AFRICAN JOURNAL OF BUSINESS AND MANAGEMENT

(AJBUMA)

ISSN 2079-410X

**University of Nairobi
School of Business**

INTERPRETIVE STRUCTURAL MODELING OF FACTORS INFLUENCING PUBLIC PROCUREMENT BID DISPUTES IN KENYA

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Abstract

Requests for review in public procurement allow aggrieved bidders to challenge award decisions of procuring entities thus boosting accountability and transparency. However, bid disputes often delay service delivery and lead to parties incurring costs as they argue their cases. Past studies have discussed factors that influence bid disputes broadly without examining how they relate. Through Interpretive Structural Modeling (ISM), a hierarchical structural framework of factors that shape public procurement bid disputes in Kenya was developed. Matrice d'Impacts Croisés Multiplication Appliquée á un Classement (MICMAC) analysis helped establish the driving and dependence powers of these factors. This paper identified 23 factors that influence public procurement bid disputes through literature review and content analysis of decisions of bid disputes handled by Public Procurement Administrative Review Board (PPARB), the high court and court of appeal. It was established that value of contracts, devolution of PPARB services, bidders' past performance and regulatory changes (the independent enablers) had low dependency and high driving power and were, therefore, regarded as fundamental factors that influence public procurement bid disputes in Kenya. It was recommended that the model advanced in this research be replicated in different contexts to help grow the model into a theory.

Key Words: *Public Procurement, Bid Disputes, Interpretive Structural Modeling.*

Introduction

Bid disputes in public procurement and their resolution are shaped by various factors. Management theories such as principal-agent theory, stakeholder theory and the theory of constraints are used to explain factors that influence bid disputes in public procurement (Canayaz et al., 2018; Nagle & Lasky, 2010; Organization for Economic Co-operation and Development (OECD), 2013; Kovacic, 1995). However, unlike ISM, management theories force preconceptions. ISM on the hand logically develops a model without forcing it to flow with existing theories (Alawamleh & Popplewell, 2011). The ISM is a framework complete with order and direction for complex problems that accord decision-makers an understanding of a system (Singh et al., 2003). By using words and graphics, ISM brings out direct and indirect relationship between factors that shape a topic more accurately than would have been if such factors were taken in isolation. This makes it desirable to a broad audience across varying disciplines and varying contexts (Attri et al., 2013).

Problem of Research

The great strides made in public procurement research notwithstanding, Grimm and Thai (2011) appreciated the importance of application of theory in public procurement research. They emphasized that theorizing public procurement needs to be accorded the seriousness it deserves. This paper aimed to generate knowledge on interactions between factors influencing bid disputes in Kenya and, in turn, develop a public procurement bid dispute management model. Factors influencing bid disputes and how they can be prevented or resolved efficiently and effectively remain to be determined. Therefore, this paper embarked on developing a model for managing public procurement bid disputes in Kenya. Through ISM and MICMAC analysis, which means cross impact matrix multiplication applied to classification, a bid disputes management model for public procurement in Kenya was developed. The model was instrumental in establishing factors influencing management of bid disputes in Kenya and how they interact.

Literature Review and Research Focus

This paper reviewed literature on factors influencing bid disputes in public procurement and on ISM. Various factors influence the occurrence of bid disputes in public procurement and consequently, their resolution. The independence of the body reviewing a bidding dispute is critical in determining if a protesting bidder would opt for such an institution as the first point of reference and whether they would appeal a decision given by such a body. Objections made to the procuring entity lack the element or at least the appearance of an independent review. After all, the officer reviewing the protest is an officer of the very same organization whose conduct and decision is being protested (Nagle & Lasky, 2010). Canayaz et al. (2018) observe that there is a possibility of dire consequences facing bid protestors who request for review. They opine that firms which launch successful bid protests lose future business opportunities with the government in the United States. The OECD (2013) observed that making public review body's decisions helps members set consistent precedents. Moreover, the release of these decisions helps in knowledge management with key stakeholders in the system.

Public procurement expertise of members of a review body influences the confidence of protesters. There are many reasons why administrative procedures may be required by a legislative body and particularly why the courts are given either a minimal role or no authority in the resolution of public contract disputes. One such reason may be the perception that a specialized forum is more likely to resolve disagreements with expertise and in an effective and efficient manner. World Bank (2016) concurs that it is essential for public procurement reviews to be heard and determined by experts. Arena et al. (2018) contend that post-award debriefings impact profoundly on the number of bid disputes. Proper debriefings help bidders make informed decisions on whether to file a complaint or not. The OECD (2013) proposes that complaints be made to the procuring entity first because it offers particular benefits. This is particularly so where mistakes rather than an

intentional breach of law are the reason for the dispute. This option is often the most efficient and helps avoid the costs involved in filing and following review proceedings.

