

The determinants of satisfaction in the Construction Supply Chain case of the Moroccan public administration

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ABSTRACT: Construction Work flows is known for non-accomplishment and difficulties in many levels. This is mainly caused by the multiplicity and divergence of the actors, and their myopic control processes in the entire construction supply chain. To deal with the previous challenges, our research work adopts a Supply Chain Management based approach. This will allow a clear identification of the construction supply chain scope one hand, and enable us to answer the challenging questions in a delimited framework on the other. To focus our study and look for concrete answers, the research orbit will be the Construction Supply Chain related to the Moroccan public administration contracts.

KEYWORDS: Supply Chain, Supply Chain in construction, Satisfaction, relational, transactional.

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I. INTRODUCTION:

In the construction industry, the adoption of contradictory contracting approaches and business opportunism have produced a less efficient industry with criticisms of low productivity according to (Egan, 1998) and (Kumaraswamy et al., 2010). The poor performance is due to incompetent stakeholders, lack of cooperation according to (College, 2005); also the engagement of these stakeholders reveals the deployment of short-term relationships.

Relationships between several members of the project team may be based on formal contractual relationships, relational links or a combination of the two. In a formal contract, parties often act in an atomized manner, looking for their own personal interests according to (Williamson, 1975). On the other hand, a relational contract supports different approaches that establish working relationships between the parties for win-win situations for all according to (Sanders & Moore, 1992).

Many authors have already studied the different types of determinative factors in supply chain relationships, which sometimes are summarized by the concept of "relationship atmosphere" (Hallén & Sandström, 1991). For (Andersen & Kumar, 2006), the "relationship atmosphere" addresses six specific dimensions often listed in the literature: power / dependency balance, trust / opportunism, spirit of cooperation / competitiveness, understanding, proximity / distance and commitment. In more precise models a total of 18 key indicators have been identified by (Meng, 2010). The authors sometimes use different concepts to interpret quite the same situations, but the importance of trust and commitment are predominant and underlined in most of the studies. These different notions reflect the different level of supply chain perception as well as the reliability of the members (Boer et al., 2005) and (Hausman & Johnston, 2010). And this member's capabilities, actions and behaviors, affect undoubtedly the level of commitment, communication, opportunistic actions and information sharing. (Carter & Jennings, 2002; Johnston et al., 2004) accordingly information sharing is widely regarded as an essential prerequisite for the creation of trust, thus maintaining long-term supply chain relationships (Nyaga et al., 2010; Ren et al., 2010).

From a slightly different point of view, power, dependence, control and surveillance also have a clear influence on the relationship (Hvolby et al., 2007, Zhao et al., 2008, Liu et al., 2010). Mutual dependence and power appear to be the basis for a collaborative relationship, allowing for the development and maintenance of long-term relationships (Narasimhan et al., 2009; Cheng, 2010). The concept of project success has evolved considerably over the last thirty years (Davis, 2014; Ika, 2009). The focus was primarily on the "iron triangle" : cost, time and quality (Pinto and Prescott, 1988, Pinto and Slevin, 1988, Shenhar & Dvir, 2007). Now, it is clearly recognized that the success of construction projects must be also assessed from the the different stakeholders point of view (Atkinson, 1999, Gemunden, 2015, Turner & Zolin, 2012). And of course the most important of these stakeholders is the client.

In fact, customer satisfaction is an essential dimension measurement of project success (Davis, 2014, Dvir et al., 2003, Ireland, 1992, Serrador & Turner, 2015). Hence this research work proposes an interoperability framework for construction project stakeholders. The framework aim to push forward the project chances of success and satisfy the final client, in our case the contracting authority¹. Trough a peripherally planned contract² this framework will make project managers avoid obstacles hindering public construction projects.

The starting point is identifying the nature of relations between the contracting parties. And then we will study the factors influencing the Construction Supply Chain in the Moroccan public contracts³.

II. LITTERATURE REVIEW:

The concept of Supply Chain Management consist on the "coordination of independent enterprises to improve the performance of the entire supply chain" (Lau, Huang, & Mak, 2004) which work collaboratively to meet customer needs (Egan, 1997) Contemporary supply chain management practices view the supply chain as an integrated flow of value generation rather than a set of independent activities (Vrijhoef, Koskela, & Voordijk, 2003). (Christopher, 2000) added that trust, commitment and information sharing among the stockholders are required for an efficient supply chain.

