

1 **Procurement issues in donor-funded international development projects**

2 **Kamrul Ahsan, Ph.D.**

3 Senior lecturer, School of Business IT and Logistics

4 College of Business, RMIT University, 445 Swanston Street, Vic 3133, Australia,

5 E-mail: kamrul.ahsan@rmit.edu.au

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7 **Sanjoy Kumar Paul, Ph.D**

8 Lecturer, Operations and Supply Chain Management

9 UTS Business School, University of Technology Sydney, 14-28 Ultimo Road, Ultimo, NSW

10 2007, Australia

11 E-mail: sanjoy.paul@uts.edu.au

12 **ABSTRACT:** This study investigates the critical procurement challenges faced by
13 international development (ID) projects in Bangladesh. Initially, a framework of challenges is
14 developed via literature review. We then rank the importance of these challenges and
15 categorize them based on interview data and analytical hierarchy processing analysis.
16 Interviews were conducted with procurement experts from three major ID project stakeholder
17 groups: donor organizations, host country government policymakers, and project
18 implementation units. The most important categories of challenges were those related to
19 project management capacity/capability, and ethics. More specifically, the challenges deemed
20 most important were those related to improper project planning, undue practices in
21 procurement implementation, government bureaucracy and interference in procurement, and
22 inexperienced procurement staff. This study contributes to the ID project procurement
23 literature by identifying the critical challenges to procurement, which differ from those of
24 other project-related areas. The findings may assist the multi-billion dollar ID project
25 procurement industry in Bangladesh by highlighting the major issues that require effective

26 management by all stakeholders. Ultimately, this may improve procurement outcomes and
27 overall project performance.

28

29 **Keywords:** International development, project, procurement, critical challenges, public project
30 procurement, analytical hierarchy processing

31 **Introduction**

32 International development (ID) projects are conducted in developing countries where natural,
33 political and/or social factors create a range of difficult environments (Golini et al. 2015).
34 Through project and program management, ID organisations or international donor agencies
35 deliver many public sector projects (such as infrastructure development, agricultural, water
36 supply and sanitation, resettlement, basic health care, education, social welfare, and capacity
37 building) in developing countries in Sub-Saharan Africa, North Africa, the Middle East,
38 South and Southeast Asia, Central and Latin America, and Central Europe (Ahsan and
39 Gunawan 2010; Hermano et al. 2013; Ika and Hodgson 2014; Khan and Rahman 2014). As in
40 other developing countries, many donor agencies in Bangladesh sponsor the public social,
41 environmental and infrastructure development projects of the Government of Bangladesh
42 (GOB) in the form of ID projects. These ID projects are known as foreign aid projects (Khan
43 and Rahman 2014) and are one of the main mechanisms through which the government
44 development projects are conducted (Hermano et al. 2013). Since 1972 (just after Bangladesh
45 became independent), the International Development Agency (IDA) of the World Bank (WB)
46 has provided US\$16 billion in support of policy reforms and projects (WB, 2016). From
47 1973-2016, the Asian Development Bank (ADB) provided US\$18.3 billion in development
48 loans (ADB_Factsheet 2016). More than two-third (67.7 percent) of these development aids
49 was disbursed in the form of ID projects (Hossain, 2014). Every financial year, ID projects or
50 project aid contribute a substantial portion towards the GOB annual development plan. For

51 example, in the fiscal year 2017-18 budget of the total annual development program, 59% are
52 from internal resources (about US\$12 billion), 37.2% (US\$7.2 billion) are from project aid
53 from donors, and the remainder is from other sources such as autonomous and semi-
54 autonomous government agencies (Financial_Express 2018).

55 In most ID projects, procurement can represent a very high proportion of total project
56 expenditure. For example, under the ADB, from January 1966 to December 2015, 63% of
57 global project loan funds were spent on the procurement of goods, works, and related services
58 (ADB 2015). In Bangladesh, around 40% of ADB loans (worth US\$7.48 billion) were spent
59 procuring goods and services from contractors and suppliers. The GOB also spends about one
60 quarter of their annual national budget on procurement (about US\$6 billion) for public sector
61 projects and operations (WB 2016).

62 For ID projects procurement in Bangladesh, the World Bank rates the performance of public
63 project procurement processes and contract management as mixed (WB 2013b). The World
64 Bank reports (WB 2017) that there is a significant economic loss due to inefficient
65 procurement and misappropriation of funds, which costs the country over 1.5% GDP growth
66 per annum. Major issues include procurement delays, poor contract administration, lack of
67 competition in contract bidding, inadequate project implementation monitoring, and capacity
68 building (WB 2016). Bangladesh is particularly renowned for having long delays in awarding
69 contracts, the World Bank reported that the maximum permitted number of days from bid
70 invitation to award was 100 days in 2017 (WB 2017). These procurement delays lead to
71 increased project costs and deferred benefits (TI 2013).

