

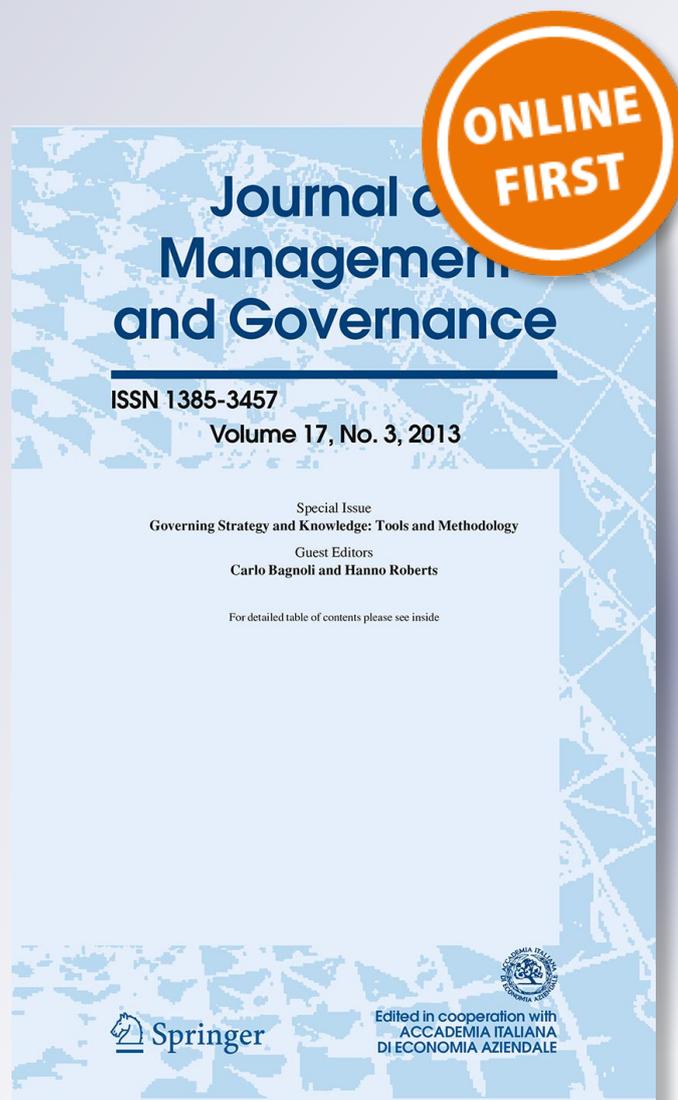
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Collaboration outcomes in a public sector: impact of governance, leadership, interdependence and relational capital

Shila Devi Ramadass¹ · Murali Sambasivan² · John Antony Xavier³

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Abstract Collaboration between public agencies is critical to address social issues effectively. The main objective of this research was to identify the factors that lead to successful achievement of desired collaboration outcomes that could eventually lead to societal outcomes. The factors identified were: transformational leadership, governance, interdependence, and relational capital. An integrated framework was developed based on collaboration governance framework (CGF) of Ansell and Gash (*J Public Adm Res Theory* 18:543–571, 2008). The CGF framework has integrated the following four broad variables that are responsible for achieving the desired collaboration outcomes: starting conditions, institutional design, leadership, and collaborative process. The study was conducted in Malaysia by sending questionnaires to 500 officers in various ministries who were involved in planning, formulating, and implementing public policies. The main findings of this study are: (1) transformational leadership influences governance, interdependence, relational capital, and collaboration outcomes; (2) governance has impact on relational capital, interdependence, and collaboration outcomes; (3) relational capital and interdependence result in positive collaboration outcomes; (4) dimensions of governance are inter-related; and (5) interdependence and relational capital are strongly correlated. This research adds significantly to the literature on collaborative governance. The implications and limitations of the study are discussed.

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1 Introduction

There is a growing body of literature on collaborative strategic management of public agencies (Clarke and Fuller 2011). Public agencies are entities within our social system that address social issues through funding, regulations, and advocacy (Ramsey 2010). In an effort to improve public service delivery and tackle complex social problems, many governments are increasingly expected to play a strategic role through creation of inter-organizational collaboration (Bryson et al. 2010). Although collaborations seem to prevail as the key tool in solving unmanageable societal problems (Keast and Mandell 2014; McGuire 2006; Ryan and Walsh 2004), they are unable to survive and achieve expected outcomes (Marek et al. 2014; Vos and Wagenaar 2012). The failure rate in collaborations appears most likely as the major concern for governments around the world especially, in the public sector (Barber 2007; Marek et al. 2014). It is understood that generally, one of the main reasons for the inability of collaboration to achieve the expected outcomes is that the collaborative arrangements are planned well with sound policy formulation but are ineffectively governed to achieve expected outcomes. Experiences of ineffective management that lead to unsuccessful collaborative outcomes are confirmed by collaboration studies (Vos and Wagenaar 2012). At this juncture, it is essential to understand the term collaboration outcome.

The hallmark of collaboration is achievement of outcomes. As proposed by Arino (2003), collaboration outcome is the 'degree of accomplishment of the partners' goals, be these common or private, initial or emergent (outcome performance), and the extent to which their pattern of interactions is acceptable to the partners (process performance' (p. 76). The nature of collaboration considered in this research is predominantly, between government agencies. The collaboration outcome consists of: value creation and goal achievement (dimensions of outcome performance) and re-evaluation (dimension of process performance). The collaboration outcome considered in this research is the perceived outcome and therefore, does not capture the actual societal outcome. However, as indicated by researchers, it is impossible to achieve societal outcomes (on the ground) without achieving collaboration outcomes (Ansell and Gash 2007; Emerson et al. 2012).