2.1 Construction Supply Chain:

Unlike the retail and manufacturing sectors, the construction industry has been slow and reluctant to employ the concept of supply chain according to (Love, 2000). This is due to short-term relationships with the supplier-subcontractors who are vulnerable due to the temporary nature of construction projects (Akintoye, McIntosh, & Fitzgerald, 2000). Due to the complexity of the sector and the number of suppliers in a single project, (Arbulu, & Ballard, 2004) proposed a strategy to improve construction supply chain management using Lean principles and techniques. The application of Lean principles and solutions facilitates supply chain management and helps to achieve a significant reduction in time, cost and inventory (Walter & Rodriguez, 2011). In the construction industry, relations with third parties have traditionally been managed by contradictory approaches leading to adverse effects on the performance of the project according to (Palacios, Gonzalez & Alarcón, 2013).

The current and popular reflection in construction is however that best practices for managing relationships should always foster highly collaborative approaches based on high levels of trust and transparency other than typical opportunistic and contradictory approaches (Cox, Ireland, & Townsend, (2006). It is necessary to move away from the contradictory attitude towards enlightened cooperation relations (Fernie, & Thorpe, 2007). Based on the success of other industries, several reports have encouraged this approach to overcome a situation of low profitability and poor performance (Koskela, 2000). If the construction industry should move from a contradictory to a collaborative environment, it should openly use supply chain management core concepts from (Love, Irani, & Edwards, 2004).

(Proverbs & Holt, 2000) advocates effective Supply Chain Management through the early involvement of both contractors and subcontractors as a way to reduce effectively overall construction costs. (Sobotka et al., 2000) studied the flow of building materials and found that in the delivery of the physical flow of materials between the stockholders in the supply chain, 0.3% to 0.6% of time is the added value. He has also shown that the interaction between the main contractor and the supplier has an average potential cost reduction of 10% (cost of materials) through improved logistics procedures.

¹ Client or contracting authority: an authority which, on behalf of one of the public bodies referred to in Article 2 above, passes the contract with the contractor, supplier or service provider.

² Contract: contract for pecuniary interest concluded between, on the one hand, a contracting authority and, on the other hand, a natural or legal person called contractor, supplier or service provider for the performance of works, delivery supplies or the provision of services.

³ Decree No. 2-12-349 of 8 June 1434 (20 March 2013) on public contract.

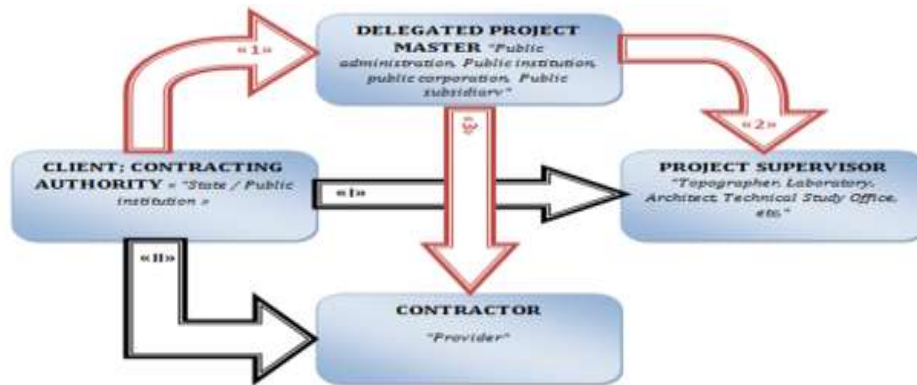


Fig.1. Construction supply chain of in the Moroccan public contracts.

"1": Agreement for the execution of missions delegated by the client;

"2": Contracts for consideration, concluded in MOD4 and MCE (contract for the provision of study and project management5);

"3": Contracts for consideration in MOD and the Contractor (Works contracts);

"I": Contract for pecuniary interest concluded in MO and MCE (Contract for the performance of study and project management);

"II": Contract for consideration in MO and the Contractor6 (Contract for construction works);

Morocco is still in its first stammering in terms of Construction Supply Chain. Especially instate public works, which is a very promising market.

Previous research works have essentially dealt with this problematic by focusing on macroeconomic conditions (regulation, customs duties ...) or macro-logistics (infrastructures...), or organizational (information systems, standardization of processes, etc.);

«In the 4th quarter of 2015, activity in the construction sector would have increased, according to 35% of the bosses interviewed, 46% stable and 19% down. This upward trend would have been mainly the result of increased activity in both the "Electrical Installation" and the "Road and Highway Construction", while in the "Construction of Fluid Networks" and "Other installation work", the activity would have declined.

The situation of order books was considered to be of a normal level by 40% of the bosses of the sector and little garnished by 39%.

As for employment, stability would have been expressed according to 57% of employers. In this context, the rate of utilization of productive capacity (TUC) would have been 66% in the 4th quarter of 2015.

