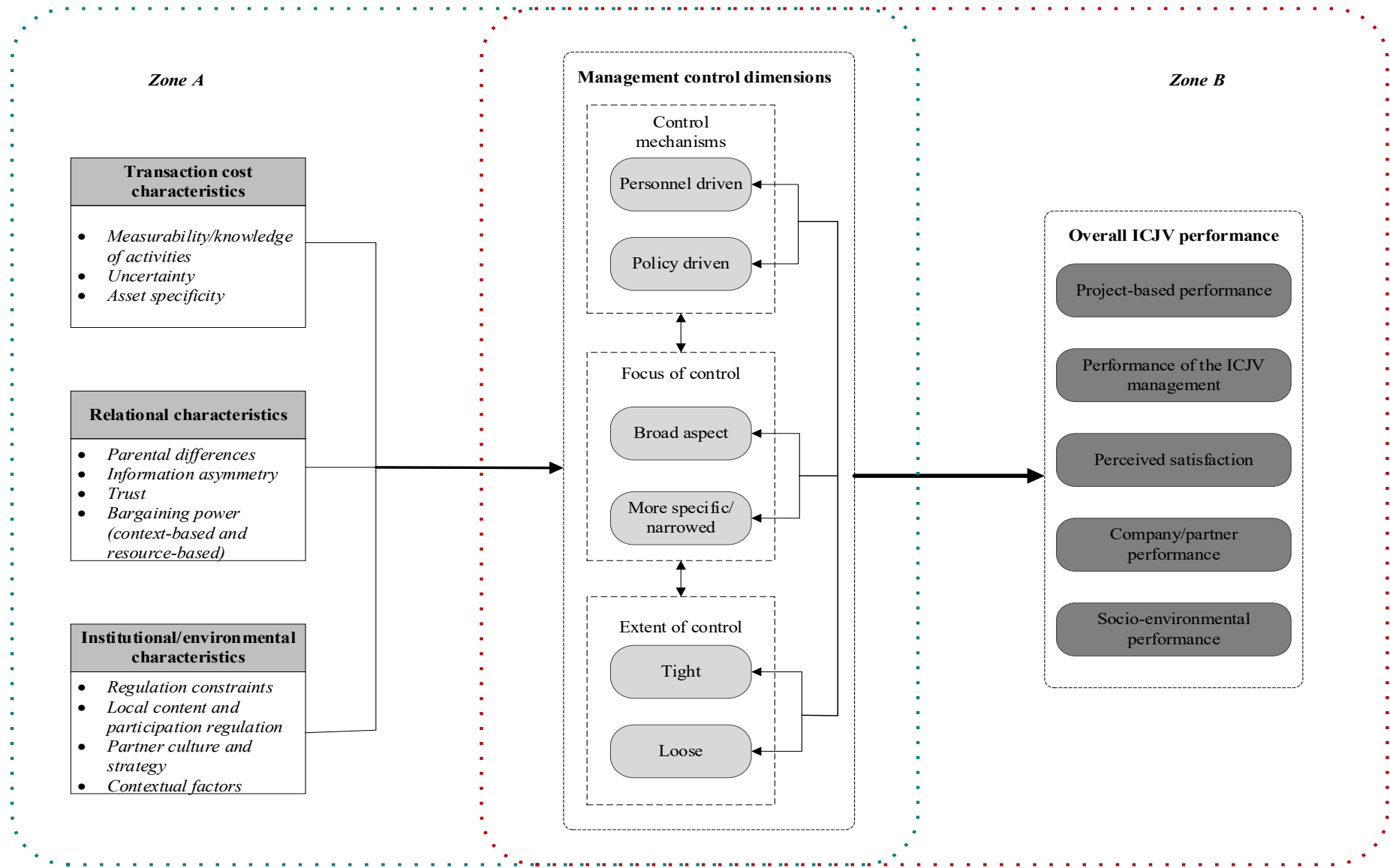
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Figure 2. Research methodological framework