Some of the reasons why collaborations are tough to manage include: (1) weak and inefficient processes as well as flaws in governance to achieve collaboration goals (Hui et al. 2011; Muijs et al. 2011; Siddiquee 2007); (2) problems in building relational capital (trust, communication and commitment) between collaboration partners (Huxham and Vangen 2000; Sambasivan et al. 2011, 2013); (3) difficulties in sharing responsibility and accountability (Auditor General of Canada 1999, 2000); (4) frail leadership role in the development and implementation of collaborations (Currie et al. 2011; Dudau 2009); (5) lack of interdependence

between collaboration partners (McNamara 2014; Muijs et al. 2011); (6) communication breakdown leading to problems related to mistrust and low commitment between the collaboration partners (Kapucu and Garayev 2012; Leland and Thurmaier 2014; Muijs et al. 2011); (7) weak program implementation; and (8) ethical dilemmas (Brereton and Temple 1999; Radhika 2012). O'Leary and Vij (2012) have stated that public managers find difficulty in balancing many success factors in collaborative arrangements to achieve favourable outcomes. The governance of collaboration is fraught with ethical dilemmas faced by the organizations/agencies in making decisions (Brereton and Temple 1999; Radhika 2012).

The question that is addressed in this research is: What are the success factors and how are they linked to handle the dilemmas effectively and achieve positive collaboration outcomes? The studies by Clarke and Fuller (2011) and Poister (2010) provide the guidance to identify the success factors. According to Clarke and Fuller (2011), collaborative process is a strategic process that requires effective management. Poister (2010) while discussing the strategic management (process) in the public sector have stated that it involves leading, shaping, implementing, and managing on an ongoing basis. Based on these guidelines, success factors to achieve collaboration outcomes considered in this study are: transformational leadership (leading, shaping, implementing, and managing) (Currie et al. 2011), interdependence between the collaboration partners (shaping and managing) (McNamara 2014), relational capital between the collaboration partners (implementing and managing) (Sambasivan et al. 2013) and governance (shaping, implementing, and managing—governance for planning, governance for execution and monitoring and governance for evaluation and feedback) of collaboration (Hui et al. 2011; Muijs et al. 2011). The significant gap that is addressed in this research is linking the success factors and empirically testing the integrated relationships. Ansell and Gash (2007) and Emerson et al. (2012) have categorically stated that it is essential to develop and test integrated frameworks.

Considering the importance of success factors in achieving favourable outcomes, it is reasonable to say that there is a dearth of existing collaboration literature that focus on success factors and their interactions in achieving positive consequences (Chen and Thuramaier 2008; Clarke and Fuller 2011; Foss and Nielsen 2012). Prior studies focusing on factors that contribute towards successful collaboration outcomes have been conducted mainly within the private sector (Kale and Singh 2009). The current study has been carried out in Malaysia, a fast developing country in South-East Asia.

The main findings of this study are: (1) transformational leadership influences governance, interdependence, relational capital, and collaboration outcomes; (2) governance has impact on relational capital, interdependence, and collaboration outcomes; (3) relational capital and interdependence result in positive collaboration outcomes; (4) dimensions of governance are inter-related; and (5) interdependence and relational capital are strongly correlated.

The remaining part of the paper is organized as follows. The next section deals with the development of theoretical framework and hypotheses. The following section explains the methodology used in this research. Specifically, this section

covers the study location, population and sampling strategy, details of measures used, pilot study, and the method of handling common variance bias in this study. The following section highlights the results of analysis. The final section deals with discussions, implications, and conclusions.

2 Theoretical framework and hypotheses development

We explain the framework used in this research through the collaborative governance framework (CGF) proposed by Ansell and Gash (2007). They developed the framework after conducting a meta-analysis on 137 studies on public sector collaboration. According to them, collaborative governance is defined as “a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, conscious-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets” (p. 544). Even though the definition includes non-state stakeholders, there are some scholars who argue that interagency coordination between the public agencies can be treated as collaborative governance (Ansell and Gash 2007). Emerson et al. (2012) have given a more encompassing definition of collaboration governance (CG). They define CG as “the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished” (p. 2). Emerson et al. (2012) have developed an integrated collaborative governance regime framework (CGR) based on a suite of conceptual frameworks, research findings, and practice-based knowledge. Between CGF and CGR, this research uses CGF because: (1) CGF is cryptic and the variables indicated in this framework closely correspond to the variables used in current research, and (2) CGR is too general and covers many contexts of collaboration and the variables indicated in CGR also include variables of CGF.

In the current research, we deal with mandated public sector collaboration. Mandated public sector collaboration refers to a collaborative environment with at least some of the collaboration partners (mainly, public agencies) having no option but to collaborate (O’Leary and Vij 2012). Countries such as the UK, Australia (Ling 2002), and Malaysia are noted to practice mandated collaboration. Mandated public sector collaboration particularly involves active involvement of public agencies with less inclusion of the community and/or the private sector (Barber 2007; Ling 2002). According to Ansell and Gash (2007), even under mandated conditions, collaboration governance is critical to achieve the desired outcomes.

Based on the CGF, there are four broad variables that are responsible for achieving the desired outcomes: starting conditions, institutional design, leadership, and collaborative process. These variables have also been included by Emerson et al. (2012) in their integrated framework. Collaborative process is the core of CGF. The variables that enable this process are: trust, commitment, mutual interdependence, frequent communication, shared ownership, openness, shared understanding, intermediate outcomes, and face-to-face dialogues. The starting

