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Governance and Resilience of Project Networks: On a Rising yet a Misunderstood Trajectory

Mugarura Yosamu
Ph.D. Student, Kenyatta University, Kenya
Dr. Paul Sang
Lecturer, Project Management, Department of Management Science, Kenyatta University, Kenya

Abstract:
Continued search for sustainable project success has dictated a shift from individualism and competition to partnerships and networking. Project networks is no longer a distant concept but a practical reality. Various actors under different social configurations (called project networks) are increasingly partnering together in search for scarce resources and complementarities. It is evidently clear that project outcomes are achieved through the collective interplay among many actors influenced by technological, social and institutional frameworks in a systemic and co-evolutionary nature. The paper discusses key antecedents (governance practices, network composition, and cultural attributes) of sustainable, and innovative interactions (otherwise known as resilience) in project networks. The paper depicts a key deficiency whereby appropriate skill sets that match unique organizational configuration of project networks, remain elusive to majority of project network managers. The purpose of the paper is to generate a debate by reviewing different literature and highlighting available contributions on the topic while pointing out existing gaps. The debate is intended to stimulate thinking among educationists and project practitioners towards developing a tailored curriculum on project network management that will equip project managers with the requisite skills necessary for managing fragile, complex, and dynamic structural and process configuration of project networks. The paper concludes by noting that for any project network governance to be successful, there is need to understand the composition of that network, cultural attributes, and interaction of network actors.

Keywords: governance, network composition, cultural attributes, interactions and resilience.

1. Introduction

Continued search for sustainable project success has dictated a shift from individualism and competition to partnerships and networking (Mugarura, 2011) [1]. States are forming strategic alliances and trading blocs while governments are partnering with private sector through public private partnerships (PPP). Input and output actors are joining efforts and resources, forming supply and market arrangements (popularly known as supply chains and value chains). Research and development (R&D) collaborators are forming multi-stakeholder networks known as innovation platforms (Catherine W. Kilelu, 2013) [2]. Various actors under these different social configurations (project networks) come together in search for scarce resources and complementarities. This unique development is attracting critical interest from an array of stakeholders given the temporary nature of projects and the bureaucratic environments of organizations that house such endeavors. Project networks play a compensating role between the "contrasting temporary organizational configuration of projects and their permanent environments" (Thommie Burström Mattias Jacobsson, 2012) [3]. This is because when such temporary configurations (project networks) become resilient, they bring about consistency, relative permanency and reliability of critical structures that overtime generate enormous efficiencies necessary for effective project delivery.

Interestingly, even individualistic entities that do not practically subscribe to collaborative initiatives, do acknowledge the role of networking in fostering innovation. It can be argued that the reason they don't cooperate is because they want to protect their space and accumulate higher gains through competition. However, as (Cricelli, 2015) [4] put it, even competitors can network in what he termed "coopetition phenomenon".

Provan, (2007) [5] defines a network as "a group of three or more legally autonomous organizations that work together to achieve not only their individual goals but also a collective goal". Such networks may be self-initiated by network members themselves, or may be mandated or contracted. He contends that when defined in this way, as multilateral combinations, networks can turn out to be extremely complex bodies that require management beyond the "dyadic approaches that have been traditionally discussed in the organization theory and strategic management literatures".

Thorelli cited in (Ojasalo, 2008) [6] looks at a network as an arrangement consisting of nodes or positions and links manifested by interaction between positions. These links are called relationships. In that vein, (Ojasalo, 2008) looks at networks as evolving organisms whose dynamics are caused by the fact that actors, relationships, needs, problems, capabilities, and resources change over

time. He concluded by noting, that just as projects are traditionally constrained by these factors, sustainably drawing actors together is an equally challenging effort (Ojasalo, 2008).