Maser and Thompson (2010) opine that debriefings with non-adversarial tones and peer reviews can boost the confidence and satisfaction of all stakeholders in a procurement process. The size of an organization determines the rates of sustenance and effectiveness of bid disputes. Requests for review filed by Micro, Small and Medium Enterprises (MSMEs) tend to fail because of not meeting legal requirements. Such firms would, therefore, benefit from legal aid because they are often financially constrained than larger enterprises (Arena et al., 2018).

The OECD (2013) asserts that all bidders should indiscriminately be accorded a chance to request for review when aggrieved. Maser and Thompson (2010) observed that smaller companies generate most of the protests. However, the rate of sustaining protests is higher for larger firms. Arena et al. (2018) pointed out that Alternative Dispute Resolution (ADR) helps in expeditious resolution of bid protests because where appropriate, it encourages corrective action. Arena et al. (2018) linked the number of protests with contract value. Bidders are less interested in launching disputes where the value of a contract is not commensurate with lawsuit costs. Besides, bid disputes related to some types of procurement like a request for proposal are likely to be sustained.

Maser and Thompson (2010) further opine that bidders would be more interested in requesting for review in procurements, which, if won, would significantly boost their revenues. They further advance that bidders would be interested in reviews for contracts that are long term. Moreover, due to the more intricate nature of specifications and evaluation process, complex contracts attract more disputes. The availability of evidence influences the number of bid disputes. According to OECD (2013), procurement laws and regulations must provide essential elements that need to be included in a protest. The number of review tiers determines the extent to which a bidding dispute can escalate

to. World Bank (2016) identifies three main review tiers, which are procuring entity, the independent administrative review bodies, and the ordinary courts. According to Arena et al. (2018), normal court processes are expensive and could be out of reach for small firms that are not well established.

The OECD (2013) and World Bank (2016) concurred that issues of cost, proximity and time are critical when deciding whether to lodge complaints with the procuring entity at the first instance level. Corruption may occur at different points in the public procurement cycle. The most frequent occurrence is at the contract award and judicial decisions where bribes could be used to influence decisions (Kovacic, 1995). Request for reviews is one of the many regulatory mechanisms that are meant to discourage corruption in public procurement (Kovacic, 1995). Bid disputes commonly arise at the sourcing phase where in some cases of outright collusion and corruption, tender documents could be misaddressed, late bid accepted, deserving bids rejected, evaluation criteria misapplied or amended after bids are received and advance information shared with preferred bidders giving them an undue advantage (Matechak, 2002).

The ISM identifies and summarizes relationships among elements that define an issue. Through ISM, order is imposed on the components of a complex problem (Singh et al., 2003). The ISM is a framework complete with order and direction for complex problems that accord decision-makers an understanding of a system. From a systems perspective, ISM process requires identification of factors, defining how they are related, ranking them, and giving them direction. The ISM transforms unclear mental abstracts into articulate models, which can help determine factors related to an issue. After the identification of critical factors or elements, a strategy may be developed for dealing with the subject (Attri et al., 2013).

Identification of variables that shape an issue kick starts ISM process. This is followed by choosing a contextually pertinent subordinate relation and pairwise comparison of variables results to a Structural Self Interaction Matrix

(SSIM). The SSIM is then converted into a binary or reachability matrix followed by checking for transitivity which results into a matrix model. The ISM results from partitioning of elements and extraction of the structural model. The structural model portrays a simplified structure graphically and in words of a complicated issue (Attri et al., 2013). Duperrin and Godet (1973) developed MICMAC to develop hierarchies for members of an element set.

The MICMAC analysis applies the multiplication properties of matrices on factors to a problem in ISM to analyze their drive and dependence powers. It is dependence and drive power that helps classify factors to an issue as autonomous, linkage, dependent, or independent. Autonomous factors are comparatively disengaged from the system because they have weak driver and dependence powers. Linkage factors are not stable owing to strong driver and dependence powers; any impact on them is relayed to other factors and also feeds back on themselves. Weak drive power and strong dependence power characterises dependent factors, while strong drive power and weak dependence power defines independent factors. An element with an extreme drive power, the critical factor, may be classified as independent or linkage factor (Mandal & Deshmukh, 1994).

In ISM, respondents decide if and how elements to a problem are related, making it interpretive. The methodology is structural, judging by the interrelationships between elements from which the complete structure is extracted. The fact that specific connections and overall structure are presented in a directed graph (digraph) makes it a modelling technique that helps give order and direction to elements making up a system. The ISM can be used in long-range planning and such like situations that require a high level of abstraction. It can work equally in situations that require low-level abstraction strategic planning, financial analysis, human resources management, and electronic commerce (Attri et al., 2013). The ISM approach is advantageous because it presents a problem in an easy to understand, use, and communicate format. This makes it desirable to a broad audience across varying disciplines. Besides, it aids in policy

analysis by identifying particular areas that need further follow up. However, the methodology is limited because an increase in elements of a problem complicates the methodology. Therefore, when developing ISM model, variables that least influence a problem may not be considered (Attri et al., 2013). This study provided a hierarchical structural framework of factors that influence public procurement bid disputes in Kenya through application of ISM method.