conditions, leadership, and institutional design provide critical contributions to the collaborative process. Starting conditions relate to level of trust, conflict, and social capital between the collaborating agencies that can prove to be an enabler or barrier to collaboration. Institutional design provides the mechanisms for governance of collaboration to take place. Leadership is essential to drive, mediate and facilitate the collaborative process. At this point, it is useful to recap the constructs used in this research to achieve the desired societal outcomes through collaboration outcomes: transformational leadership, interdependence between the collaboration partners, relational capital between the collaboration partners, and governance (governance for planning, governance for execution and monitoring, and governance for evaluation and feedback) of collaboration. The constructs used in the current research relate to the variables of CGF as follows. First, interdependence and trust (a dimension of relational capital) between the collaborating agencies are essential as starting conditions (CGF) of the collaborative process. Higher levels of interdependence and trust will ensure that the collaborative process starts on a firm 'footing'. Second, CGF argues that transforming, servant, or facilitative leadership is essential to bring the collaborating agencies together and steer them through the collaborative process to achieve the desired collaboration outcomes. According to Bass (1985), the characteristics of a transformational leader that are relevant to public sector collaboration are: (1) focusing on important priorities and goals, (2) creating an ethical climate—this is important since the purpose of public sector collaboration is for solving social problems, (3) promoting strong collaboration between partners, (4) ensuring proper governance, and (5) encouraging partners to work for the common good and achieve the desired outcomes. Since these characteristics are relevant in current research, we consider the role of transformational leadership. Third, governance of collaboration used in current research can be linked to institutional design of CGF. According to Ansell and Gash (2007), formalization of governance structures is an important feature of institutional design. Since governance is critical at different stages of the collaborative cycle, it has been broken into three dimensions: governance for planning, governance for execution and monitoring, and governance for evaluation and feedback. Fourth, interdependence and relational capital (trust, commitment, and communication) used in the current research are related to collaborative process of CGF. Collaboration depends upon achieving a "virtuous cycle" between communication, trust, and commitment (relational capital), understanding through interdependence, and outcomes (Huxham and Vangen 2000; Imperial 2005). Summarizing collaborative governance, Ansell and Gash (2007) highlight three important benefits in addition to meeting the outcomes: avoiding high costs of adversarial policy making, expansion of democratic participation, and restoration of rationality to public management. The conceptual framework used in this research is given in Fig. 1.

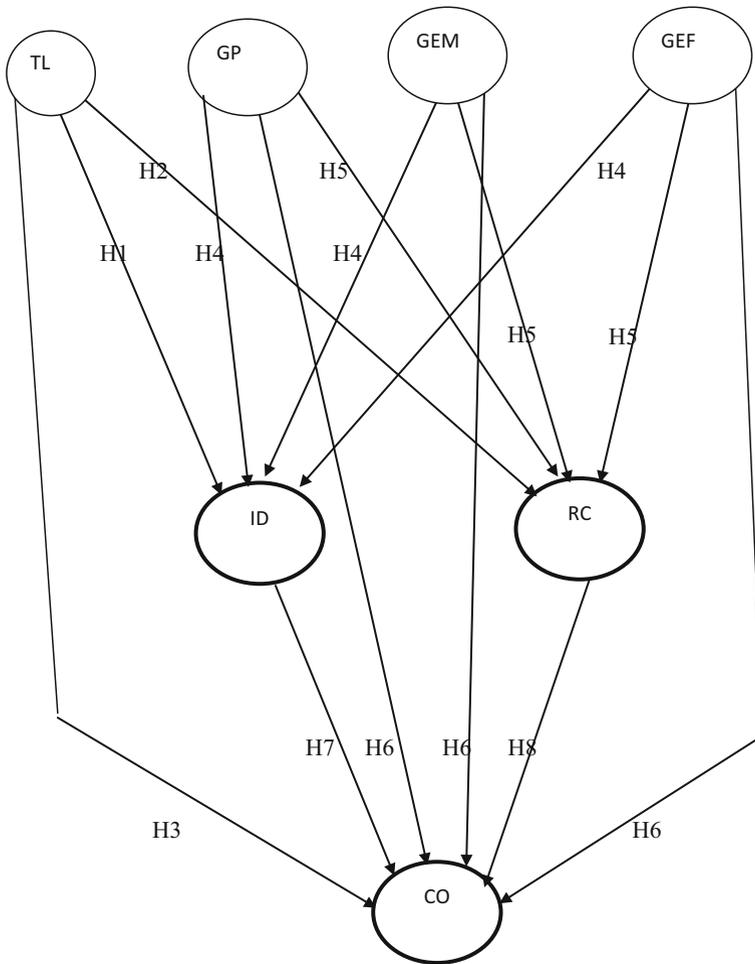


Fig. 1 Conceptual framework. *TL* transformational leadership, abbreviations: *GP* governance for planning, *GEM* governance for execution and monitoring, *GEF* governance for evaluation and feedback, *ID* interdependence, *RC* relational capital, *CO* collaboration outcomes

2.1 Hypotheses development

2.1.1 Transformational leadership versus interdependence

Based on previous studies, there are five types of interdependence that are applicable to collaborative governance (Nemati et al. 2010; Sambasivan et al. 2011): goal, resource, reward, task, and accountability. The transformational leaders lead the collaboration partners to contribute to the common good of the society (Mendenhall and Marsh 2010). The pursuit to achieve common goals creates goal interdependence between the collaboration partners (Sambasivan et al. 2011; Van Vijfeijken et al. 2002). When resources are not available, these partners will seek

resources from other partners to help achieve the common goals that create resource interdependence (Mitsuhashi and Greve 2009; Nemati et al. 2010). The encouragement from the transformational leaders for the collaboration partners to work collectively to achieve common goals leads to task interdependence i.e., exchange of information and/or means between collaboration partners (Wang et al. 2011). Reward interdependence occurs in collaboration when the success of collaboration partners is made dependent on each other (Sambasivan et al. 2011, 2013) by the transformational leaders in solving complex social problems and achieving common targets (Shatzer et al. 2014). Accountability interdependence is important in public sector collaboration as each partner is held accountable for the (non-) achievement of common goals and individual goals (Nemati et al. 2010). According to Fayezi et al. (2012), interdependence in collaboration is the result of relational integration among multiple stakeholders through information exchange, goal congruence, and incentive alignment to achieve favorable outcomes. Ramadass et al. (2017) have shown that in public sector collaboration in Malaysia there is a strong link between leadership and interdependence. Based on the above arguments, it is hypothesized as follows:

H1 Transformational leadership is positively related to interdependence.

2.1.2 Transformational leadership versus relational capital

Relational capital consists of three dimensions: trust, commitment, and communication (Sambasivan et al. 2013). Transformational leaders improve communication between collaboration partners through idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration factors (Konorti 2012). For instance, transformational leaders encourage effective communication between partners because it serves to empower and thus extend lines of communication between the partners (Konorti 2012). Transformational leaders strive to generate mutual trust and commitment between partners to achieve the common goals i.e., to solve social problems for the society's well-being (Konorti 2012; Mabey and Morrell 2011). By empowering the public agencies (collaboration partners) to carry out their responsibilities in achieving goals of the collaboration, transformational leaders play an important role in creating trust between collaboration partners (Brătianu and Anagnoste 2011; Konorti 2012). The trust between collaboration partners increases when the transformational leaders dissolve misunderstandings that arise in the collaboration through frequent communication between the collaboration partners (Brătianu and Anagnoste 2011). It is also noted that the shared belief between collaboration partners creates mutual trust (Sambasivan et al. 2013). Thus, the relational capital increases when there is stronger transformational leadership style in collaborative governance. Based on the above arguments, it can be hypothesized as:

H2 Transformational leadership is positively related to relational capital.