72 Research has been conducted on project procurement issues in general (Aliza et al. 2011;
73 Hampton et al. 2012; de Araújo et al. 2017) and specifically that in public projects (Addo-
74 Duah et al. 2014). However, known issues in project procurement are not necessarily
75 applicable to ID project procurement in specific countries, because they are based on certain

76 assumptions which may not universally valid. Moreover, previous studies on ID projects have
77 addressed only certain general procurement issues in the course of their research, and have
78 reported that project donor and host country issues affect ID project procurement. For
79 example, ID project donor procurement and disbursement systems often do not match local
80 systems (Ika and Donnelly 2017), which can complicate procurement processes (Youker
81 2003; Khan and Rahman 2014). The bureaucratic process of the host country can lead to
82 delays in procurement and increase the cost of ID projects (Ahsan and Gunawan 2010; Kagiri
83 2013; Keng'ara 2014; Carvalho et al. 2015). In many cases, the host country's project
84 procurement authority has inadequate knowledge of donor rules and regulations of
85 procurement (Ahsan and Gunawan 2010; Ika and Donnelly 2017). Quite often, foreign donors
86 interfere with the procurement process (Ika and Hodgson 2014; Parker et al. 2018). In the
87 case of bilateral lending, procurement is often tied to firms from the donor country, and these
88 firms may not always be competitive in price or offer the most appropriate products or
89 services (Khan and Rahman 2014). Hence, it appears that procurement is a major component
90 of ID project management and carries significant challenges.

91 Previous literature has identified some specific procurement challenges while conducting
92 broader research on ID projects. It appears that procurement is an important process in ID
93 projects, and that more attention should be given to this issue in Bangladesh, where no
94 academic research has yet been done. Identifying the challenges of ID project procurement in
95 Bangladesh could improve the management of procurement and of ID projects. It is important
96 to systematically identify and categorize these challenges to pinpoint major issues and
97 improve ID performance. With the aim of exploring ID project procurement issues in
98 Bangladesh, this study will answer the following research questions (RQs):

99 **RQ1:** What are the major categories of challenges in ID project procurement?

100 **RQ2:** Which challenges are most critical in ID project procurement?

101 We investigate critical challenges of ID project procurement from different ID project
102 stakeholder viewpoints in the context of Bangladesh, which is a developing country where
103 many ID projects are run by government with the support of foreign donors. The output of the
104 research may help ID project professionals, donor organizations, and host countries to identify
105 problems in ID project procurement and public procurement so that they can develop
106 strategies for further development.

107 The rest of this paper is organized as follows. First, we provide a contextual background to
108 the study, followed by a review of the literature and a framework of ID project procurement
109 challenges. The next section discusses the research methodology and present results and
110 analysis. This is followed by a discussion of the findings and the paper concludes with
111 theoretical and managerial contributions, limitations and future research direction.

112 **Contextual Background to the Research**

113 As background information to this research, we provide an overview of ID projects, explain
114 how ID projects work within a complex network of stakeholders, and discuss ID project
115 procurement issues in developing countries such as Bangladesh.

116 ID projects are conducted in developing countries in a range of difficult environments
117 determined by various natural, political, and social factors (Golini et al. 2015). Through
118 project and program management, ID projects deliver many “hard” and “soft” public sector
119 projects in developing countries (Golini and Landoni 2014; Ika and Donnelly 2017). Hard
120 projects include agriculture, infrastructure, water supply and sanitation projects. Examples of
121 soft projects include resettlement, basic health care, education, social welfare, and capacity
122 building projects.

123 Usually, ID project stakeholders include the lender or donor, the ministry of finance/planning
124 of the host country, and a project management or coordination unit (Ahsan 2012; Khan and

125 Rahman 2014). The performance of the ID project depends largely on the involvement of
126 these stakeholders (Ika and Hodgson 2014; Ika 2015). Funding agencies or donors pay for
127 projects but do not receive any project deliverables; the client is normally a sectorial ministry
128 or institution of the host country working directly with the donor for loan approval and
129 negotiation. The project implementation unit (PIU) of the host country is involved in project
130 and procurement execution with a project manager and project team, while contractors carry
131 out the physical implementation of most project components and activities. The target
132 beneficiaries receive direct or indirect benefits from the projects (Ahsan and Gunawan 2010;
133 Ika and Donnelly 2017). The ID project donors are influential as they finance the
134 project(Hernandez 2013). Major ID project donors are the World Bank Group, the Inter-
135 American Development Bank, the ADB, the African Development Bank and the European
136 Bank for Reconstruction and Development, the European Bank for Reconstruction and
137 Development, and the Organization for Economic Co-operation and Development (OECD).