Methodology of Research

General Background of Research Methodology

This paper was qualitative and adopted the interpretivist research philosophy. This is because it entailed collection and analysis of participants' opinions in a bid to construct knowledge in a given subject (Saunders, 2016). The paper adopted cross sectional research design and employed primary data, which was collected using semi structured interviews.

Sample of Research

Target respondents were aggrieved bidders and heads of procurement for entities that had been involved in bid disputes that were heard and determined by PPARB, including those that escalated to the high court and the court of appeal, between 2001 and 2020. In addition, PPARB secretariat and review board members were targeted.

The respondents were purposefully sampled. Purposeful sampling is best suited for cases that are rich in information and where resources are limited (Guest et al., 2006). Individuals who have expertise in the area of study are identified and selected. Twelve bidders and 12 heads of procurement for procuring entities that had been involved in the disputes under review were purposively sampled. Moreover, six current PPARB secretariat and review board members were purposively sampled to participate in the semi-structured interviews. Only 14 respondents (five bidders, five heads of procurement and four members of PPARB and its secretariat) agreed to participate in the semi-structured interviews.

Sandelowski (1995) argues that an expertise-driven judgment of whether information collected is fit for purpose determines whether a sample size in qualitative research is adequate. The point of saturation guides the ideal number of participants. Saturation helps decide the point at which data collection and succeeding analysis should be stopped in qualitative research. Guest et al. (2006) advised that six to 12 interviews are sufficient for purposeful sampling. Interviews continued until saturation was reached. A point of data saturation occurs when no new information is discovered during analysis and thus signaling that data collection may cease. Saturation was reached when the 10th respondent was interviewed.

Instrument and Procedures

This paper sought to provide a hierarchical structural framework of factors that influence public procurement bid disputes in Kenya through application of ISM method. In addition, MICMAC analysis was conducted to determine the dependency and driving power of these factors. The hierarchical structural framework was meant to help understand how factors influencing bid disputes management in Kenya interact in a bid to recommend means of better managing these bid disputes.

Data Analysis

Factors that influence public procurement bid disputes were identified through literature review; content analysis of cases heard and determined by Public Procurement Complaints Review and Appeals Board (PPCRAB), PPARB; the high court, and the court of appeal between 2001 and 2020; and semi structured interviews. A total of 23 factors that influence public procurement bid disputes were identified and analyzed. The 23 factors that influence public procurement bid disputes in Kenya positively and negatively that were identified and analyzed were independence of PPARB; fear of loss of future business; making of PPARB decisions public; expertise of PPARB; quality of debriefing by procuring entities; nature or size of the bidder for example if they are Access to Government

Procurement Opportunities (AGPO), MSME, local or foreign; availability or lack of ADR; value of contracts; nature of procurement items; availability of evidence; and number of review tiers; remedies available. Other factors included cost of legal representation; devolution of PPARB services; time taken to deliver a decision; corruption; quality of bidding documents; expertise or conduct of evaluation committee; past performance; method of procurement; nature or sector of the procuring entity; regulatory; and conflict between development partner's regulations and national public procurement laws and regulations.

To appreciate the relationships among the 23 factors that influence public procurement bid disputes in Kenya, paired comparison of these factors was conducted. In this paper, the interrelationship and influence of factors that influence public procurement bid disputes in Kenya was compared. The SSIM was constructed through the opinion of bidders; heads of procurement; review board members; and members of PPARB secretariat who were knowledgeable in bid disputes having been involved in such disputes. The respondents offered paired comparison of the identified 23 factors that influence public procurement bid disputes in Kenya. This relationship pointed out which factor influenced the other leading to development of SSIM through an initial 23x23 matrix of the identified factors. Respondents offered their paired comparison of two factors (i and j) with the direction of relationship between the factors being denoted as V: factor i influences factor j (where the row influences the column); A: factor j influences factor i (where the column influences the row); X: factor i and j influence each other (where row and column influences each other); and O: factor i and j are unconnected (where the row and the column are not related).

Results of Research

After conducting semi structured interviews with all the respondents, concurrence on how the factors relate with each other was settled on leading to SSIM shown in Table 1 below.