2.1.3 Transformational leadership versus collaboration outcomes

Transformational leaders have been recognized to make a positive difference by pursuing different goals through different means, creating positive cultures, clarifying mission, influencing followers, and steering organizations to a more productive and high performing outcomes (Dudau 2009; Wallace and Tomlinson 2010). These leaders are said to make available a true sense of purpose for the members as well as the collaboration which energizes these members to achieve goals (Konorti 2012; Ramadass et al. 2017; Singh 2014). Besides, the transformational leaders offer individualized considerations that allow collaboration members to grow and mature (Konorti 2012). In turn, the members of collaboration provide greater value to the organization and its stakeholders by striving to achieve goals of the collaboration (Konorti 2012). These abilities of transformational leaders to guide and steer collaboration partners are said to significantly influence collaboration outcomes (Smith et al. 2011). In light of the above arguments, it is hypothesized as follows:

H3 Transformational leadership is positively related to collaboration outcomes.

2.1.4 Governance versus interdependence

Before deriving the hypothesis, we explain types of governance. The current research deals with three types of governance. Firstly, governance for planning (GP) involves establishment of a specific body to facilitate the collaboration process (Kale and Singh 2009; Thomson et al. 2007). GP includes ways to solve problems related to collaborative action through discussions as well as agreement of jointly determined rules to ensure successful collaborative environment (Kale and Singh 2009; Thomson et al. 2007). Secondly, governance for execution and monitoring (GEM) comprises organization structure, the process, and participation from external parties that affect collaboration outcomes (Huxham and Vangen 2000). The structure in GEM is associated with structural connections between collaboration partners (Huxham and Vangen 2000). These structural connections include steering committees, collaboration manager, and lead agencies that are used to implement and monitor collaboration programs (Huxham and Vangen 2000). The process in this governance includes communication mediums such as committee meetings, workshops, standardized procedures and ICT systems that are utilized in execution and monitoring within collaborative working arrangements (Huxham and Vangen 2000). The participation in GEM consists of external and independent parties that are usually neutral such as experts, academicians and facilitators commissioned to aid collaborators to manage their working process in public sector collaboration (Huxham and Vangen 2000). Thirdly, governance for evaluation and feedback (GEF) includes the structure, process and participation utilized for obtaining feedback and evaluation in public sector collaboration (Huxham and Vangen 2000). Hereby, the participation additionally includes consultants, auditors and international bodies commissioned to assist collaborators by evaluating and providing

feedback for the betterment of collaborative governance in delivering outcomes (Huxham and Vangen 2000).

Interdependence is described as the belief that the outcomes of a relationship depend on both the individual and the joint actions that people in a partnership undertake (Sambasivan et al. 2011). For the individual and joint actions to be effective, as a first step, it is important to develop basic protocols and ground rules for collaboration (GP). It is these that give procedural legitimacy to the collaborative process (Ansell and Gash 2007). As a second step, it is essential to have formal structures and processes (GEM) in place and these are vital for collaborative governance (Ansell and Gash 2007; Imperial 2005). The structure and process ensure that there is a continuous monitoring and outcomes agreed upon by the collaboration partners are met. As a third step, a process has to be implemented to evaluate achievement of intermediate outcomes (milestones) and obtaining feedback from the external and internal stakeholders (GEF). The evaluation of intermediate outcomes and feedback are essential to deliver better collaboration outcomes. Based on the above arguments, we formulate the following hypothesis:

H4 Governance for planning (GP), governance for execution and monitoring (GEM), and governance for evaluation and feedback (GEF) are positively related to interdependence.

2.1.5 Governance versus relational capital

Relational capital between collaboration partners consists of three distinct elements: trust, commitment, and communication (Sambasivan et al. 2013). While discussing the collaborative governance process, Ansell and Gash (2007) highlight three important points: (1) communication is at the heart of collaboration, (2) trust building is the most prominent aspect of collaborative process, and (3) collaborating partners' level of commitment to collaboration makes the difference between success and failure. According to Imperial (2005), collaboration and its governance are iterative processes with strong inter-relationships between trust, commitment, communication, understanding, and outcomes. An interesting question at this point is: Is relational capital critical under mandated collaboration? Ansell and Gash (2007) emphatically answer this question by stating that "even when collaborative governance is mandated, achieving buy in is still an essential aspect of the collaborative process." (p. 560). For achieving the buy in throughout the collaboration process, trust, commitment and communication are essential. Based on the above arguments, we hypothesize as follows:

H5 Governance for planning (GP), governance for execution and monitoring (GEM), and governance for evaluation and feedback (GEF) are positively related to relational capital.

2.1.6 Governance versus collaboration outcomes

The ultimate goal of public sector collaboration is to achieve the outcomes that are critical to the well-being of the society. The outcomes of collaboration in a public

sector are largely dependent upon how well the collaboration is managed and governed (Ansell and Gash 2007; Stoker 1998). According to Rajkumar and Swaroop (2008), there is a large empirical literature on the positive relationship between governance indicators and developmental outcomes. Aberbach and Rockman (1992) show how effective governance can help in improving the governmental outcomes. In general, it can be argued that effective governance throughout different stages of collaboration in the public sector is vital for achieving the intended collaboration outcomes effectively, both in terms of cost and time. Therefore, it is hypothesized that:

H6 Governance for planning (GP), governance for execution and monitoring (GEM), and governance for evaluation and feedback (GEF) are positively related to collaboration outcomes.