138 For social, environmental, and infrastructure developments, many donor agencies sponsor
139 public projects of the GOB in the form of ID projects. These ID projects have related to
140 procurement. The country procurement assessment report prepared by the World Bank
141 (CPTU 2017) identified the following issues in the procurement system of Bangladesh: (i) no
142 legal framework to govern public sector procurement, (ii) complex bureaucratic procedures
143 which cause delays, (iii) lack or absence of planning, (iv) multiple layers of approval and
144 review processes, (v) lack of adequate professional competence of the staff that manage
145 procurement, (vi) ineffective contract management, and (vii) lack of adequate mechanisms to
146 ensure transparency and accountability. Hence, procurement reform was identified as one of
147 the priorities for the public sector governance improvement agenda. With the aim of
148 improving public procurement, the World Bank conducted the Public Procurement Reform
149 Project (2002 in Bangladesh during 2002–2005 (WB 2016; WB 2017). Although Bangladesh

150 has made good progress in establishing the foundations for an effective public procurement
151 system by introducing necessary legislation and regulatory institutions, the procurement
152 performance results (CPTU 2017) show that overall, the system's performance rating remains
153 poor to average.

154 **Literature Review and Challenge Framework Development**

155 Typically, ID projects follow transactional processes and strict guidelines that are laid down
156 by donor agencies to ensure that rigor and transparency are maintained in the awarding of
157 contracts and the performance of tasks (Ika 2012). Furthermore, as ID projects are public
158 policy implementation projects run by a host country (Ogunlana 2010; Venugopal 2018),
159 these projects must also follow the host country's public procurement rules, requirements, and
160 regulations for fair, ethical, and transparent governance, to ensure that the solicitation of
161 vendors proceeds in a fair manner (Correia et al. 2013). We presume that management
162 efficiency and effectiveness in procurement plays a key role in achieving ID project
163 objectives and can be considered an important area in the project procurement management
164 knowledge area. In the following, we review the literature to identify the key challenges
165 facing ID project procurement, and categorize them systematically.

166 ***Framework for ID project procurement challenges***

167 Previous research placed ID project challenges into three categories: (i) contextual problems,
168 (ii) institutional problems, and (iii) organizational or management problems (Kwak 2002; Ika
169 2012; Nanthagopan et al. 2016; Ika and Donnelly 2017). Contextual problems are related to
170 host country contexts or problems arising from the contextual background of the project.
171 Contextual issues include the political situation and political influence of the host country, the
172 sociocultural issues of the host country, and issues related to demographic and environmental
173 aspects (Ika and Donnelly 2017). Institutional problems include issues relating to project
174 governance and implementation institutions/bodies. Institutional issues include corruption,

175 insufficient support and institutional capacity to deliver projects, insufficient implementation
176 capacity between donors and recipients, the bureaucracy of the host country, and
177 incompatibility between the host country's and the donor's management systems (Rondinelli
178 et al. 1983; Youker 1999). Organizational or management issues are related to improper
179 project management (Ika 2015). The majority of these issues are related to project
180 management areas which include imperfect project design, unclear project objectives, and
181 delays between project identification and initiation (Kwak 2002). As procurement is one of
182 the vital components of ID projects, it is important to systematically identify and categorize
183 the issues and challenges related to ID project procurement, which will improve ID
184 performance.

185 As such a categorization does not yet exist, we propose an ID project procurement challenge
186 framework. The proposed framework adopts the main categories of ID project issues outlined
187 by Kwak (2002) and (Ika and Donnelly 2017) and groups them into four categories:

- 188 (i) project sponsor issues (institutional),
- 189 (ii) host country issues (institutional and contextual, management),
- 190 (iii) project management issues (organizational project management capacity),
- 191 (iv) ethical issues (institutional and contextual).

192
193 To our knowledge no previous study has considered ID project procurement challenges in
194 such depth. Each of the challenges and their four categories are outlined in Figure 1 and
195 discussed in the following.

196 Figure 1 about here

197 *Overview of ID Project Procurement Challenges*

198 *Project Sponsor Issues*

199 In ID projects, the sponsors are the lender or donor organizations, which are major project
200 stakeholders and play vital roles in managing ID project procurement. Sponsor issues related
201 to ID project procurement are institutional problems (Rondinelli et al. 1983; Ika and Donnelly
202 2017). They include the lack of co-ordination between donors and key stakeholders, donors’
203 incompatible rules and regulations on procurement, and complex loan approval and
204 disbursement processes.