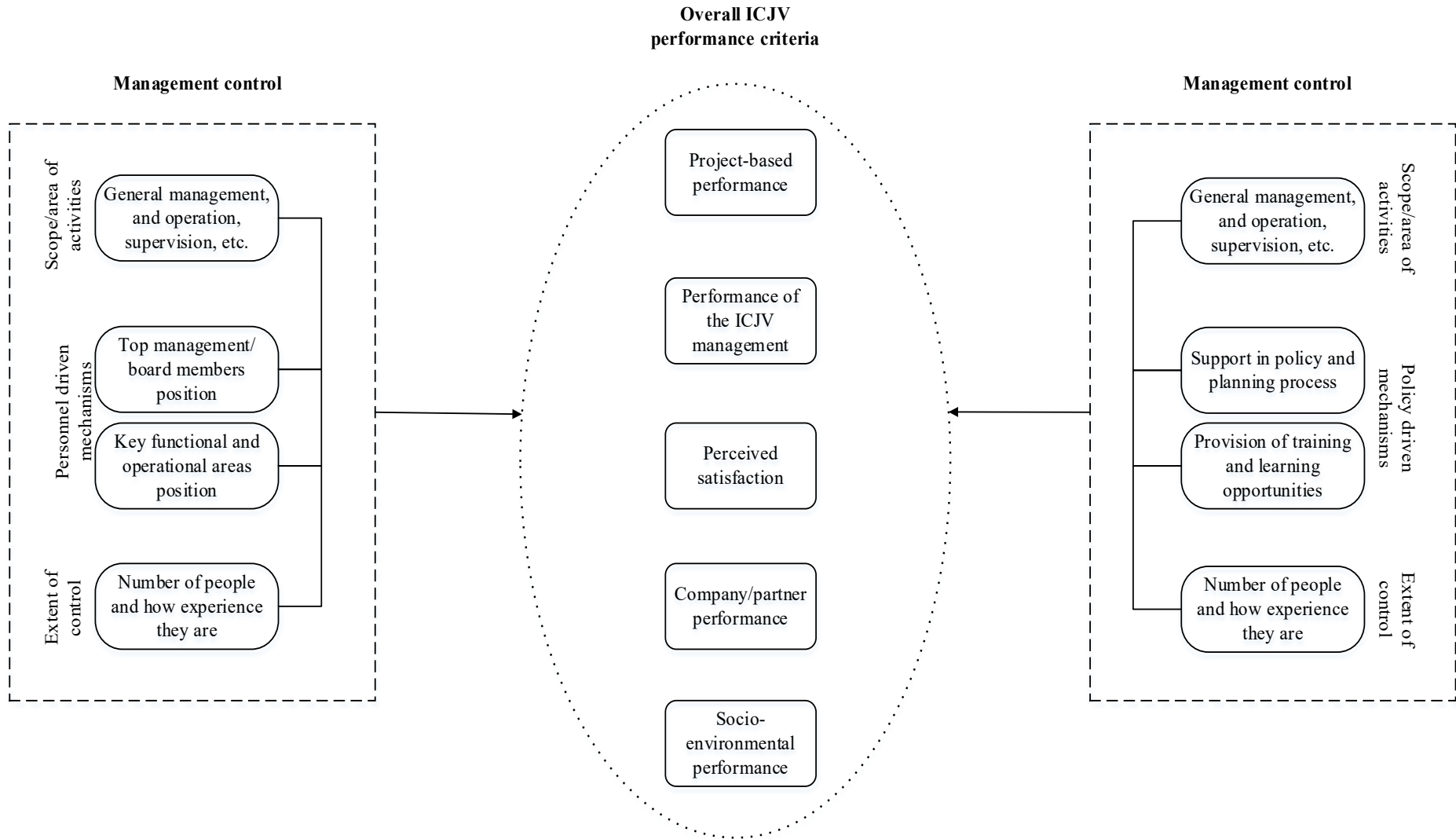
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Figure 3. Dimensions of IJV control (adapted from Giacobbe and Booth, 2009)



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Figure 4. A theoretical framework of management control determinants and performance in ICJVs



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1042 **Figure 5.** A conceptual model for control and performance relationship within ICJVs

1043 Table 1. Journal information of selected papers

Selected journal	Number of papers
International Business Review (IBR)	4
Journal of International Marketing (JIM)	3
Journal of International Business Studies (JIBS)	3
Asia Pacific Management Review (APMR)	2
Journal of Business Research (JBR)	2
Financial Management (FM)	1
Journal of Cleaner Production (JCP)	1
Critical Perspectives on International Business (CPIB)	1
The Service Industries Journal (TSIJ)	1
Journal for Global Business Advancement (JGBA)	1
European Management Journal (EMJ)	1
Organization Science (OS)	1
Asia Pacific Journal of Marketing and Logistics (APJML)	1
Construction Management and Economics (CME)	1
Journal of Asia-Pacific Business (JAPB)	1
Management International (MI)	1
Journal of Management Studies (JMS)	1
Journal of construction engineering and management (JCEM)	1
Journal of Applied Management and Entrepreneurship (JAME)	1
Strategy and Governance of Networks (SGN)	1
Academy of Management Journal (AMJ)	1
Managerial Finance (MF)	1
Total	31

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1048 Table 2 Summary of research on management control and performance relationship within IJVs