2.1.7 Interdependence versus collaboration outcomes

According to Logsdon (1991), interdependence between the public sector agencies nurtures a desire to participate and commitment to meaningful collaborations. Ultimately, it is these meaningful collaborations that lead to successful outcomes. Ansell and Gash (2007) make an interesting observation about interdependence. They suggest that stakeholders in public sector projects recognize their interdependence through the collaborative process. According to O'Leary and Vij (2012), an individual agency or a group of public agencies in public sector collaboration are interdependent to perform tasks and achieve targets. Public agencies are interdependent due to their accountability to the general public and are collectively answerable for achieving common goals of collaboration (O'Leary and Vij 2012). Thus, interdependence has a direct impact on the outcomes as the public agencies are mandated to work together for achieving goals in collaboration (Rogers and Weber 2010). Based on these arguments, it is hypothesized as:

H7 Interdependence is positively related to collaboration outcomes.

2.1.8 Relational capital versus collaboration outcomes

Ansell and Gash (2007) emphasize the importance of relational capital in the achievement of collaboration outcomes by highlighting the problems in collaborative strategies that can possibly lead to under-achievement of outcomes. The problems highlighted by them are: (1) lack of real commitment, (2) distrust between the public agencies, and (3) manipulation by powerful agencies. Many researchers have shown that stronger relational capital between collaboration partners allows them to achieve favorable outcomes (Sambasivan et al. 2013). The collaboration partners with high levels of commitment, trust, and communication can achieve goals of solving complex social problems (Vos and Wagenaar 2012; Zhang 2014). Therefore, it is hypothesized that:

H8 Relational capital is positively related to collaboration outcomes.

3 Methodology

3.1 Study location

Social problems such as civil unrest, corruption (Barber 2007), and terrorism exert tremendous pressure on the public sector to address and solve these problems. The study location and context is Malaysian public sector. The Malaysian Government has been facing problems whereby the nation's performance in areas such as crime, corruption, education, and income distribution has fallen behind pre-2010 and has needed improvement in order to achieve the social goals encapsulated in Vision 2020 (Prime Minister's Department 2010). There has been an increasing demand from the citizens of Malaysia for improvements in the quality and quantity of public services (Prime Minister's Department 2010). Heeding to the requests of the citizens, the Malaysian government has implemented Government Transformation Program (GTP) which requires collaboration between public agencies, private organizations, and non-governmental organizations to fulfil demands of society for a better social environment (Prime Minister's Department 2010). The GTP covers the following seven areas: (1) crime; (2) corruption; (3) education; (4) standard of living of low-income households; (5) rural development; (6) public transport; and (7) cost of living. In Malaysia, public agencies play a major role and are held accountable for achievement of successful outcomes. Malaysian Public Service (MPS) has received low ratings in recent international and regional comparisons in the areas of crime (Sidhu 2005; Tang 2011), corruption (Hui et al. 2011), student outcomes (Prime Minister's Department 2010), living standards (Harun and Jalil 2013), rural basic infrastructure (Yassin and Shaffril 2011), and urban public transportation (Barber 2007; Prime Minister's Department 2010). These problems indicate that reforms have failed to boost efficiency, competence, and accountability within the public sector to the expected levels (Prime Minister's Department 2010; Ramadass et al. 2017; Siddiquee 2007). Therefore, the study is timely.

3.2 Population and sample size

The population for this study includes all public officers (officers are involved directly or indirectly) who represent the federal ministries, departments, and agencies in Malaysia involved in public sector collaboration. The sampling frame for this research was the listing of public officers posted in federal ministries, departments, and agencies obtained from Public Services Department. One of the authors works in one of the central agencies and therefore, it was not difficult to get the sampling frame and the required information from the government. The total number of officers involved in the collaboration (directly or indirectly) was 22,259. Based on the sample size calculator and because of problems related to non-response and/or missing data, we selected a sample size of 500. We used stratified random sampling with three strata: (1) junior-level officers (55%), (2) middle-level managers (40%), and (3) top-level managers (5%). A questionnaire was developed and administered to all the 500 officers selected at random from the sampling frame.

The sample included 275 junior level officers, 200 middle-level managers, and 25 top-level managers who are involved in collaboration and implementing transformation programs.

3.3 Measures

Table 1 gives the details of each construct used in this study. The items under each construct were adapted from established studies. The constructs in this study were: transformational leadership (idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation), relational capital (trust, commitment, and communication), interdependence (task, goal, reward, resource, and accountability), governance—governance for planning, governance for execution and monitoring, and governance for evaluation and feedback, and collaboration outcomes (goal achievement, value creation, and re-evaluation). A copy of the questionnaire can be obtained from the corresponding author.

3.4 Pilot test and the administration of questionnaire

A pilot test was conducted with 30 officers involved in planning, formulating, and implementing public policies. These officers were the under-secretaries in ministries, heads of the departments, and directors. Some minor changes were made to the ‘wording’ in some of the items under transformational leadership to reflect agreement with the terms used by Malaysian officers. Before making changes to the terms, written permission was obtained from the developers of the construct and its items.

The questionnaire was distributed to 500 officers who were selected at random from the sampling frame. Four hundred and five officers (response rate—81%)

Table 1 Constructs used and sources

S. no.	Construct	# of dimensions/#of items	Source
1	Transformational leadership	4/20	Avolio and Bass (2004)
2	Relational capital	3/16	Sambasivan et al. (2011, 2013)
3	Interdependence	5/29	Sambasivan et al. (2011, 2013), Thomson et al. (2007), Wood and Winston (2007)
4	Governance for planning	1/8	Thomson et al. (2007)
5	Governance for execution and monitoring	3/17	Thomson et al. (2007)
6	Governance for evaluation and feedback	1/7	Thomson et al. (2007)
7	Collaboration outcome	3/15	Sambasivan et al. (2011, 2013)

responded. Thirteen questionnaires were rendered unusable because of many missing items. Three hundred and ninety two filled questionnaires were finally used for further analyses. Finally, we used the responses from 195 junior-level officers, 178 middle-level managers, and 19 top-level managers.