205 *(i) Lack of coordination between donors and key stakeholders:* The complex network of
206 relationships between stakeholders is one of the most challenging issues in the management
207 of ID projects (Khan and Rahman 2014; Parker et al. 2018). There can be a lack of consensus
208 on project objectives among key stakeholders and, sometimes, contradictory agendas (Ika and
209 Donnelly 2017). At times, the interests of “heavyweight” and influential donors carry more
210 weight in decision making than the interests of recipients (Lim and Vreeland 2013).

211 *(ii) Donors’ incompatible rules and regulations on procurement:* The donor is exclusively
212 involved in the process of project identification, design, and development (Khan and Rahman
213 2014). Donors also have their own strategies specific to their countries and guidelines, which
214 host country project procurement objectives should match (Ahsan and Gunawan 2010;
215 Keng’ara 2014; Bourguignon and Platteau 2015). However, a donor’s lengthy, donor
216 exclusive and complicated procurement rules and regulations are often incompatible with
217 those of the host country (Botha 2014; Keng’ara 2014).

218 *(iii) Complex loan disbursement processes:* Disbursement of funds is defined as the donor’s
219 release of approved funds to an appointed beneficiary of the borrower—that is, the PIU—for
220 implementation of project activities such as procurements or major transactions (Keng’ara
221 2014). ID project sponsors have complex loan disbursement systems for reviewing the
222 summaries of expenditure submitted by PIUs, which often affect procurement (Bourguignon
223 and Platteau 2015).

224 ***Host Country Issues***

225 The host country is the real owner of an ID project; hence, their role is very important in ID
226 project procurement. Host country issues are related to contextual and institutional problems
227 such as political and institutional capacity, and bureaucracy.

228 *(i) Political instability in the host country:* Political issues in the host country may delay the
229 initiation of ID projects, delay procurement execution, and directly affect project success
230 (Williams 2017). Political instability refers to issues at national and regional levels such as
231 inconsistency in policies, procurement laws and regulations, restrictions on fund repatriations,
232 and import restrictions (Ozorhon et al. 2007). Political instability may result in frequent
233 changes of government policies which adversely affect the success of development project
234 objectives (Ika and Donnelly 2017).

235 *(ii) Government bureaucracy in procurement:* The bureaucratic administrative systems of a
236 host country (approvals, procurement, personnel, and release of funds) may require lengthy
237 interpretation by a project implementation unit to ensure conformity with government
238 regulations (Khan and Rahman 2014). In such bureaucratic systems, every document must
239 typically pass through several stages before final decisions are made. Such processes may
240 slow down the project implementation process and they are also subject to influence by
241 corrupt decision-makers tempted to make decisions in their own favor (Williams 2017).

242 *(iii) Frequent move/transfer of key project officials:* The PIU of the host country government
243 runs an ID project, and the PIU works mostly under a matrix organization (Youker 1999),
244 where there are issues of project and functional managers. Project managers ID project
245 (mostly high-ranking national civil servant), appointed by the government of the beneficiary
246 country, often need to move or transfer to other projects of other ministries (Ika and Donnelly
247 2017). This frequent transfer of key project personnel may slow down essential decision
248 making for a project, as well as slow the procurement implementation process (Ahsan 2012).

249 (iv) *Delay in key staff hiring*: The host or beneficiary country government often tries to start
250 ID project work with the existing high-ranking civil servant (Ika and Donnelly 2017). The
251 host country government may be reluctant to appoint a project manager until foreign funding
252 is completely approved, which may mean a year or more can be lost during key staff hiring
253 (Youker 1999). This delay in key staff hiring of the host country may also hinder the ID
254 project procurement process and increase the cost of the project (Ahsan 2012).

255 ***Project Management Issues***

256 Project management environments in developing countries are often difficult due to poor
257 infrastructure and a lack of resources, which adds to the complexity of these projects
258 (Landoni and Corti 2011). Management issues of the host country are related to
259 organizational project management capacity (Nanthagopan et al. 2016) such as PIU include
260 frequent scope changes, project design changes, improper planning, and a lack of project and
261 procurement management skills at the PIU level.

262 (i) *Frequent scope change*: The beneficiaries of ID projects are often not included in the
263 project design phases, leading to unrealistic project planning that does not match the host
264 country's needs (Ika 2012; Keng'ara 2014). Hence, project scope changes are inevitable and
265 occur frequently. The tendency of the sponsor or host country to frequently widen or change
266 the project—and therefore procurement scope—can create changes to task and resource
267 scheduling which may lead to missed deadlines (Ahsan and Gunawan 2010).