Table 1: Structural Self-Interaction Matrix

	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1	O	A	O	O	O	O	O	A	A	O	O	A	A	O	O	O	O	O	O	A	X	O	
2	O	A	O	O	A	O	O	A	O	O	O	A	O	O	O	O	O	O	O	O	X		
3	A	A	O	O	O	O	O	A	V	O	O	V	O	O	O	O	A	O	O	O			
4	O	A	O	O	O	O	O	O	V	O	O	O	O	O	O	O	O	O	A				
5	O	A	O	A	A	A	X	A	X	O	O	A	A	X	V	O	X	A					
6	O	O	A	V	O	V	O	V	O	O	V	O	A	O	X	A	O						
7	X	A	A	O	O	V	O	A	X	O	V	V	V	O	O	O							
8	O	O	A	V	X	V	V	V	V	O	V	O	O	O	X								
9	O	A	X	X	A	X	A	V	V	O	V	O	O	A									
10	A	A	A	A	O	A	A	X	V	O	V	X	A										
11	A	A	A	O	O	V	O	O	V	O	X	O											
12	X	A	O	A	A	A	O	A	O	O	V												
13	O	A	O	O	O	O	O	A	A	O													
14	O	A	O	O	O	O	O	V	V														
15	V	A	O	A	O	A	A	A															
16	O	A	V	X	X	V	O																
17	V	A	O	X	O	V																	
18	A	A	A	V	A																		
19	A	V	O	O																			
20	V	A	O																				
21	O	A																					
22	X																						
23																							

The SSIM was converted into the initial reachability matrix resulting from substituting symbols V, A, X and O with 1 and 0. The rules for the replacement of 1 and 0 were as follows; if the symbol in SSIM (i, j) entry was V, then the (i, j) entry in the reachability matrix becomes 1 and the (j, i) entry became 0; if the symbol in SSIM (i, j) entry was A, then the (i, j) entry in the reachability matrix became 0 and the (j, i) entry became 1; if the symbol in SSIM (i, j) entry was X, then the (i, j) entry in the reachability matrix became 1 and the (j, i) entry also became 1; and if the symbol in SSIM (i, j) entry was O, then the (i, j) entry in the reachability matrix became 0 and the (j, i) entry also became 0.

After the initial reachability matrix was achieved, transitivity links that existed between the variables were investigated. The transitivity of relationships in ISM method follows the rule that, if factor x influences factor y, and factor y influences factor z, then factor x should influence factor z. The transitive link is applied to the factors which have no relationship (O) after the initial reachability matrix (Ahuja et al., 2009; Bhattacharya & Momaya, 2009; Adama, 2019). All the entries without initial relationships were changed from (0) to (1*). The resultant final reachability matrix, capturing the dependence and the driving powers, is as captured in Table 2 below. The total number of factors that a given factor helps achieve including itself is the driving power. On the other hand, the total number of factors that a given factor affects including itself is the dependence factor (Bhattacharya & Momaya, 2009). These two factors helped develop the level partition and MICMAC analysis as discussed in subsequent sections.

Following determination of the final reachability matrix, the reachability set and antecedent set for each factor was identified (Warfield, 1974; Sage 1977; Adama, 2019). The reachability set for each factor is a group of the factors it drives including itself. Antecedent sets of each factor are a group factors on which it depends including itself. Thereafter, the intersection of these sets was determined for all the factors. The

intersection factor consisted of the factor(s) that have both the reachability and the intersection sets as the same (Adama, 2019). The first set of intersection factors that were determined occupied the top-level in ISM hierarchy. The factors in the top-level of the hierarchy do not help achieve any other factors above their own level (Sage 1977; Faisal 2010). After the top-level factors were identified, the factors were deleted from the other remaining factors (Ravi & Shankar, 2005). The remaining factors become the new set of factors from which a new intersection evolve. The same process is repeated for all other factors in the next level until the level of every factor is identified.

The outcomes of the iteration process in this paper is summarised in Tables 3 below. After nine iterations based on the final reachability matrix, nine levels were identified in ISM hierarchy. The first iteration resulted into factors 1, 2 and 15, the second factors 5 and 13, the third factors 3, 7 and 23, the fourth factors 4 and 9, the fifth factors 10, 12, 16 and 17, the sixth factors 6, 18 and 20, the seventh factors 11 and 19, the eighth factors 8 and 21 while the ninth iteration resulted into factors 14 and 22. It is through identifying the levels for each factor that the digraph and ISM were established. In addition, conical matrix was formed by clustering the factors at the new levels, across the columns and rows in the final reachability matrix.