3.5 Handling common method variance

The responses for the questionnaire survey in this study were from a single source. The dependent and explanatory variables were perceptual measures that were obtained from a single respondent. According to Podsakoff et al. (2003), this can potentially cause common method variance. Based on the suggestions provided by researchers, we performed Harman one factor test (Podsakoff et al. 2003) and common latent factor test (MacKenzie et al. 2011). The results of the tests are: (1) Harman one factor test resulted in the first factor explaining 36% out of 86% of total variance explained by all factors. Thus, no general factor was apparent; (2) common latent factor test indicated that all the delta values were less than 0.2 (MacKenzie et al. 2011). The results of both the tests indicate that the effect of common variance in this study is minimal.

4 Results

4.1 Reliability and validity

Cronbach Alpha scores were used to assess the reliability of the constructs. The reliability scores of all constructs were between 0.846 and 0.958 (higher than the recommended value of 0.7). The validity of the constructs was assessed using the confirmatory factor analysis (CFA). The composite reliability (CR), average variance extracted (AVE) of each construct and correlation between each construct are given in Table 2. Based on the values, it can be seen that: (1) CR scores of all constructs are greater than 0.7 and (2) AVE values of all constructs are greater than 0.5. The results suggest that convergent and discriminant validities of all constructs are within the acceptable range.

4.2 Descriptive statistics

Table 3 gives the descriptive statistics of all constructs. Based on the mean values, it can be inferred that: perceptions of levels of attributes of transformational leadership, relational capital, and interdependence are 'medium'; perceptions of levels of collaboration outcomes and governance (governance for planning, governance for execution and monitoring, and governance for evaluation and feedback) are high; skewness and kurtosis statistics of all constructs are between -1 and $+1$ indicating the normality of the constructs.

Table 2 Correlation, CR, and AVE of constructs

S. no.	Construct	CR	AVE	Correlation						
				TL	INTER	RC	GP	GEM	GEF	OUT
1	TL	0.939	0.757	1.00	0.362 ^a	0.453	0.223	0.241	0.178	0.325
2	INTER	0.846	0.605	0.602 ^b	1.00	0.678	0.311	0.464	0.472	0.552
3	RC	0.945	0.689	0.673	0.824	1.00	0.345	0.425	0.402	0.501
4	GP	0.859	0.626	0.472	0.558	0.587	1.00	0.402	0.407	0.154
5	GEM	0.926	0.615	0.491	0.681	0.652	0.634	1.00	0.706	0.359
6	GEF	0.915	0.733	0.422	0.687	0.634	0.607	0.819	1.00	0.350
7	OUT	0.958	0.720	0.570	0.743	0.708	0.392	0.599	0.592	1.00

CR composite reliability, AVE average variance extracted, TL transformational leadership, INTER interdependence, RC relational capital, GP governance for planning, GEM governance for execution and monitoring, GEF governance for evaluation and feedback, OUT collaboration outcome

^aValues above the diagonal are squared correlations

^bAll correlations significant at 0.05 level of significance

Table 3 Descriptive statistics of constructs

S. no.	Construct	Mean (5-scale)	Standard deviation	Skewness	Kurtosis
1	Transformational leadership	3.479 (medium)	0.488	0.388	- 0.435
2	Interdependence	3.532 (medium)	0.565	- 0.312	- 0.084
3	Relational capital	3.603 (medium)	0.489	- 0.258	- 0.258
4	Governance for planning	3.860 (high)	0.570	0.231	- 0.609
5	Governance for execution and monitoring	3.730 (high)	0.550	0.229	- 0.552
6	Governance for evaluation and feedback	3.840 (high)	0.640	- 0.055	- 0.479
7	Collaboration outcome	4.043 (high)	0.631	- 0.182	- 0.656

4.3 Testing of hypotheses

We used SEM (structural equation modeling) to test the hypotheses. According to Hair et al. (2010), “SEM is a family of statistical models that seek to explain the relationships among multiple variables. In doing so, it examines the structure of interrelationships expressed in a series of equations, similar to a series of multiple regression equations. These equations depict all the relationships between the dependent and independent variables involved in the analysis” (p. 711). The correlations in Table 2 suggest the existence of significant inter-relationships between constructs. The structural model was run using Lisrel 9.2. Figure 2 shows the final framework with significant relationships and fit statistics. Based on the fit indices, it can be seen that the model fit is good. The salient results of hypotheses testing are:

- The hypothesis (**H1**) that links transformational leadership and interdependence is supported ($\beta = 0.328, p \text{ value} = 0.000$). Based on the results, it can be seen that transformational leadership helps build strong interdependence between collaboration partners;
- The relationship between transformational leadership and relational capital (Hypothesis **H2**) is supported ($\beta = 0.253, p \text{ value} = 0.000$). This implies that the leadership is critical to build trust, commitment and communication between the collaboration partners;
- The relationship between transformational leadership and collaboration outcome (Hypothesis **H3**) is supported ($\beta = 0.152, p \text{ value} = 0.000$). The result shows that in order to achieve the necessary collaboration outcomes, transformational leadership role is important;