Project networks can be viewed from two perspectives: as a network of different team members (these can be individual persons or organizations), or as a network of different projects with similar/common goals. As concluded by Nangoli et al, (2013) [7], it is a project manager's major responsibility to build supportive collaborative relationships among project stakeholders. It can be noted however, that management of these networks calls for good understanding of their complex configuration in order to take advantage of their importance in successful project delivery. Unfortunately most managers continue to borrow traditional management approaches without due consideration of the fragility of relationships that exist in project networks.

1.1. Governance

Project networks have been studied from a variety of perspectives, but little attention has been accorded to their governance. Indeed, even PMI guidelines on governance of portfolios, programs and projects (2016) [8] only emphasize structural governance domains (i.e. committees, boards, sponsor etc.) and how they align with the strategic direction, integration management and benefit realization of the host organization. In a network context, governance practices are meant to offer effective implementation of regulatory and structural frameworks for collaborative endeavors. They offer accountability and coordination mechanisms necessary for effective collaboration of the networking actors. Governance is an important network function because of the collaborative dynamics that evolve from different outlooks or interests the different actors have, which often leads to conflicts and collaboration difficulties. Eva Gustafsoon, (2014) [9] noted that whereas appropriate governance structures are necessary to generate compromise between different interests and a precondition to successful resilient networks, sustaining constructive interactions within those structures is a difficult endeavor.

It has been argued that the reason why project network governance is critical and yet received limited scholarly attention is because they are comprised of autonomous yet temporary organizations and, thus, are essentially cooperative endeavors (Provan, 2007). Since networks are not legal entities, the legal requirement for governance is simply absent unlike formal organizations. It can be argued however, that for project networks to achieve their goals, some form of governance is necessary to ensure that participants engage in collective and mutually supportive action, that conflict is addressed, and that network resources are acquired and utilized efficiently and effectively. Governance is about modelling how different project network actors interact, reach consensus (or not) and solve joint problems (Eva Gustafsoon, 2014). As observed by (Huemann, 2013) [10], projects frequently fail due to unarticulated and thus unresolved tensions among project stakeholders due to lack of innovative ways for managing complex and diverse actor interests. For example, it is important to understand the number and nature of actors (network composition), their behavioral orientations (cultural attributes) and relationships (interactions).

1.2. Resilience

Resilience refers to "the ability to face internal or external crisis and not only effectively resolve it but also learn from it, be strengthened by it and emerge transformed by it, both individually and as a group" (Brenson-Lazan, 2003) [11]. Laursen and Salter, (2006) [12] posit that any system's resilience is premised on three important characteristics: its capacity to experience a disturbance or change and still retain its basic function, structure, and identity; the system's ability to self-organize; and the ability to increase its learning and adaptive capacity. It can be noted from the above that a resilient network is one which is able to learn and innovate, reconstitute itself after shock, expand and multiply and sustainably consolidate achievements.

1.3. Problem Statement

Project management is concerned with meeting or exceeding stakeholder needs and expectations (PMBOK 2013). This means that in order for projects to meet or exceed stakeholder needs and expectations, their interactions must be carefully and sustainably managed. It can be argued that existence of project stakeholder problems reported in empirical studies may be attributed to failure to adopt developments within the fields of stakeholder management and sustainable development that call for innovative ways for actor interaction. This is partly because Project management scholars and practitioners continue to create and subscribe to discourses which are either unrelated or building on non-updated concepts, models, or theories from other fields. For instance the Human Resource knowledge area in the PMBOK is based on human resource theories of the 1960s and 1970s (HueMann, 2012), in total disregard of the temporary and dynamic nature of projects thus rendering their management difficult and cumbersome. In spite of overwhelming pieces of advice available on how to manage project stakeholders, a steady stream of project failures related to unsatisfied stakeholders continues to be reported (Huemann, 2013). In their study of 2010, the independent evaluation group (IEG) of the World Bank reported that 39% of all World Bank projects were unsuccessful while in Africa alone, 50% had failed sighting bad governance, lack of project management capacity and in specific cases like Kenya Agricultural Productivity Project (KAPP) poor stakeholder management as one of the major causes (Sang, 2015) [13].