268 (ii) *Improper planning*: The World Bank's post-implementation evaluation reported that ID
269 project management issues are related to a lack of detailed, realistic, and current project plans
270 on schedule, budget, and procurement; and poor or no analysis of major risk factors and
271 relevant contingency planning (Ahsan and Gunawan 2010). The planning of ID projects is
272 typically undertaken and approved by the donor before the borrower obtains the loan for the

273 project, and the project manager is involved in project implementation (Ika and Saint-Macary
274 2012).

275 *(iii) Frequent project design changes:* Frequent changes of project design affect procurement.
276 At the implementation phase, it is typical that project designs require modification due to
277 having imperfect plans and unclear objectives (Kagiri 2013). At the implementation stage, the
278 project manager of an ID project is mostly involved in redefining, reshaping, or “re-planning”
279 the projects (Ika and Saint-Macary 2012; Ika and Hodgson 2014). This is mostly due to ID
280 project managers being uninvolved in the actual planning.

281 *(iv) Incompetent procurement staff at PIUs:* Effective implementation of an ID project
282 procurement plan depends largely on a trained skilled workforce at the PIU level (Appiah
283 2011). Analysts have found that most ID project host countries do not have adequate
284 institutional capacity, competent procurement staff, or personnel trained to plan and
285 implement projects effectively (Golini et al. 2015). In many cases at the PIU level, project
286 procurement staff or authorities do not have the knowledge of donor rules and procurement
287 regulations (Keng’ara 2014).

288 ***Ethical Issues***

289 Ethical issues in project procurement include conflicts of interest, bid shopping, collusive
290 tendering, bid cutting, and corruption in payment processes (Schwartz 2009; TI 2013). The
291 following sub-sections discuss the major ethical challenges faced by ID projects, including
292 bias in developing a procurement plan, unfairness in procurement contracting and bidding,
293 and undue practices in procurement implementation processes.

294 *(i) Bias in developing a procurement plan:* It is important to govern project procurement
295 processes—especially at the plan procurement stage—to ensure accountability and
296 transparency of decision-making processes (Aliza et al. 2011). Many ID projects become
297 prime targets for political manipulation by donors and political leaders who advocate their

298 own projects for political gain (Khang and Moe 2008; TI 2013). In preparing an ID project
299 procurement plan, donor organizations sometimes intentionally put conditions on the
300 procurement of goods and services in such a way that the host country must buy from a
301 monopoly source that may not always be competitive in price (Khan and Rahman 2014).

302 *(ii) Unfairness in procurement contract and bidding:* The process of selecting contractors and
303 awarding ID project contract is often biased and inconsistent (Ahsan and Gunawan 2010).
304 During the tendering and contract awarding stages there may be manipulation of listed
305 procedures on tendering and bidding, kickbacks for supply contracts, politician-led influence
306 on the choice of contractors (Williams 2017). Informal payments are a common practice in
307 developing countries, where firms pay approximately as much as 1% of the contract amount
308 to secure government purchases (Estache and Iimi 2008).

309 *(iii) Undue practices in procurement implementation:* During the contract execution phase, a
310 number of corrupt practices may be evident in ID procurement processes. These include, for
311 example, delivery of inferior materials, lowering of specifications to allow sub-standard
312 construction work, works inspectors and consultants concealing the sub-standard work of
313 contractors, payment of claims which cannot be accounted for, and payment of contingency
314 sums without any tangible basis (Osei-Tutu et al. 2010; Williams 2017).

315 **Research Methodology**

316 Based on a framework developed from the literature, we interviewed three major stakeholder
317 groups. We used the analytic hierarchy process (AHP) to rank the 14 identified procurement
318 challenges and determine the critical challenges to ID project procurement.

319 ***Case Study and Respondent Selection***

320 This study considers three major stakeholders. Each stakeholder group is considered as a case,
321 and under each case we interviewed participants. The stakeholders were the donors, host