Lastly, more than three-quarters of business owners (77%) reported investment in 2015, mainly to replace part of the equipment7» , makes it difficult to integrate the philosophy of Supply Chain in the Moroccan market. We propose here to study a variable which has not been studied enough: the satisfaction of public administrations works. The evaluation of this variable will be done through the criteria mentioned in the literature review.

2.2 Questions And Objective Of Research:

The stat of art illuminated the tow following observations:

- A deficiency of studies and research works about supply chain management in construction markets;
- The lack of the Supply Chain Management philosophy in the construction markets in the Moroccan public administration. This leads us to ask the following research questions:

“What are the scopes and limits of construction supply chain management in the Moroccan public administration? And finally what are the factors of the contracting authority satisfaction?”

⁴ Delegated contractor: public administration, public institution, state-owned company or public subsidiary to which certain tasks of the developer are entrusted.

⁵ The contracts for the provision of studies and project management, which include, where appropriate, specific obligations related to the concept of intellectual property.

Contractor: provider, supplier or service provider.

⁷ Survey of the economic situation of the national economy with economic operators in the sectors of mining, manufacturing, energy and environmental, construction, 23/03/2016 of the High Commission for Planning.

Question1: What is the nature of relations inside the Construction Supply Chain in the Moroccan public contracts?

Question2: What are the precursors of satisfaction of construction in the Moroccan public contracts?

This part aim is to understand the relationships between actors through the transactional and relational approach within the Supply Chain and to study the precursors of client satisfaction in construction projects in public administration. This study could be useful to:

- Improve research works that fill in construction supply chain.
- To study the determinants or precursors of the satisfaction in the Moroccan public contracts;

2.3 The Determinants Of Satisfaction In Supply Chain Construction:

Client satisfaction has been documented by several authors in particular (Ndubisi, 2003, Anderson, 1994, Fornell, 1992, & Hirschman, 1970). First, according to (Richins, 1983), when clients are satisfied, the probability of leaving the relationship is greatly reduced. On the other hand, the confirmation / reversal theory (Churchill & Surprenant, 1982; Oliver, 1980) explain that satisfaction is achieved when expectations are met, and dissatisfaction means the opposite. (Lovell, Patterson, & Walker, 1998) cited the virtues of customer satisfaction: satisfaction is inextricably linked to customer loyalty and engagement. Secondly, satisfied customers will be positive word-of-mouth and will play an advertising role to the company. In other hand a satisfied customers may be more forgiving. A customer, who has benefited from good services many times in the past, is more apt to believe that service failure is a deviation from the norm. Other studies have shown that satisfied customers are less sensitive to competitive offers.

Many research works have shown the importance of internal (employee) satisfaction to external satisfaction (client). (Hill and Alexander, 2000) stated that there is a positive relationship between employee satisfaction and customer satisfaction. This approach is adopted in companies promoting motivation and retention among employees. They stated that "employees, who are more motivated to achieve customer satisfaction, tend to be more flexible in approaching their work, making fewer mistakes and using more initiatives." (Fecikova, 2004) conducted index-based surveys to measure customer satisfaction and reported that internal customer satisfaction is one of the basic factors to satisfy the external customer because they will be able to deliver the product or the superior service when they are internally motivated.

Since the 1990s, some authors have demonstrated a positive relationship between customer satisfaction requirements and delivery performance and logistics solutions (Sharma et al., 1995, Choi & Eboch, 1998, Beamon, 1999, Cermak et al., 1994). (Cermak et al., 1994) discussed the fact that customers can even participate in the specification and provision of services. In this sense, suppliers must react quickly to customer demand by increasing their capabilities to control all processes, including logistics.

According to the definitions and the studies of the authors preceded, we deduce that client satisfaction is linked to a combination of factors appertaining to relational and transactional approach. Next we study the variables of these approaches influencing satisfaction.

2.3.1 Conceptualization Of The Commitment:

(Moorman, Zaltman & Deshpandé, 1993) defined engagement as the belief of partners in a continuous relationship, maintained in importance to ensure maximum effort. This can be translated by the desire to maintain a quality relationship by believing in the importance of the relationship. According to (Cook & Emerson, 1978), engagement is the center; the basis of relationships in marketing, (McDonald, 1981) in the literature of marriage, the durability of the relationship is the result of commitment and mutual trust, which has allowed the differentiation of other types of relational exchanges. (Anderson & Weitz, 1992; Moore, 1998) in supply chain, engagement is defined as the attitude of the supply chain's partners for a stable, mutually, and continuously relationship.