Forming project networks like value chains and innovation platforms is one clever way of integrating stakeholders into project affairs in order to achieve sustainable outcomes. However, most leaders of these project networks hitherto bring a set of management skills that are founded on a completely different paradigm; of coercion, strict compliance to order etc. This approach disregards the multi-stakeholder composition of such networks and the vital need to sustain soft interactional ties between them, leading to their disintegration. Nederlof S. M., (2011) [14] alludes to this management challenge when they noted that the three main factors responsible for the disintegration of agricultural innovation platforms are "lack of funding, irreconcilable conflicts between partners, and unfavorable changes in the institutional and political context". However, they fell short of investigating antecedents of

environments that lead to such "irreconcilable conflicts" which touch the very core of project network management that this review seeks to understand. By doing so, the review will attempt to validate (Laursen and Salter, 2006) position that a network which is internally strong will easily steer through external threats and still retain its basic function, structure, and identity. After all, (Nederlof S. M., 2011) attributes such internal weaknesses to inability of actors to build networks which are resilient and fairly independent of external funding.

1.4. Review Objective

The general objective of this review is to discuss determinants of resilience in project networks. The discussion is aimed at generating debate while stimulating thinking among educationists and project practitioners towards assessing the adequacy of available curriculum on the management of complex and fragile nature of project networks. The review will be helpful to researchers and development actors in understanding the key determinants of project network resilience. In turn, this understanding will help improve governance and resilience of project networks. As a result, the general proposition that resilient networks improve delivery of projects will be confirmed.

2. Theoretical Review

2.1. Systems Theory

The systems approach was first advanced by Ludwig as a response to the duplication of scientific research in the 20th century (Laszlo and Kripper, 1998) [15]. A system is a set of two or more interrelated elements, whereby each element has an effect on the functioning of the whole. Richard, Kast and Rosenzweig, (1964) [16] define it as "an organized or complex whole; an assemblage or combination of things or parts forming a complex or unitary whole." There is a multi-dimensional effect such that each element is affected by at least one other element in the system and all possible subgroups of elements affect the whole while affecting each other (Laszlo and Kripper, 1998, Ludwig, 1968). For a system to survive, there is need for well facilitated, well-organized and coordinated efforts to sustain its structure and function (Laszlo and Kripper, 1998).

Ludwig, (1968) [17] defines a system as "a complex of interacting components, concepts characteristic of organized wholes such as interaction, sum, mechanization, centralization, competition, finality, etc., and to apply them to concrete phenomena". Richard etal., (1964) use the analogy of human body to describe complex organizational systems where the skeletal and muscle sub-systems represent basic structures, while the circulator sub-system represents the human resources. The nervous sub-system represents communication systems, while the brain represents the top decision making organ. Described this way, (Richard etal., 1964) contend that an organization represents a self-maintaining "organism" capable of reproduction. Viewed from a network perspective, the human body analogy is fundamentally relevant to this study, significant all being the brain which is not only responsible for high-level decision making but panoramic thermostat-like monitoring of the network functioning. The strength and success of any network is as good as the quality (focus, agility, bigger picture) of its top governing body.

The systems theory assumes the concept of synergy such that the whole is more than the sum of its parts. Like network actors, every part is committed to developing strategies that preserve the benefits of having their system. The systems theory therefore introduces very important thinking relevant to this study, for example, individual network actors are the different parts that form the whole (network) while multidimensional effects are the relationships that exist between actors. As already alluded to above, the theory is also relevant in as far as facilitation, organization and coordination efforts are important governance practices necessary to sustain and render a network resilient to internal and external shocks.