322 country governments, and PIUs of ID projects. Participants from each stakeholder group were
323 non-randomly selected from ID projects through the use of purposeful sampling and
324 snowballing techniques (Biernacki and Waldorf 1981). Selection of respondents was based on
325 their position, current role in project procurement, work experience, and background
326 knowledge. We visited websites of donor organizations, government ministries, and major
327 public organizations related to ID project procurement, identified key professionals, and
328 approached them through telephone calls, emails, and the business-oriented social networking
329 tool LinkedIn. Upon confirmation of participation, we sent AHP questionnaires to the
330 participants to familiarize them with the interview questions prior to the structured interviews.
331 We interviewed ID project procurement professionals from major stakeholder groups
332 working in development projects in Bangladesh. After approaching 20 potential participants
333 from the various stakeholder groups, nine respondents confirmed they would participate. A
334 questionnaire was developed to collect respondents' opinions on the relative importance of
335 the various challenge-categories and challenges. Respondents were high- and mid-level
336 procurement professionals who had 6–15 years' experience in the field of ID projects and
337 procurement. All requested anonymity. An overview of the stakeholder groups is provided
338 below, and a summary of respondents' experience and roles is provided in Table 1. For
339 privacy reasons, we have not disclosed the names of any stakeholder organizations.

340 *(i) Host country government:* In this study, the host country government is the GOB. The
341 relevant departments were the Ministry of Planning and the Central Procurement Technical
342 Unit (CPTU). The CPTU exists within the Implementation Monitoring and Evaluation
343 Division of the Ministry of Planning. The CPTU usually conducts procurement monitoring,
344 coordination and management plans for overall sectoral governance.

345 *(ii) Donor organization:* Two major international donor organizations were selected for this
346 study. Their roles were to support GOB projects by providing aid and loans. These donors

347 also helped in capacity building in project procurement. In Bangladesh, both donor
348 organizations emphasized rapid procurement and consultant recruitment, and compliance with
349 financial management requirements. They worked with the GOB to help develop
350 Bangladesh's power and energy supply, education and training institutions, water and
351 municipal services, the rural sector, and access to finance. In Bangladesh, their presence as
352 sponsors of ID projects was very strong. In total, both donors provided around US\$34 billion
353 for ID projects.

354 *(iii) Project implementation unit of ID project:* The PIU selected in this study was one of the
355 major public sector construction organizations of the GOB. The PIU consisted of full-time
356 officials from different sectoral ministries, technical staff members, public sector
357 organizations, and some temporary staff members hired for particular projects. The PIU ran
358 development projects for the GOB, conducted major procurement activities for projects, and
359 liaised with the donor and the GOB.

360 Table 1 about here

361 ***The AHP Model for Ranking Critical Challenges***

362 The AHP is a multi-criteria decision-making approach that helps in breaking down a complex,
363 unstructured problem into its component parts with a hierarchical structure. We used AHP as
364 a suitable approach for identifying the critical challenges of procurement in ID projects.

365 The approach helps decision makers prioritize and rank alternatives through pair-wise
366 comparisons of conflicting objectives based on subjective judgements. Weights or priorities
367 are calculated by the eigenvector method (Saaty 1987). The AHP is also capable of
368 calculating group decision weights by summarizing the geometric means of individual
369 judgement weights (Jaberidoost et al. 2015; Shojaei et al. 2016). The AHP method
370 outperforms the simple rating method, as it helps to ascertain the consistency of

371 responses (Cheng and Li 2001). In AHP, sample size does not matter if the respondents are
372 representative of experts and provide consistent answers (Saaty 1994). Previous research has
373 investigated the sample adequacy issue and concluded that AHP is a subjective method that
374 focuses on specific issues where a large sample is not mandatory (Wong and Li 2008). It
375 appears that while studies employing AHP are usually conducted with few responses from
376 experts who are knowledgeable with the issue under investigation (Lee and Ross 2012), the
377 results of the AHP-based analysis are not influenced by a small sample size (Sambasivan and
378 Fei 2008).

379 The proposed ID project procurement challenge framework was structured hierarchically with
380 qualitative challenge categories, and sub-categories that required decision makers to assign
381 subjective priority weights of judgement. Since AHP is capable of dealing with qualitative
382 criteria with subjective judgements (Subramanian and Ramanathan 2012), we considered it an
383 appropriate approach for identifying the critical challenges to ID project procurement.
384 Moreover, use of AHP with the nine experts opinion are considered appropriate, as the
385 experts were considered to be representative of each stakeholder group, and experts opinion
386 will be checked for consistency.

387 ***AHP Application for Critical Procurement Challenges***

388 We applied AHP to rank the identified critical challenges to ID project procurement. The
389 process of AHP involves the following three steps:

390 *Step 1 – Identification of key challenges and AHP structuring:* The first step involves the
391 identification of the ID project procurement challenges and their categories. Identification and
392 classification of these determinants was accomplished with a literature review. We considered
393 the objective (Level 1), four major categories of challenges (Level 2), and identified 14
394 challenges (Level 3) from the literature. The hierarchical structure is shown in Figure 1.