Table 2: Final Reachability Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Driving Power
1	1	1*	1	0	0	0	0	0	0	0	0	1*	0	0	1*	0	0	0	0	0	0	0	0	5
2	1*	1	1	0	0	0	0	0	0	0	0	1*	0	0	1*	0	0	0	0	0	0	0	0	5
3	1	1	1	0	1*	0	1*	0	0	1*	0	1	1*	0	1	0	0	0	0	0	0	0	1*	10
4	1	0	1*	1	1*	0	1*	0	0	0	0	0	1*	0	1	0	0	0	0	0	0	0	1*	8
5	1*	0	1*	1	1	1*	1	1*	1	1	1*	1*	1*	0	1	1*	1	1*	0	1*	1*	0	1*	19
6	1*	1*	1*	1*	1	1	1*	1*	1	1*	1*	1*	1	0	1*	1	1*	1	1*	1	1*	0	0	20
7	1*	1*	1	1*	1	0	1	0	1*	1*	1*	1	1	0	1	0	1*	1	0	1*	0	0	1	16
8	1*	1*	1*	0	1*	1	1*	1	1	1*	1*	1*	1	0	1	1	1	1	1	1	1*	0	1*	20
9	1*	1*	1*	0	1*	1	1*	1	1	1*	1*	1*	1	0	1	1	0	1	1*	1	1	0	1*	19
10	1*	1*	1*	1*	1	1*	1*	1*	1	1	1*	1	1*	0	1	1	1*	1*	1*	1*	1*	0	1*	21
11	1	0	1*	1*	1	1	1*	0	1*	1	1	1*	1	0	1	1*	1*	1	0	1*	0	0	1*	17
12	1	1	1*	1*	1	0	1*	0	1*	1	1*	1	1	0	1*	1*	1*	0	0	0	0	0	1	15
13	1*	0	0	0	1*	0	0	0	0	1*	1*	0	1*	0	1*	0	0	1*	0	0	0	0	0	7
14	1*	1*	1*	0	1*	0	1*	0	0	1*	0	1*	1*	1	1	1	0	1*	1*	1*	1*	1	1*	17
15	1	0	1*	1*	1	0	1	0	1*	1*	1*	1*	1	0	1	0	1*	1*	0	0	0	0	1	14
16	1	1	1	1*	1	0	1	0	1*	1	1*	1	1	0	1	1	1*	1	1	1	1	0	1*	19
17	1*	0	0	1*	1	1*	1*	1*	1	1	0	1*	1*	0	1	1*	1	1	0	1	1*	0	1	17
18	1*	1*	0	1*	1	1*	1*	1*	1	1	0	1	1*	0	1	1*	1*	1	0	1	1*	0	1*	18
19	1*	1	1*	1*	1	1*	1*	1	1	1*	0	1	1*	0	1*	1	1*	1	1	1*	1*	1	1*	21
20	1*	1*	1*	1*	1	1*	1*	1*	1	1	0	1	1*	0	1	1	1	1*	1*	1	1*	0	1	20
21	1*	0	1*	0	1*	1	1	1	1	1	1	1*	1*	0	1*	1*	1*	1	1*	1*	1	0	1*	19
22	1	1	1	1	1	1*	1	1*	1	1	1	1	1	1	1	1	1	1	1*	1	1	1	1	23

23	1*	1*	1	0	1*	0	1	0	1*	1	1	1	1*	0	1*	1*	0	1	1	1*	0	1	1*	17
Dependence	23	16	20	14	21	12	20	11	17	20	14	21	21	2	23	16	15	18	11	16	13	4	19	

Table 3: Reachability, Antecedent, and Intersection Sets Iterations

Variables	Reachability Set	Antecedent Set	Intersection Set	Level
1	1,2,3,12,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,21,23	1,2,3,12,15	Level I
2	1,2,3,12,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23	1,2,3,12,15	Level I
15	1,3,4,5,7,9,10,11,12,13,15,17,18,23	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23	1,3,4,5,7,9,10,11,12,13,15,17,18,23	Level I
5	1,3,4,5,6,7,8,9,10,11,12,13,15,16,17,18,20,21,23	3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23	3,4,5,6,7,8,9,10,11,12,13,15,16,17,18,20,21,23	Level II
13	1,5,10,11,13,15,18	3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23	5,10,11,13,15,18	Level II
3	1,2,3,5,7,10,12,13,15,23	1,2,3,4,5,6,7,8,9,10,11,12,14,15,16,19,20,21,22,23	1,2,3,5,7,10,12,15,23	Level III
7	1,2,3,4,5,7,9,10,11,12,13,15,17,18,20,23	3,4,5,6,7,8,9,10,11,12,14,15,16,17,18,19,20,22,23	3,4,5,7,9,10,11,12,15,17,18,20,23	Level III
23	1,2,3,5,7,9,10,11,12,13,15,16,18,20,23	3,4,5,7,8,9,10,11,12,14,15,16,17,18,19,20,21,22,23	3,5,7,9,10,11,12,15,16,18,20,23	Level III
4	1,3,4,5,7,13,15,23	4,5,6,7,10,11,12,15,16,17,18,19,20,22	4,5,7,15	Level IV
9	1,2,3,5,6,7,8,9,10,11,12,13,15,16,18,19,20,21,23	5,6,7,8,9,10,11,12,15,16,17,18,19,20,21,22,23	5,6,7,,8,9,10,11,12,15,16,18,19,20,21,23	Level IV