3. Empirical Review

3.1. Network Composition

Characteristics of project network partners have a significant impact on the performance and outcomes of projects (Teirlinck and Spithoven, 2015) [18]. These characteristics are framed in the well-known terminology of breadth and depth propagated by Laursen and Salter (2006). They define network breadth as the number of different types of partner. Teirlinck and Spithoven, (2015) posit that the number of project participants (breadth) has a positive influence on project outcomes as different actors pursue different interests in a network. For example, while private firms tend to focus on acquiring valuable knowledge that provides leverage for competitive advantage, the main drive for non-profit actors such as universities may be to create new knowledge and to educate. The number of partners is therefore an indication of new knowledge involved in the project and of enlarged recombined efforts (Teirlinck and Spithoven, 2015).

Network breadth assesses composition in terms of the number of actors irrespective of their type. This approach only partly allows us to account for network size, since cooperating with 2 or 20 partners of the same type has conceptual and operational consequences. According to (Teirlinck ans Spithoven, 2015), understanding the different types of network partners is equally important. Networks are forms of social organization, which are more than the sum of the actors and their links, which (links) deserve to be studied in their own right (Provan, 2007). Understanding the variability and extent to which beneficiary partners draw on the cooperation they are involved in, is what is referred to as Network depth. Laursen and Salter (2006) refer to depth as the degree of interaction, emphasizing the importance of deep searching (complementarity of expertise) amongst actors for effective innovation processes. For a network to be resilient, managers/facilitators must realize that different actors may have different(unique) interdependencies that need to be understood and taken into account in the project network, (Martinsuo, 2015) [19]. In order to avoid problems associated with

discontinuities between projects and lose key (resourceful) partners, networks pursue strong and long-term relationships (Martinsuo, 2015).

3.2. Cultural Attributes

Network interactions risk being hampered because of cultural differences if not well managed (Peter Teirlinck, 2015). Martinsuo, (2015) observed that joint objectives enhance the development of commitment and shared values among project participants. A combination of the two is a very important antecedent for deep bonding and cooperation towards collective action. Ojasalo, (2008) also noted that behavior/relation control (norms) is important in protecting network values. Norms help to control members from behaving in a manner that hurts the core values of a network. A good value system is one whose normative system is strong to keep members focused on what brings them together, what makes them proud as a network. Takacs, (2007) [20] refers to norms as a form of social control depicted by behavioral confirmation where members express the desire to conform to the expected behavior.

Bonding is apparent in project networks that operate less controlled system where value system is used to enforce the normative system. Hofstede (2005) [21] empirically identified three cultural attributes of informal institutions (like project networks) among them power distance, collectivism vs individualism (values), and relational control (norms). Power distance is the extent to which the less powerful members of institutions and organizations within a collaborative arrangement expect and accept that power is distributed unequally and affects all spheres of human activity from intra-family relations to matters of political leadership style. Low power distance societies place greater value on equality, decentralized power, and shared authority. In large power distance cultures, there is likely to be greater centralization of management and less cooperation between powerful and non-powerful actors (Hofstede and Hofstede, 2005). In other words, a project network needs a manager who understands the underlying cultural orientations of individual actors as well as the communities within which the network operates.

3.3. Network Interactions

The boundaries of a network may be ambiguous, unless there is an access regulator. Boundaries define extent of relationship (interactions) within and outside the network. Interactions are a reflection of network member interests resulting into recognizable relationship processes, which may manifest through consensus or conflict (Martinsuo, 2015). However, owing to the dynamics of interaction, interests and expectations may change over time; thus conflict can be turned into consensus or vice versa (Eva Gustafsoon, 2014). The overturn of conflict into consensus calls for a conscious coordination effort that matches interaction dynamics of the network.

It is therefore important to note that project partners continuously learn from each other through their collaborative experiences. Previous collaboration can function as an enabler in the convergence of attitudes, the sharing of common norms, and mutual understanding about the nature of collaboration and project activities (Peter Teirlinck, 2015). It can therefore be noted, that repeated collaboration creates knowledge benefits. However, these benefits tend to dry up over time which means that in order to realize the positive effect of network stability on performance, there is need for a conscious effort towards coordination which reinvigorates interaction activities. Teirlinck and Spithoven (2015) further noted that the need for familiarity, trust, and mutual understanding, of each other's needs and capabilities, means that prior collaborations influence the choice of future partners.