395 *Step 2 – Pair-wise comparison of criteria:* At this stage, challenges at each level were
396 compared pair-wise in terms of their importance relative to a category in the next-higher level.
397 Starting at the top of the hierarchy and working down, a number of preference (square)
398 matrices were generated in the process of comparing challenges at a given level. Categories of
399 challenges under Level 2 were compared under the objective (Level 1). Afterwards,
400 challenges (Level 3) under each Level 2 category were compared pair-wise in terms of their
401 importance to a challenge at that level. The scale used for pair-wise comparisons in AHP is a
402 one-to-nine scale based on five attributes equal (scale 1), moderate (scale 3), strong (scale 5),
403 very strong (scale 7), and extremely strong (scale 9). For a set of n criteria in a matrix, $(n^2 -$
404 $n)/2$ judgments are needed and the remaining judgments are reciprocals ($a_{ji} = 1/a_{ij}$). We
405 interviewed nine experts from three stakeholder groups. We asked each participant to rate the
406 relative importance of the four major challenge categories, and the challenges in each
407 category. In total, five matrices were generated: one for challenge categories at Level 2, and
408 four for challenges at Level 3 of the problem hierarchy.

409 *Step 3 – Determination of critical challenges and consistency of judgements:* In the third and
410 final step of AHP, the preference matrices generated in Step 2 were translated into largest
411 eigenvalue problems. Afterwards, eigenvalues are solved for unique and normalized vectors
412 of weight to criteria in each level of hierarchy. The overall weights of the challenges were
413 determined by aggregating the weights throughout the hierarchy. The AHP analysis also
414 provided a direct measure of the consistency of judgments elicited by the decision makers.
415 Saaty (1990) proposed a consistency ratio (CR) to describe the degree to which decision
416 makers adhere to the rank order specified. It also measures the extent to which an established
417 preference is kept. A $CR \leq 0.1$ is recommended as acceptable (Saaty and Kearns 1985). If CR
418 > 0.1 , it is suggested that the decision makers re-evaluate their judgments. Homogeneity of
419 determinants/categories within each cluster of determinants, smaller number of determinants

420 in the cluster, and better understanding of the decision problem would improve the
421 consistency index (Saaty 1993).

422 **Results and Analysis**

423 Using the decision-support software *Expert Choice for AHP*, the relative and global priority
424 weights of the challenge categories and challenges were calculated.

425 *Identification of Critical Challenges*

426 (i) *Analysis of local priority weights of challenges under each challenge-category*: Based on
427 the interviews and following Step 2 of AHP, we initially determined the local priority weights
428 of the challenge categories and challenges for each respondent. Afterwards, as per AHP, using
429 the geometric mean (Hsu et al. 2010; Jaberidoost et al. 2015), we aggregated the respondents'
430 local priority weights for the opinions under each group of stakeholder: host country
431 government (Govt.), donor organization (Donor), and PIU (Table 2).

432 From Table 2, we can see that under the '*project sponsor issues*' challenge category, both
433 'Donor' and 'PIU' considered '*lack of co-ordination*' as an important challenge. Their local
434 priority weights were 0.716 and 0.434, respectively. The Govt. stakeholder group considered
435 '*complex loan disbursement process*' to be a major challenge (weight = 0.51). Under the '*host*
436 '*country issues*' category, all three stakeholders identified government bureaucracy in
437 procurement as a major challenge. For the category of '*project management issues*', Donors
438 considered '*incompetent procurement staff at PIU*' (weight = 0.504) as a critical challenge,
439 Govt. stakeholder group respondents considered the most critical challenge to be '*frequent*
440 '*project design change*' (weight = 0.306), while and 'PIU' identified '*improper planning*'
441 (weight = 0.500). Lastly, under the ethical issues category, all three-stakeholder groups
442 emphasized '*undue practices in procurement process*' as a critical challenge.

443 The overall CR for each group of stakeholders shows that respondents' opinions on local
444 priority weights within the group were consistent. For example, the calculated overall CR for

445 the Donor group was 0.08, where the CR was ≤ 0.1 and within the acceptable limit (see Table
446 2).

447 Table 2 here

448
449 (ii) *Determination of global procurement challenges from different stakeholder group*
450 *perspectives:* Using Step 3 of AHP, we further determined the global priority weight and rank
451 order of challenges for each stakeholder group (Figure 2).