10	1,2,3,4,5,6,7,8,10,11,12,13,15,16,17,18,19,20,21,23	3,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23	3,5,6,7,8,10,11,12,13,15,16,17,18,19,20,21,23	Level V
12	1,2,3,4,5,7,9,10,11,12,13,15,16,17,23	1,2,3,5,6,7,8,9,10,11,12,14,15,16,17,18,19,20,21,22,23	1,2,3,5,7,9,10,11,12,15,16,17,23	Level V
16	1,2,3,4,5,7,9,10,11,12,13,15,16,17,18,19,20,21,23	5,6,8,9,10,11,12,13,14,16,17,18,19,20,21,22,23	5,9,10,11,12,13,16,17,18,19,20,21,23	Level V
17	1,4,5,6,7,8,9,10,12,13,15,16,17,18,20,21,23	5,6,7,8,10,11,12,15,16,17,18,19,20,21,22	5,6,7,8,10,12,15,16,17,18,20,21	Level V
6	1,2,3,4,5,6,7,8,9,10,11,12,13,15,16,17,18,19,20,21	5,6,8,9,10,11,17,18,19,20,21,22	5,6,8,9,10,11,17,18,19,20,21	Level VI
18	1,2,4,5,6,7,8,9,10,12,13,15,16,17,18,20,21,23	5,6,7,8,9,10,11,13,14,15,16,17,18,19,20,21,22,23	5,6,7,8,9,10,13,15,16,17,18,20,21,23	Level VI
20	1,2,3,4,5,6,7,8,9,10,12,13,15,16,17,18,19,20,21,23	5,6,7,8,9,10,11,14,16,17,18,19,20,21,22,23	5,6,7,8,9,10,16,17,18,19,20,21,23	Level VI
11	1,3,4,5,7,9,10,11,12,13,15,16,17,18,20,23	5,6,7,8,9,10,11,12,13,15,16,21,22,23	5,7,9,10,11,12,13,15,16,23	Level VII
19	1,2,3,4,5,6,7,8,9,10,12,13,15,16,17,18,19,20,21,23	6,8,9,10,14,19,20,21,22,23	6,8,9,10,19,20,21,23	Level VII
8	1,2,3,5,6,7,8,9,10,11,12,13,15,16,18,19,20,21,23	5,6,8,9,10,17,18,19,20,21,22,23	5,6,8,9,10,18,19,20,21,23	Level VIII
21	1,3,5,6,7,8,9,10,11,12,13,15,16,18,19,20,21,23	5,6,8,9,10,14,16,17,18,19,20,21,22	5,6,8,9,10,16,18,19,20,21	Level VIII

| 14 | 1,2,3,5,7,10,12,13,14,15,16,18,19,20,21,23 | 14,22 | 14 | Level IX |
| 22 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23 | 14,19,22,23 | 14,19,23 | Level IX |

The initial digraph with all the transitivity links was based on the conical form of the reachability matrix. The diagraph then became ISM upon removing the transitivity links and replacing all the nodes with the factors. The ISM, captured in Figure 1 below, is the result of representation of the inter-relationships between the factors i and j, shown by the arrow that points from factor i to factor j. In ISM, level IX is the lowest level in the hierarchical model, while level I is the highest. As discussed above on levels partitioning, the factors that are in level I do not help in influencing other factors in higher levels. However, the factors in the lowest level, level IX of ISM, are the fundamental factors that influence every other factor in the model.

The ISM depicted in Figure 1 below shows that the most critical factors that influence bid disputes in Kenya are factor 14 (devolution of PPARB services) and factor 22 (regulatory changes). Both factors, which fall at level IX, are interrelated. Genn (2012) opines that civil justice is a public good considering that it contributes quietly and significantly to social and economic wellbeing. It is therefore, critical that it is accessible to all. Thiankolu (2011) emphasized on the need for reconciling incongruous policy objectives through regulatory changes. Stakeholders should attempt to resolve, rationalize or harmonize the conflicts between various competing goals of the procurement law, keeping in mind the relative importance of each policy objective and the circumstances of each case.

From ISM in Figure 1 below, factor 22 (regulatory changes) influences factor 21 (nature or sector of the procuring entity) at level VIII. At level VIII lay factor 8 (value of contracts) and factor 21 (nature or sector of the procuring entity) which were interrelated. Factor 8 influenced factor 11 (number of review tiers) in level VII while factor 21 was interrelated with factor 19 (number of review tiers) in level VII. Level VII comprised of factor 11 (number of review tiers) influences and factor 19 (past performance). Factor 11 related with two factors in level VI as follows; influenced factor 18 (expertise or conduct of evaluation committee) and was interrelated with factor 6 (nature or size of the bidder). On the other hand, factor 19 related with two factors in level VI as follows - influenced factor 18 (expertise or conduct of evaluation committee) and was interrelated with factor 20 (method of procurement).

Level VI comprised of factors 6 (nature or size of the bidder), 18 (expertise or conduct of evaluation committee) and 20 (method of procurement). Factor 6 influenced directly all the four factors at level V namely, factors 10 (availability of evidence), 12 (remedies available), 16 (corruption) and 17 (quality of bidding documents). Factor 18 (expertise or conduct of evaluation committee) influenced directly factors 12 and 16 and was interrelated with factor 10. Factor 20 on the other hand affected directly factor 12 and interrelated with factors 10, 16 and 17.