Martinsuo, (2015) observed that inter-organizational relationships can be characterized as weak or strong and "arm's length or embedded". The concept of relationship strength combines the belief and action components of the relationship: belief in a spirit of cooperation and trust as opposed to the maintenance of a distant relationship, and actions taken indicate the strength of a relationship.
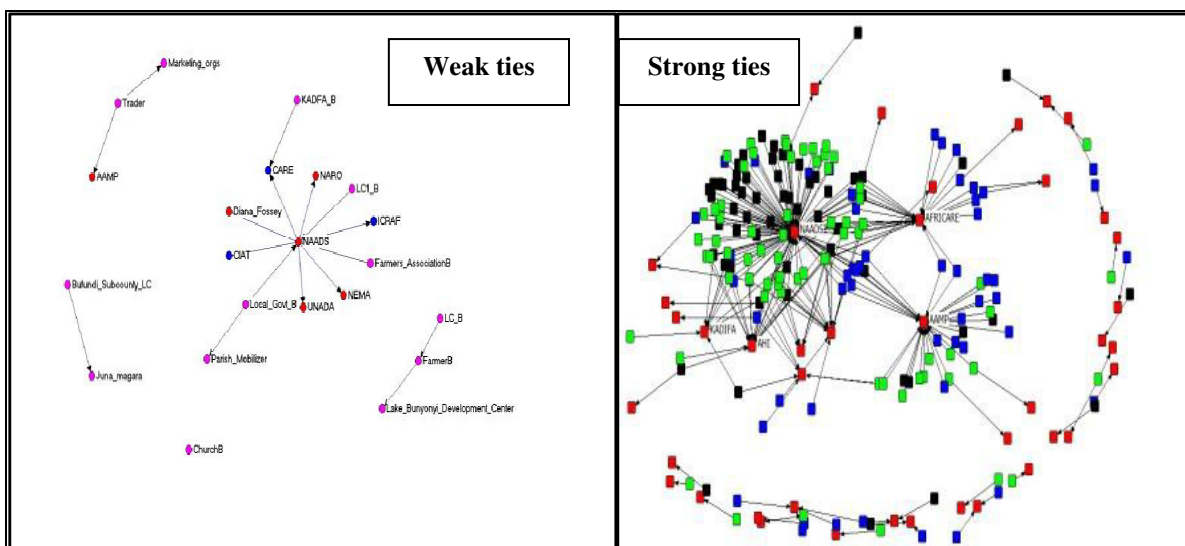

Figure 1: Showing weak and strong network ties
Source: Tenywa etal, (2011) [22]

The main ways of building trust in networks are: working together, problem solving, shared goals, reciprocity and reasonable behavior which confirms the proposition that governance is an important influence on network interaction (Swan, 2007) [23]. It has been argued that a high level of trust between actors enables joint problems solving. On the other hand, problem solving in a fair and transparent way increases trust between actors (Swan, 2007).

3.4. Network Resilience

From a computer network perspective, resilience refers to "the ability of a network to defend against and maintain an acceptable level of service in the presence of challenges" (Smith P et al, 2011) [24]. The above definition resonates across themes and disciplines just as Brenson-Lazan, (2003) noted that a networks' resilience is manifested by not just its ability to resolve and emerge from internal or external shocks, but to learn from, be strengthened and transformed through the painful process. Laursen and Salter, (2006)posit that the resilience of a system is hinged on three important characteristics: "the capacity of the system to experience a disturbance or change and still retain its basic function, structure, and identity; the ability to self-organize; and the ability to increase its capacity to learn and adapt". Network resilience refers to "the capacity to foster, engage in, and sustain positive relationships and to endure and recover from life stressors and social isolation". It is manifested by network's ability to readjust to changing or hostile environments in new and innovative ways (Kimhi, 2016) [25].