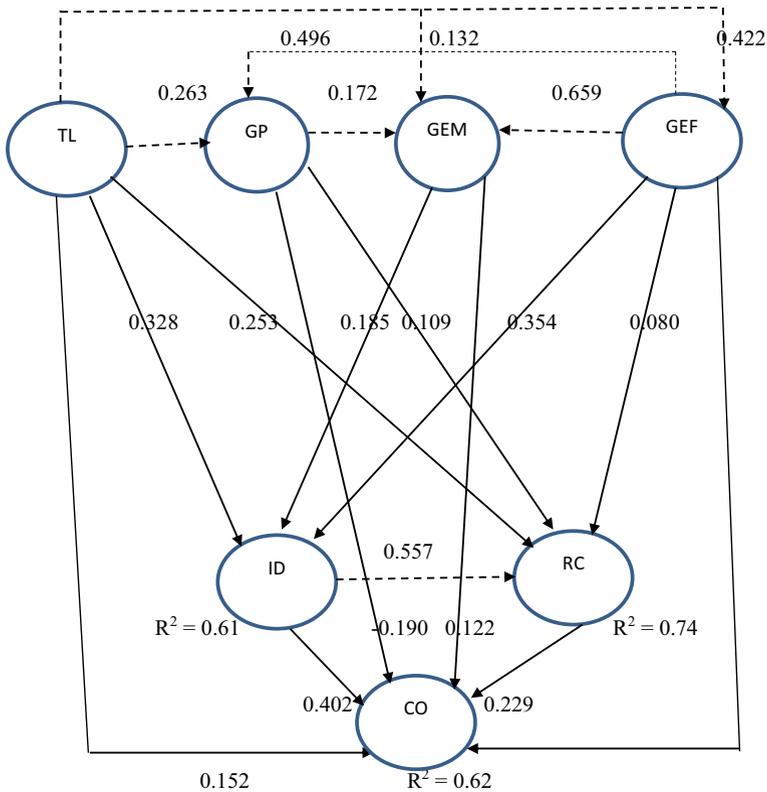


Fig. 2 Final framework with significant relationships. *TL* transformational leadership, abbreviations: *GP* governance for planning, *GEM* governance for execution and monitoring, *GEF* governance for evaluation and feedback, *ID* interdependence, *RC* relational capital, *CO* collaboration outcomes. Dotted arrow: not hypothesized relationships. Fit statistics: chi square/degrees of freedom = 1.245 (acceptable value ≤ 5) ($p \text{ value} = 0.468$), root mean square error approximation (RMSEA) = 0.025 (acceptable value ≤ 0.08), goodness of fit index (GFI) = 0.998 (acceptable value of all fit indices ≥ 0.9), comparative fit index (CFI) = 0.998, incremental fit index (IFI) = 0.998, root mean residual (RMR) = 0.003 (acceptable value ≤ 0.08)

- Transformational leadership has been found to exert positive influence on governance for planning ($\beta = 0.263$, p value = 0.000), governance for execution and monitoring ($\beta = 0.132$, p value = 0.000), and governance for evaluation and feedback ($\beta = 0.422$, p value = 0.000). Through this result (not hypothesized), this study has gone beyond the framework suggested by Ansell and Gash (2007) by demonstrating the role of transformational leadership in strongly influencing the governance process;
- Among the dimensions of governance, governance for execution and monitoring ($\beta = 0.185$, p value = 0.002) and governance for evaluation and feedback ($\beta = 0.354$, p value = 0.000) have positive relationships with interdependence (Hypothesis **H4**);
- Governance for planning ($\beta = 0.109$, p value = 0.001) and governance for evaluation and feedback ($\beta = 0.083$, p value = 0.040) have positive impacts on relational capital (Hypothesis **H5**). The results suggest that effective governance is important for building interdependence and relational capital. Besides, it has been found that (1) governance for planning ($\beta = 0.172$, p value = 0.000) and governance for evaluation and feedback ($\beta = 0.659$, p value = 0.000) have positive influence on governance for execution and monitoring and (2) governance for evaluation and feedback has a strong impact on governance for planning ($\beta = 0.496$, p value = 0.000). The results suggest that governance dimensions are inter-related;
- The collaboration outcomes (Hypothesis **H6**) are influenced by governance for planning ($\beta = -0.190$, p value = 0.000), governance for execution and monitoring ($\beta = 0.122$, p value = 0.040), and governance for evaluation and feedback ($\beta = 0.122$, p value = 0.037). The results imply that too much emphasis on planning can have a negative impact on the outcomes and the governance for execution and monitoring and governance for evaluation and feedback have positive impacts;
- Interdependence ($\beta = 0.402$, p value = 0.000) and relational capital ($\beta = 0.229$, p value = 0.000) have strong relationships with collaboration outcomes (Hypotheses **H7** and **H8**). These results have been verified by many studies (for example, Sambasivan et al. 2011, 2013). Besides, the relationship between interdependence and relational capital ($\beta = 0.557$, p value = 0.000) is very strong suggesting the need for both for ensuring the success of collaboration in public sector; and
- Even though it is not explicitly hypothesized, the mediating roles of interdependence and relational capital between transformational leadership, governance and collaboration outcomes have been tested using the Hayes' bootstrapping procedure and the following results have been obtained: (1) interdependence mediates the relationship between transformational leadership and collaboration outcomes (Sobel's z -value = 5.291, p value = 0.000), (2) interdependence mediates the relationship between governance for execution and monitoring and collaboration outcomes (Sobel's z -value = 2.825, p value = 0.005), (3) interdependence mediates the relationship between governance for evaluation and feedback and collaboration outcomes (Sobel's z -value = 4.600, p value = 0.000), (4) relational capital mediates the

relationship between transformational leadership and collaboration outcomes (Sobel's z -value = 3.350, p value = 0.000), and (5) relational capital mediates the relationship between governance for planning and collaboration outcomes (Sobel's z -value = 2.430, p value = 0.015).

5 Discussions, implications and conclusions

This research started with the argument that collaboration in public sector is fundamental to achieving collaboration outcomes effectively. Then it set the objective of identifying the factors that lead to successful collaboration outcomes. The research identified the factors based on the strategic management and collaboration governance framework developed by Ansell and Gash (2007). Our framework differs from Ansell and Gash's framework in four ways: (1) dominating role of leadership in driving governance, interdependence, relational capital, and outcomes, (2) breaking the governance structure into planning, execution and monitoring, and evaluation and feedback, (3) the role of governance in enabling interdependence, relational capital and outcomes, and (4) grouping trust, communication, and commitment into relational capital.

The findings of this research highlight the influential role played by transformational leadership on governance, interdependence, relational capital, and collaboration outcomes. In Malaysian context, this result is not surprising. For each major outcome in the government transformation program, one ministry/agency is chosen as the main driver by the government. The minister/director managing the ministry/agency assumes the leadership role. Though the lead ministry/agency is held responsible for the achievement of a particular outcome, it is supported by other ministries/agencies as directed by the government (Siddiquee 2014). Many researchers have extolled the role of leadership in collaboration governance. For example, Huxham and Vangen (2003) specify the role as embracing, empowering, involving stakeholders and mobilizing them; Ansell and Gash (2007) highlight the role as setting and maintaining ground rules, building trust, facilitating dialogue, and exploring gains (p. 554); Konorti (2012) and Mabey and Morrell (2011) suggest that achievement of common goals through mutual trust and commitment can be made possible by leaders of collaboration. Therefore, it is suggested that full benefits of collaboration can be achieved in public sector through strong leadership. Implementation of transformation programs in Malaysia has shown that significant results can be achieved if the programs are headed by strong leaders (Siddiquee 2014; Xavier et al. 2016).