Level V had factors 10 (availability of evidence), 12 (remedies available), 16 (corruption) and 17 (quality of bidding documents). Factor 12 was interrelated with factors 10 and 16; and factor 16 was interrelated with factor 17. Factors at level V related with those at level IV as follows - factor 10 directly influenced factor 4 (expertise of PPARB) and was interrelated with factor 9 (nature of procurement items); factor 12 directly influenced factor 4 and was interrelated with factor 9; factor 16 (corruption) directly influenced factors 4 and 9 while factor 17 directly influenced factor 9.
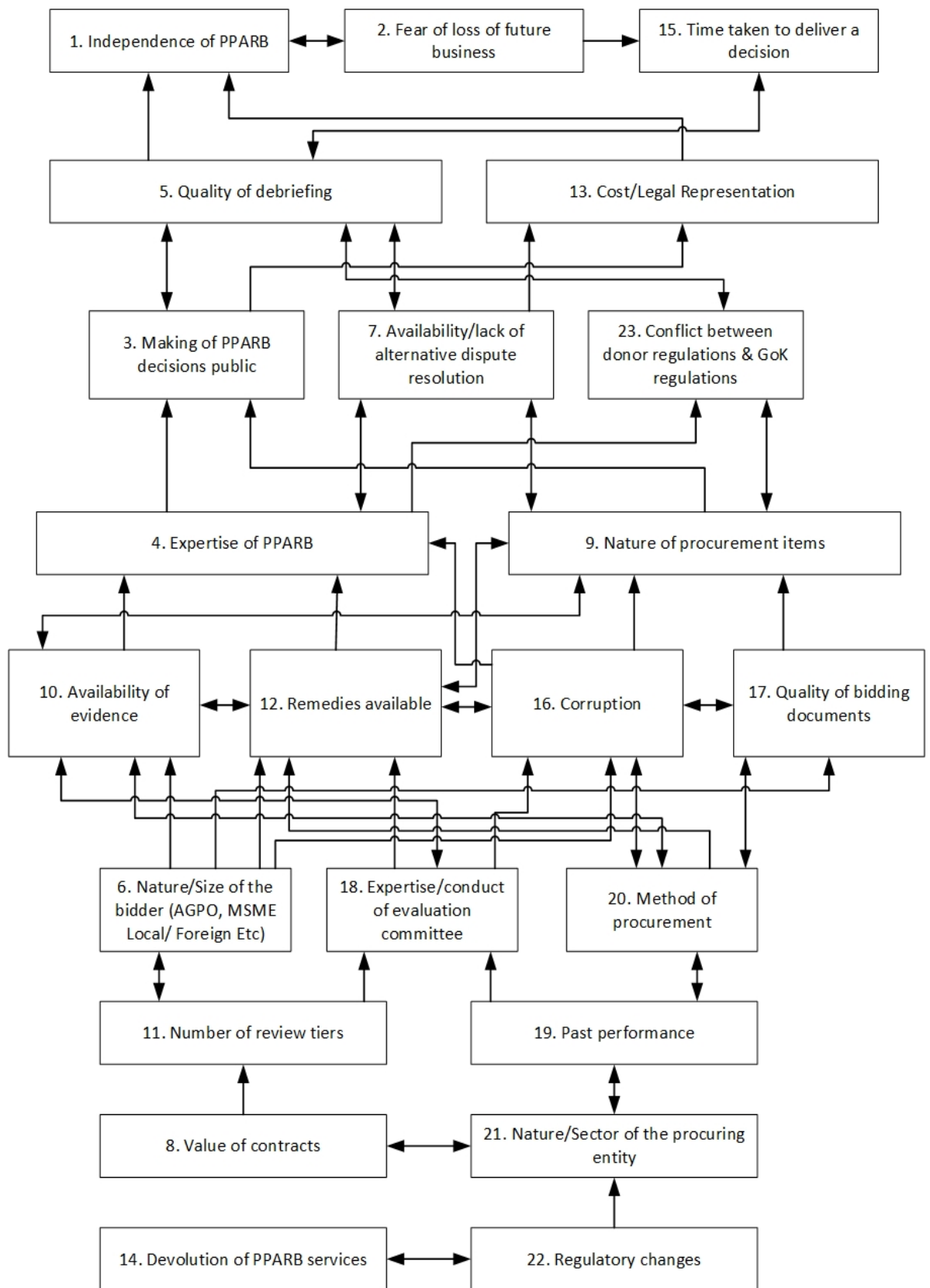
Figure 1: Framework of Factors Influencing Public Procurement Bid Disputes

Level IV comprised of factors 4 (expertise of PPARB) and 9 (nature of procurement items). Both factors interacted with factors at level III as follows - factor 4 directly influenced factors 3 (making of PPARB decisions public) and 23 (conflict between development partner's regulations and national public procurement laws and regulations) and interrelated with factor 7 (availability or lack of ADR) while factor 9 directly influenced factor 3 and interrelated with factors 7 and 23. Level III had the following three factors which influenced factors in level II - factor 3 (making of PPARB decisions public), factor 7 (availability or lack of ADR) and factor 23 (conflict between development partner's regulations and national public procurement laws and regulations). Factor 3 interrelated with factor 5 (quality of debriefing) and directly influenced factor 13 (cost of legal representation). Factor 7 interrelated with factor 5 and directly influenced factor 7 and factor 23 interrelated with factor 5.