As such, resilient networks are said to be characterized by innovation, sustainability, reproduction and reconstitution. Innovation has been a major factor driving the growth of actor participation in many networks because it provides ability by the members to sustain, support, encourage and maintain the network (Cricelli, 2015). Sustainability refers to the network's ability to maintain consistent synchronization across multiple generations of the platform (and/or its products) by creating a rhythm to which new entrants and products can align (Ancona and Waller, 2007; Gawer and Handerson, 2007) [26]. Moore and Westley (2011) [27] refer to reconstitution as the reconstruct or reorganization of an old network or team to perform a totally new task(s) or to adapt the previous task(s) depending on the prevailing need. Network reproduction involves imitating or repeating earlier styles and outputs of work or tasks in the cycle of network processes (Schewick, 2007) [28]. Reproduction leads to formation of lateral networks, replication and growth of scope of activities and approaches to work (Moore and Westley, 2011). Reproduced networks could take form of new enterprises, new innovation lines, and scaled-up operations with bigger membership or new geographical and organizational spheres. It should be noted that networks enhance their resilience capacity by means of their interactions between actors.

4. Discussion

Project networks are undoubtedly emerging as a very effective tool for successful and sustainable delivery of project outcomes. They are cheaper, broad looking yet coherently organized towards achieving complex, innovative and bigger goals than single project configurations. However, governance of single projects ought to be distinguished from governance of networks. The assumption that an excellent project manager is necessarily a good project network manager is flawed and short focused. Project teams whether across programs or portfolios, are not the same as networked array of actors especially where the latter's goal is building long-term collaborative arrangements. Project network governance demands principles like transparency, fairness, participation, understanding apparent and actual stakeholder interests, continuous review of network composition for breadth and depth, and careful consideration of a value-based cultural orientation as antecedents to resilient collaborative arrangements.

Project governance ordinarily involves the use of institutions and structures of authority and collaboration to allocate resources and to coordinate and control joint action across the project teams. However, network interactions are distinct from normal functional operations; they focus less on dyadic relationships but more on diverse collaborative arrangements, information sharing, and collective action, thereby requiring a more innovative set of management techniques. As noted from literature, discussion on mechanisms for governance has generally focused on specific activities performed on a particular network, rather than in a broader, strategic and systematic way of sustaining networks and making them resilient. It should be remembered however that effective governance is critical to successful network management, especially regarding the handling of tensions inherent in varied actor interactions.

In a false bid to strengthen network interactions, managers have given more attention to such stakeholders whose claims and interests are considered as salient in terms of power, urgency and legitimacy. These efforts can only be short-lived since fairness is a cornerstone for any long-term collaboration. Whereas it is important to give adequate attention to key actors that occupy central positions and exploit their full potential for the good of network objectives, disregarding weaker actors renders the entire effort fruitless. This is because ultimately, for the network to act collectively and move as one unit, actor interactions must be anchored on joint objectives, trust, common understanding, and cooperation. For trust and cooperation to thrive, transparency and fairness must abound.

One important aspect loosely discussed (yet very important) by literature regarding interdependencies in project networks is centrality. Centrality refers to an actor's position in the network relative to others. An actor's central position in a project network is considered as advantageous, because it provides the actor with direct access to other network members and makes it visible. An actor's centrality in a network is measured by an actor's number of direct ties to other actors, independent access to others and control over other actors. The actor's position (depth/degree of importance) in a project network is assessed by the capability to create new and to strengthen existing relationships. Managers ought to note therefore, that variation in degree of importance among network actors is aimed at building a spirit of complementarity and synergy, not segregation and discrimination.