Authors	Conceptualization of management control	Measures of performance	Country	Industry	Perspective/Focus area	Management control-performance relationship
Mantecon et al. (2016)	Dominant- and shared-control	Return on assets	USA	Manufacturing	Parents firms	A positive relationship, however, shared control highly correlate with performance
Huang et al. (2015)	Centralization, formalization, and socialization	Strategic goal achievement, cooperative relationship with IJV's partners, willingness to continue this cooperative relationship	China	Multiple industries including the manufacturing, machinery, etc.	Foreign partners	A direct effect of formalization and socialization on IJV performance. No significant relationship between centralization and performance.
Shah (2015)	Strategic control by equity shares, and specific control by appointments	Internal and external environmental orientation, and corporate and functional strategic focus	Trinidad and Tobago	Oil, gas and chemical sector	Top firm managers	Direct influence
Huang and Chiu (2014)	Desired and exercise control	Overall performance	Taiwan	Manufacturing, financial, and human resource management	Parent firms	Both positively influence performance.
Ghuri et al. (2013)	Personnel and policy control mechanisms	Overall satisfaction, profit, and growth	South Korea	Multiple industries	Foreign partners (CEOs)	While personnel control influence satisfaction, policy control impact both financial and growth measures.
Lee et al. (2011)	Human resource, cultural, and performance control mechanisms	Economic, competency-based, and synthetic performance	Taiwan	Service industry	Foreign parents (MNCs)	-
Porporato (2009)	Strategic, managerial, and operational control	Financial, operating, and subjective indicators	Canada	Motor/auto parts industry	IJV managers	Positive influence
Selekler-Gökşen and Üysal-Tezölmez (2007)	Strategic and operational control	Financial returns and goal achievement	Turkey	Manufacturing	Local parent	Both positively influence financial returns. No variation in terms of goal achievement.
Mjoen and Tallman (1997)	Specific and equity control	Overall IJV goal	Norway	Multi-industrial sectors including, construction, engineering, etc.	Local firms	Strongly and positively related
Whitelock and Yang (2007)	Strategic and operational control	Market-developing, efficiency-seeking, and knowledge-acquiring objectives	China	Multiple industries (machinery, textiles, electronics, etc.)	Parent firms	Direct impact
Pangarkar and Klein (2004)	Extent of control	Overall success, stability, sales growth, market share, and profitability	Singapore	-	Foreign parents	Partial support for a contingent control-performance link
Choi and Beamish (2004)	Split control, shared management, MNE-partner-dominant, and local-partner-dominant	Overall satisfaction	Korea	Manufacturing	Parent firms	A direct link between split control and performance. No significant relationships among the remaining three types of control.
Lee et al. (2003)	Asymmetry of governance structure (either local or foreign partner dominance)	Overall performance (profitability)	China	Manufacturing enterprises	Top firm managers	Asymmetry governance reveals no significant relationship with profitability compared to those operating under an asymmetric structure.

Yan and Gray (2001a)	Strategic, operational, and structural control	Strategic objectives	-	-	-	-
Zhang and Li (2001)	Shared management, dominant type, and independent type	Productivity, product competitiveness, innovativeness, partner harmony, achieving partner's objectives, profitability, and growth and expansion	China	Manufacturing industries	Local general managers	Contingent on the evolutionary control design process
Luo (2001)	Strategic, operational, and structural control	Profitability, and government satisfaction	China	Construction	Foreign partners	Positive and significant correlations were found among the three control and performance measures
Luo et al. (2001)	Overall, and specific control	Overall satisfaction	China	Manufacturing industries	Parent firms	Strong positive relationship
Ramaswamy et al. (1998)	Equity control	Return on assets, return on equity and return on sales	India	Manufacturing industries	Longitudinal	The curvilinear relationship between control and performance
Wang et al. (1998)	Control mechanisms	Growth, profitability, and overall performance	Singapore	Multi-industrial sectors including, construction, engineering, etc	Local partners	Positive relationship exists
Glaister and Buckley (1998)	Mechanism, extent, and focus control	Subjective and objective measures	UK	Manufacturing and tertiary sector	Foreign partners	Objective measures significantly correlate with the dimensions of control than that of subjective measures of performance
Ding (1998)	Dominant- and shared-control	The financial, non-financial, and combined performance	China	Multiple industries	Foreign partners	Different performance impact of control among local and foreign firms
Ding (1997)	Dominant- and shared-control	Financial and non-financial measures	China	Multiple industries	Foreign partners	Dominant control positively influences performance.
Hebert (1996)	Dominant- and shared-control	Satisfaction, and business performance	Canada	Manufacturing	Parent firms	Shared-control exhibited significant higher performance than dominant-control.
Yan and Gray (2001b)	Strategic, operational, and structural control	Strategic objectives	China	Multiple industries	Top firm managers	Operational control positively influences performance. No significant relationship between the two other controls and performance.
Lin and Ho (2012)	Jointly managed JVs, and separately managed JVs	Client satisfaction	Taiwan	Construction	Project managers	Jointly managed JVs correlates more positively with performance than the separately managed
Lu and Hebert (2005)	Equity control	IJV survival	International survey	-	Foreign partners	Positive
Duan and Chuanmin (2007)	Strategic and operational control	Can be measured from a different perspective of JV partners	China	Manufacturing industries	Top firm managers	Direct
Le Nguyen and Larimo (2008)	Mechanism, extent, and focus control	Overall satisfaction	Finland	-	-	Direct
Yan and Gray (1994)	Mechanism, extent, and focus control	Strategic objectives	China	Multiple industries	Parent firms	Direct
Chalos and O'Connor (1998)	Outcome and behavioural control	Strategic objectives	International survey	Manufacturing industries	Top firm managers	-