Client satisfaction, mediation of client engagement, has been shown to influence future intentions (Garbarino & Johnson, 1999). (Brown, Barry, Dacin & Gunst, 2005) argue that a consumer's cumulative assessment of satisfying consumer experiences has a positive impact on the degree of engagement in a marketing relationship. (Fullerton, 2011) in his study of banking, hairdressing, and auto repair industries shows that satisfaction is significantly and positively related to emotional engagement.

H1: The commitment acts positively on the satisfaction of the Client (Contracting authority);

2.3.2 Conceptualization And Determinants Of Trust:

(Moorman, Deshpandé & Zaltman, 1993) defines it as "the desire to rely on a partner whom one has confidence in" where the firm belief that the trustworthy partner is reliable, they have incorporated "will", it is the behavioral intent "if one believes that the partner is trustworthy without wanting to rely on it, confidence will be limited".

Trust can be associated with honesty, responsibility, fairness, competence, loyalty, efficiency, utility ... (Anderson & Narus, 1990,) define trust as the belief of the firm that another (Spekman,1988) considers that trust is the basis of any partnership strategy since it represents a rewarding character and encouraging parties to engage in such relationships, as well (Achrol, 1991) asserts that trust is the major determinant of any engagement.

Trust has been described as an important dimension of inter-organizational relational governance, (Zaheer & Venkatraman, 1995). In the TCE (transaction cost saving theory), (Williamson ,1985) concluded that trust can control opportunism.

Therefore, the impregnation of these two concepts in the construction SCM will allow the establishment of a long-term relationship between the members of the supply chain, which is due to the presence of trust and open communication; and a strong commitment between the various players in the chain who will be ready to invest in training and development of the supply chain organization.

H2: trust has a positive impact on the satisfaction of the Client (Contracting authority);

2.3.3 Conceptualization Of Communication:

A concept widely studied in inter-actors relationships that incite information sharing, often associated with trust and commitment (Lages et al.,2005) defines it as "human activity that creates and maintains relations between the different parties involved in the exchange" (Hoang, 2009), which considers it as one of the essential factors in the functioning of the supply chain. Communication contributes to a better coordination of the actions of the partners enabling them to achieve the objectives more easily (Anderson & Narus ,1990). It helps to reduce the risk of conflict and malfunction and increases the benefits that parties can derive from the relationship (Anderson & Weitz, 1992).

(Anderson &Narus,1990) also point out that there is a new vision of communication as an interactive dialogue between the company and their client that takes place during all stages of the project to provide timely and trustworthy information; in addition, communication helps maintain confidence. Because language is imperfect, open dialogue is often a necessary means to develop and maintain a shared understanding of the relationship (Sabel, 1993). Effective communication between the company and the customers leads to a better relationship, customer satisfaction and loyalty.

H3: Communication acts positively on the satisfaction of the Client (Contracting authority);

2.3.4 Conceptualization And Determinants Of Information Technologies:

(Lin & Tserng, 2001) have highlighted that supply chain management is about rapidly obtaining real-time information, minimizing costs, and increasing service levels, improve communication between the components of the supply chain, and increase flexibility in terms of delivery and response time. In the traditional construction industry, construction processes are always labor, employment, and time. With the advent of information technology, it is possible to manage the construction supply chain by seamlessly connecting all components of the construction chain with real-time information. The chain of supply construction contractors includes the construction of the internal supply chain and the external power supply construction chain. The researchers propose simplified models for internal and external logistics supply chains to carry out supply chain management for construction using information technology. These information technologies tailored to supply chain management include Internet, Intranet, Extranet, and mobile devices (such as Personal Digital Assistant device). In addition, XML is introduced for the standard and technology designed to accelerate data sharing by integrating systems across the supply chain efficiently.

H4: The "IT" information technologies acts positively on the satisfaction of the Client (Contracting authority);

2.3.5 Conceptualization And Determinants Of The Formalization:

The formalization or the contractual conception of the inter-actors relations has been of great interest in the SC according to the authors (Woolthuis et al., 2005, Poppo & Zenger, 2002, Dekker, 2004, 2008). These discussions are part of the transactional approach (the theory of transaction costs and agency theory) and the theory of resource dependence (Paché & Sauvage, 1999).

The formal contract theory defines formalization as a written agreement between two or more parties, which are perceived or intended as legally binding (Woolthuis et al., 2005), the results are supposed to be effective when the contractual form accurately reflects the " uncertainty, asset specificity and transaction frequency (Williamson, 1985).