Different network actors will take different positions and therefore have different ties, some internal others external to the network. An actor's ability to create new and strengthen existing ties is key to network resilience. This is because the more the network ties an actor

has, the more ability that actor has to acquire diverse knowledge, and therefore more potential to affect innovation. This is so because different types of ties affect the processes of knowledge exploration and network resilience in different ways. Diverse (open) networks can create weak ties, which are argued to be sources of new knowledge and resources since these weak ties bridge gaps between actors and their social environment. On the other hand, dense (close) networks create strong ties which are important for positive interaction, deeper bonding, cooperation, common understanding and collective action necessary for network resilience. However, for such relationships (ties) to add value in a project network, there need to be proper matching between actor positions. As correctly observed by (Martinsuo, 2015), tie durability is a function of good matches; instability, an outcome of poor ones. Therefore, by understanding how to manage, coordinate and control different types of relationships successfully, workflow procedures can be improved and better relationships can be formed and strengthened at all levels in the networks.

Networks may be project-specific with a temporary life span or continuous with indefinite life span. The facilitating actor (individual person or company) may choose to establish a new network for each project or implement several with the same network composition. While making the decision whether to compose a new network or continue with existing composition, the facilitator (often called a broker) needs to assess their capabilities related to management of the two network composition processes (i.e. recomposing or continuing with current composition). In the case of project-specific networks, the actors, activities, and resources must be fundamentally reviewed and renewed each time a new network is formed. In the case of a continuous network, most of the elements remain the same (only projects come and go) but the depth of interaction and bonding in the previous project needs to be evaluated, lessons learnt and integrated in the overall network management process.

The above observation leads us to categorizing properties of project network management into enablers and results. Enablers include leadership, people, policy and strategy, partnership and resources, and processes. Results include key performance results, people results, customer results, and society results. Indeed, in the case of project-specific networks, it is likely that both enablers and results change characteristically from one project to another. In contrast, in the case of continuous networks, it is likely that only results change, unless explicit effort is invested in the renewal of enablers. It is clear that any continuous (resilient) network needs to improve and refresh all the aspects of management in order to respond to the dynamics of environment and to maintain its "coopetitive" strength. Furthermore, if the broker/facilitator prefers continuous networking rather than project-specific, it is important to enhance the network actors' commitment to long-term relationships. Commitment to long-term relationships is enhanced by trust, satisfaction and relationship benefits, sharing of information, good personal relationships between actors, consistency of interaction, conflict handling, and shared values and norms.

Actors possess varying interests, often conflicting. To achieve harmony and common direction, actors should be allowed opportunities to negotiate and overcome their conflicting interests and focus on their common interest. Inter-actor relationships most often function around apparent (formal) and actual (informal) interests. For fruitful negotiation to occur so that both interests (apparent and actual) work for common benefit, it is important that actors clearly disclose their individual benefits (actual interests) they expect to realize from the network. When individual interests are openly negotiated, they get mutually accepted therefore don't conflict with and/or hamper achievement of apparent common benefits. It ought to be remembered that without an individual benefit to be achieved it is unlikely that actors pursue collaborative activities and could present an easy source of conflict. Strong relationships develop when there are mutual benefits to be gained and a relationship is reinforced when these mutual benefits are achieved. It follows therefore, that where mutual benefits exist and transparency abides, project networks can be beneficial to both cooperators and competitors. This is in agreement with (Cricelli, 2015) that even competitors can network in what he termed as "coopetition phenomenon".

Primary reward from a network and its fundamental meaning may accrue differently to different actors. This is due to the fact that objectives and priorities in different networks vary. To some it may be a means for profit maximization, to others a platform for creative self-fulfillment and friendship. Because of this, there may be need to emphasize different aspects in the management domain. The management process needed may include emphasis on hard or soft aspects, or a combination of both, depending on the case under consideration. When a network's primary goal is in profit maximization, particularly in the short-term, then the emphasis should be in the management of hard aspects. In contrast, if the short-term profit maximization does not have the highest priority, the emphasis should be on the management of soft aspects. It should be noted that soft functions are those which do not lend themselves to quantitative, reductionist-type evaluation, but nevertheless are important to the success of a project. Budgeting, risk management, and control plans are examples of hard aspects. On the other hand, team management, communication management, and human and industrial relations management are examples of soft aspects.