Level II comprised of factors 5 (quality of debriefing) and 13 (cost of legal representation). These factors related with those in level I as follows - factor 5 interrelated with factor 15 (time taken to deliver a decision) and directly influenced factor 1 (independence of PPARB). Factor 13 on the other hand directly influenced factor 1. At level I, factor 1 and factor 2 (fear of loss of future business) were interrelated while factor 2 influenced factor 15 completing the interconnectivity of all the factors in the framework. Based on the preceding discussion on the development of ISM-based model using MICMAC analysis, this section further investigated the driving powers and dependence of the factors. The final reachability matrix in Table 2 was used in the development of MICMAC analysis. The sum of 1s in each row corresponds with the dependency power of the factors, while the sum of 1s in each column represents the driving power for each factor. The factors were then classified into four quadrants based on their driving power (y-coordinate) and dependence (x-coordinate), as shown in Figure 2 below.

MICMAC Analysis — Driving Power vs. Dependence Power

Driving Power	Dep 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
23			22																				
22									*Linkage Enablers*														
21											19										10		
20											8	6				20							
19		*Independent Enablers*												21		16	9				5		
18																		18					
17		14												11	17				23				
16																				7			
15																					12		
14																							15
13																							
12																							
11																							
10																				3			
9		*Autonomous Enablers*										*Dependence Enablers*											
8														4									
7																					13		
6																							
5																2							1
4																							
3																							
2																							
1																							

Dependence Power →

Figure 2: Matrice d'Impacts Croisés Multiplication Appliquée á un Classement Analysis

The driving power and dependence figure (Figure 2 above) helps to order the factors influencing public procurement bid disputes in Kenya. The first quadrant contains the factors with weak driving power and weak dependence, which are referred to as "autonomous enablers". The factors in this quadrant are normally disconnected from the system, with limited linkages to other factors in the system (Faisal, 2010). This paper did not have any autonomous enabler, which means that none of factors influencing public procurement bid disputes in Kenya derived in this paper can be isolated from the entire system and all identified factors must, therefore be addressed. The second quadrant contained "dependence enablers" which were factors with weak driving power and strong dependence. Dependence enablers in this paper were factors 1 (independence of PPARB), 2 (fear of loss of future business), 3 (making of PPARB decisions public), 4 (expertise of PPARB) and 13(cost of legal representation).

The third quadrant had factors that have strong driving power and strong dependence and these factors are known as "linkage enablers". These factors are unsteady because action on any one of the factors influences others creating a ripple effect (Ahuja et al., 2009). The factors in this linkage quadrant, which were the majority, included factors 5 (quality of debriefing by procuring entities), 6 (nature or size of the bidder), 7 (availability or lack of ADR), 9 (nature of procurement items), 10 (availability of evidence), 11 number of review tiers, 12 (remedies available), 15 (time taken to deliver a decision), 16 (corruption), 17 (quality of bidding documents), 18 (expertise or conduct of evaluation committee), 20 (method of procurement), 21 (nature or sector of the procuring entity), and 23 (conflict between development partner's regulations and

national public procurement laws and regulations).

Considering that these factors have a high driving power and are also dependent on the other factors, they ought to be carefully addressed in a bid to address bid disputes in public procurement. It means that any positive action on any one of these factors leads a positive ripple effect to the others and vice versa. The fourth quadrant had the "independent enablers" and these were factors with strong driving power but weak dependence. Independent enablers in this paper were factors 8 (nature of procurement items), 14 (devolution of PPARB services), 19 (past performance) and 22 (regulatory changes).

Conclusions and Recommendations

The paper was intended to bridge gaps in management of public procurement bid disputes in Kenya. Using a holistic approach, this paper generated a new integrated model that explains how factors influencing public procurement bid disputes in Kenya interact and what needs to be addressed for successful management of bid disputes. The MICMAC analysis suggests that value of contracts, devolution of PPARB services, past performance, and regulatory changes (the independent enablers) had high driving power and are, therefore, regarded as fundamental factors that influence public procurement bid disputes. The model generated by this paper guides management of bid disputes in Kenya. The same can be replicated in different contexts to grow the model into a theory.

This study has contributed to knowledge in the field of public procurement. The study makes contribution to existing body of knowledge in regard to application of ISM and MICMAC analysis to develop a comprehensive framework for management of factors influencing public procurement bid

disputes. This study will contribute to policy formulation and development in Kenya guided by the understanding of nature and degree of interrelationship between factors that influence public procurement bid disputes in the Kenyan context. The results of the study will guide improvement on practice, legal, regulatory, and institutional frameworks that define an effective and efficient public procurement bid dispute management system.

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