Governance ultimately creates the conditions for ordered and ethical rule and collaborative action (collective decision-making) (Stoker 1998). Effective governance is essential to achieve the outcomes sought by the governments. Current research highlights the importance of governance as follows: (1) it influences three factors: interdependence, relational capital and collaboration outcomes. Among the effects of governance on three factors, impact on interdependence is the strongest; (2) dimensions of governance are inter-related. An important finding is the influence

of governance for planning and governance for evaluation and feedback on governance for execution and monitoring. The result suggests that for effectively executing and monitoring the collaboration, planning and continuous evaluation of the intermediate outcomes and feedback from the stakeholders are vital; (3) transformational leadership influences all the three dimensions of governance with highest impact on governance for evaluation and feedback. The finding suggests that leaders (transformational) play a vital role in effectively governing collaboration through different stages to successful achievement of collaboration goals; and (4) the impact of governance for planning on outcomes is negative. As stated earlier, governance for planning involves establishment of a specific body to facilitate the collaboration process and ways to solve problems related to collaborative action through discussions as well as agreement of jointly determined rules to assure successful collaborative environment. The finding of this research suggests that if the structure and the jointly determined rules of collaboration are too rigid, then the rigidity can negatively impact outcomes. One of the reasons for the outcomes in Malaysia to be modest may be the rigidity of structure and rules of collaboration (Siddiquee 2007). Lately, the successes of government transformation programs in Malaysia have been impressive in some areas such as rural development and public transport (Siddiquee 2014; Xavier et al. 2016). The successes can be more significant if the structure and the rules are made more flexible to accommodate changes based on the evaluation of intermediate outcomes and feedback from the stakeholders.

The positive links between interdependence, relational capital, and collaboration outcomes are well documented (Ansell and Gash 2007; Ramadass et al. 2017; Sambasivan et al. 2011, 2013). As stated by researchers, achievement of collaboration outcomes cannot be obtained without the significant roles of interdependence and relational capital. Interdependence between the public sector agencies (partners) is critical for interaction processes and information sharing (Ansell and Gash 2007). It makes the partners realize that the benefits of collaboration are far more than working alone and the partners tend to trust, commit, and communicate more (Das and Teng 2000; Sambasivan et al. 2013). This is because under conditions of high task, goal, reward, resource, and accountability interdependencies, partnering agencies tend to work collectively because they depend on each other to achieve the collaboration goals effectively. Such interdependencies improve partners' willingness to communicate openly and trust each other, thereby increasing the commitment to cooperative relationship (Ansell and Gash 2007; Sambasivan et al. 2013). Previous studies have demonstrated that frequent interactions strengthen the ties among collaboration partners and promote cooperation so that positive outcomes may be derived (Cravens et al. 2000). In fact, some of the reasons cited for the moderate success of transformation program in Malaysia are the leadership, strong interdependencies, and strong relational capital between the collaborating agencies (Siddiquee 2014; Xavier, et al. 2016).

5.1 Theoretical and practical implications

This study has contributed significantly to the literature on public sector. Specifically, the study has developed and tested a comprehensive framework that captures the factors that are critical to the governance of public sector collaboration and its outcomes. Earlier studies have developed frameworks (Ansell and Gash 2007; Emerson et al. 2012) but have rarely tested them empirically. These researchers through their works have encouraged academicians to conduct more empirical validation of frameworks. The current research, by developing and testing a comprehensive framework, has effectively filled the gap in the existing literature on collaboration (mandated) in the public sector. The framework has been developed based on the collaborative governance framework developed by Ansell and Gash (2007). This research offers a contingency “framework” in the sense that it captures the contingent factors that lead to positive collaboration outcomes. Besides, the research also explains the inter-relationships between the contingent factors.

The practical implications of this research are: (1) transformational leadership plays a vital role in the governance and achievement of government transformation program outcomes. The government mechanism must appoint the “right” ministry/agency to lead the achievement of each outcome. The ministry/agency can be chosen to take the lead role based on the role and relevance of outcome to the ministry/agency; (2) many researchers have highlighted the role of governance in achieving collaboration outcomes. This research has conclusively shown the significant role of governance. The lead ministry/agency and collaboration partners must place significant emphasis on the process of governance (planning, execution and monitoring, and evaluation and feedback). The lead ministry/agency must ensure that governance of collaboration is flexible and effective; (3) many researchers (Sambasivan et al. 2013) have highlighted the importance of interdependence and relational capital to achieve collaboration outcomes. The findings of current research validate the literature. The collaboration partners need to realize the significance of being interdependent since the collaboration outcomes cannot be accomplished by one or two ministries/agencies. The partners need to develop trust by communicating frequently and be committed to achievement of goals. The lead ministry/agency can play an important role. The governance process ensures high levels of interdependence and relational capital between the collaboration partners.

5.2 Conclusions and limitations of the study

This research has enabled us identify the factors that are critical to collaboration success in public sector in the context of Malaysia. The main findings of this study are: (1) transformational leadership influences governance, interdependence, relational capital, and collaboration outcomes; (2) governance has impact on relational capital, interdependence, and collaboration outcomes; (3) relational capital and interdependence result in positive collaboration outcomes; (4) dimensions of governance are inter-related; and (5) interdependence and relational capital are strongly correlated.

The current study is not without limitations. First, the ministries/agencies that participated in this study were at the federal level. Only national-level social goals were considered in this research and the state-level agencies and local government bodies were not included in this research. Future studies could consider these agencies and bodies explicitly. Second, the sample size in this research was limited to 392 respondents in spite of one of the authors being employed in one of the central agencies. Third, this study was cross-sectional. A longitudinal study might be conducted to establish the cause-effect relationships empirically. Fourth, the collaboration governance process can explicitly include other stakeholders such as community, private organizations, and non-governmental organizations.

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