It can be remembered however, that even the soft aspects are borrowed from specific management functional knowledge areas. None of them is originally tailored to management of project networks. They could have been successful on individual projects but the overall failure rate of projects continues to pose questions regarding the appropriateness of mix and application of management techniques borrowed from other knowledge areas. *This the fundamental contribution by this study; to challenge project practitioners and academia, to search deep into the appropriatenes of existing set of project network management tools and consider developing a specially targeted set appropriate for project networks.*

Successful innovation in project networks often require effective cooperation, coordination and working relationships between the different network actors. The success of a network's innovations is influenced by the strength of relationships among network participants. Commitment, trust, communication and appropriate coordination have been highlighted as critical components of partnering relationships. It can be argued that trust and commitment are the most central dimensions in strong relationships, while other dimensions either act as antecedents or consequences of trust and/or commitment.

Based on the discussion above, it can be noted that relationship strength characterizes network interactions in terms of trust and commitment. The more the trust and commitment amongst network members, the stronger their relationship. In other words, when

relationship strength between two actors is high, it is a sign that the interacting personnel rely on each other, and are committed to the relationship. This finding reinforces Beverley Lloyd-Walker [29], (2011) that strong relationships are requirements for successful partnering and alliance projects and they are based on mutual trust and commitment. It equally adds to Crespine - Mazet, (2010) [30] conclusion that interactions grow deeper and sustainable as project actors seek (are committed) to deal with project complexity and uncertainty. It is therefore evident that the stronger the interactions the more resilient a network becomes.

Innovation can be in form of product or process. Product innovation refers to a new product being developed while process innovation refers to a new way of doing things. Project networks grow as product innovation increases leading to new product lines and value chains (network reproduction). However, for such products and reproduced networks to entrench and build sustainable presence, process innovations must, be present, evident and play a key role. Process innovation is therefore vital for the sustainability of network products. The study however reminds us that successful development and implementation of process innovations are not easily enhanced by the mere importation of knowledge such as traditional management approaches. Instead, the success of process innovations is likely to need a complex exchange of knowledge with external subjects while maintaining deep ties among actors. Indeed, intensive cooperation amongst partners, a good matching combination of weak and dense ties, has been empirically proven to enhance creation and sharing of knowledge, useful to all parties in the development of valuable innovations. On the other hand, mere knowledge transfer without deep interaction does not enhance a virtuous process that is ultimately required for further knowledge creation.

5. Conclusion

It is evidently clear that effective networking requires a competent manager, coordinator, facilitator or broker. However, their role and management approach should match the dynamism and complexity of project networks. The roles and approaches typical in organizations characterized by hierarchies, bureaucracy, centralization, and opportunism are an odd import into network governance. "Managing and controlling in the context of networks does not mean *total management* and control, and they are not synonym for command and opportunistic use of coercive power" Ojasalo (2008). However, appropriate skill sets that match the unique organizational configuration of project networks, remain elusive to majority of project network managers. This is the debate that this paper purposed to generate by reviewing different literature highlighting available contributions on the topic while pointing out the existing gaps. The paper has successfully magnified the deficiency that most network managers continue to borrow (with minimum or no creativity at all) traditional management discourses with no purposeful consideration to fragile, complex and dynamic structural and process configuration of project networks.

The study noted that, undoubtedly repeated collaboration will create knowledge benefits. However, without effective facilitation, these benefits tend to dry up over time which means that in order to realize the positive effect of network stability on performance, there is need for a conscious effort towards coordination which reinvigorates interaction activities. A type of coordination with ability to assess the network state of affairs, evaluate existing relationships and draw in new energies at the right time.

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