In this research focus, considering the transaction cost approach has shown that formal contracts provide the guarantees and the mechanisms that can protect economic trade from the consequences of limited rationality and opportunism (Williamson, 1985). Formal contracts can detail the roles and responsibilities that must be performed, specify monitoring and sanction procedures for non-compliance, and determine outputs to

be delivered (Poppo & Zenger, 2002, Reuer & Arino, 2007).). The different project processes are generally organized into distinct enterprises linked to one another through contractual relationships

H5: Formalization has a positive impact on the satisfaction of the Client (Contracting authority);

2.3.6 Conceptualization And Determinants Of Power:

(Cox,2001) demonstrated that power is at the heart of trans-organizational relationships, power is the ability to influence the behavior of other members of the relationship.

(French & Raven, 1959) identified five types of power: expert power, reference power, legitimate power, reward power and coercive power. According to this classification, several dichotomies appeared. For example, the first three types were identified as non-economic power by (Etgar, 1978) and as non-contingent by (John,1984), while the last two types of power were considered economic power by(Etgar ,1978) and as contingent power by (John,1984).

Supplier satisfaction is defined as the feeling of equity in the relationship, no matter the existence of an imbalance of power. The authors (Hunt & Nevin, 1974, Lusch, 1976, Michie & Sibley, 1985) found relatively positive effects of non-coercive power on the satisfaction and negative effects of coercion.

H6: Non-coercive power has a positive impact on the satisfaction of the Client (Contracting authority);

2.3.7 Conceptualization And Determinants Of The Control:

In fact control ensures that the partner behaves in accordance with its expectations in order to coordinate activities in the value chain (Bouquin, 2001). At the inter-organizational level, (Dekker, 2004) proposes two main functions for control: creating the conditions for achieving the desired results and ensuring coordination of interrelated tasks. According to (Roy & Bygras, 2000), control tools cover all the activities and evaluation processes used to manage and control inter-stakeholder relationships throughout their evolution.

According to (Juran, 1998), there are three quality management processes to improve quality such as quality planning, quality improvement and quality control. In this process, quality should have two aspects; products and services with or without fewer defects that required different processes of quality planning, control and improvement. In addition, as reported by (Dale,2009), quality is the integration of marketing, engineering, production and service that fills customer satisfaction as well as its systematic approach that requires the participation of all functions such as quality control, quality maintenance and quality improvement. According to (Jerry,1989), quality control is a business method rather than technical activity, it is because technical activities involve materials, machinery and processes and operation. It further emphasizes that the human relationship is a fundamental element of quality control activity to generate progressive commitment to Total Quality Management (TQM) such as senior management, employee involvement, offer, open communication and measuring the cost of quality. Effectiveness of quality control has become the most important guide to organizational growth and success due to quality control moved from technical method to a business method. Thus, quality control defined as an effective method to integrate the development of quality, quality maintenance and quality improvement. Quality control involves manufacturing, processes, products and services leading to customer satisfaction.

H7: Quality control acts positively on the satisfaction of the Client (Contracting authority);

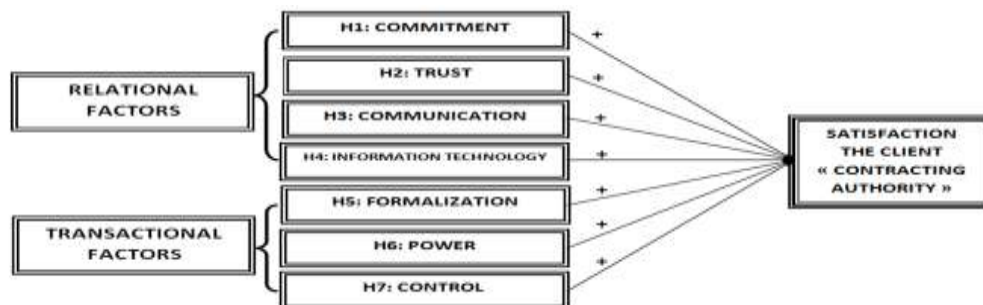


Fig. 2. The conceptual model of an inter-actors relationship of the construction SC in the Moroccan public administration.

III. CONCLUSION:

The management supply chain represents an innovative and even competitive creative promoter stake that will undoubtedly contribute to the satisfaction of the project owner, and this, through the efficient management of construction projects of Moroccan public administration. ;

Also the management of the construction supply chain allows the strategists to make target and timely decisions, via the integrity of all the links of the construction that it emerges.

The objectives of this essay are to understand the inter-stakeholder relations via the transactional and relational approach, within the Supply Chain, and to study the precursors of the client's satisfaction, in the construction projects case of 'public administration. This study could be useful for:

- Enrich research in the theme of the construction supply chain;
- Study the determinants or precursors of the satisfaction of the client in the Moroccan public contracts;

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