452 Experts from the government stakeholder group considered ‘*government bureaucracy in*
453 *procurement*’ (weight = 0.116) as the most critical challenge and placed less importance on
454 ‘*lack of co-ordination between donor and other stakeholders*’ (weight = 0.029). The Donor
455 group considered the most critical challenge to be ‘*incompetent procurement staff at PIU*’
456 (weight = 0.197) and was less critical of the ‘*complex loan disbursement process*’
457 (weight = 0.012). The PIU group considered the most critical challenge to be ‘*undue*
458 *interference in procurement process*’ (weight = 0.193) and a less critical challenge to be
459 ‘*political instability in host country*’ (weight = 0.031).

460 Overall, the global priority weights given to the challenges by each stakeholder group were
461 very similar (Figure 2). On many issues, respondents from the different stakeholder groups
462 came up with very similar opinions. The only exceptions were for the challenges of
463 ‘*incompetent procurement staff*’ and ‘*donor’s complex loan disbursement process*’. The
464 Donor group considered the ‘*incompetency of procurement staff*’ in Bangladesh as an
465 important challenge. On the other hand, the GOB group considered ‘*donor’s complex loan*
466 *disbursement process*’ as a challenge in implementing ID project procurement in Bangladesh.

467 Figure 2 here

468

469 (iii) *Rank order of challenges*: To determine an aggregated overall ranking of the challenges
470 for all the stakeholder groups together, we considered the geometric mean of the nine
471 individual respondents' local priority weights (Hsu et al. 2010; Jaberidoost et al. 2015) given
472 to all the challenge categories and challenges. Details of calculated local priority weights of
473 all challenge categories and challenges are shown in the hierarchical model of Figure 3.
474 Subsequently, following Step 3 of AHP, we calculated the global weight and priority rank
475 order of challenges (Figure 4). The overall CR of judgements are calculated which is
476 consistence as $CR < 0.1$.

477 Figure 3 here

478 With respect to goals, an overall rank order of 14 critical challenges was obtained (Figure 4).
479 The top seven critical challenges were: improper planning (weight = 0.120), undue practices
480 in procurement process (weight = 0.116), government bureaucracy in procurement (weight =
481 0.096), incompetent procurement staff at PIU (weight = 0.088), lack of coordination between
482 donors and other major stakeholders (weight = 0.083), frequent project design change
483 (weight = 0.082), and unfairness in procurement contracts and bidding (weight = 0.064).
484 Whereas, the challenges given lowest priority were: bias in developing procurement plan
485 (weight = 0.034), political instability in host country (weight = 0.034), and a donor's complex
486 loan disbursement process (weight = 0.045). The results of the AHP analysis also show that
487 the respondents' opinions were consistent in determining critical procurement challenges
488 ($CR = 0.01$).

489 Figure 4 here

490 ***Sensitivity Analysis of the Rank Order of Challenges***

491 Sensitivity analysis was used to investigate whether small variations (e.g. a 10% increase) in
492 the priority weight assigned to a challenge-category would affect the rank order of the major

493 challenges. We investigated the impacts of changes of the priorities of two major challenge-
494 categories (project management issues and ethical issues) on the top-seven critical challenges
495 (Table 3).

496 With a decrease (10%) in priority weight from 0.289 to 0.26, three challenges (government
497 bureaucracy in procurement, frequent project design change, and unfairness in procurement
498 contract and bidding) remained in their initial position. The other four challenges only
499 changed their rank order. Overall, there were no new challenges within the top seven ranks.
500 With an increase (10%) in priority weight of the ‘*project management issues*’ (from 0.289 to
501 0.317), the top-seven challenges remained the same. Four challenges remained in their initial
502 positions, but ‘frequent project design’ moved from rank 6 to 5, and ‘lack of coordination
503 between donors and key stakeholders’ moved down from 5 to 6.

504 By changing the priority weight of the ‘*ethical issues*’ challenge-category, we further
505 investigated the sensitivity of the rank order of the initially-determined challenges. Table 3
506 shows that changing the weight of ‘*ethical issue*’ from 0.281 to 0.252 (a 10% decrease), had
507 no impact on the ranks of the initially-determined top-six challenges. The only impact we
508 observed on the rank order was for ‘*unfairness in procurement contract and bidding*’, which
509 moved down to rank 11 from rank 7; and the ‘*frequent scope change*’ challenge, which
510 moved from 8 up to 7. Changing the weight of ‘*ethical issue*’ (10% increase) from 0.281 to
511 0.309 only had a very slight impact—only the ‘*improper planning*’ challenge increased from
512 rank 2 to rank 1—while the rest of the rank order remained unchanged. However, the top
513 seven challenges remained the same.

514 Sensitivity analysis shows that the identified critical challenges were robust to changes in the
515 priority weights assigned to the major challenge-categories of ethical issues and host country
516 issues.

517

519 **Discussion**

520 Through AHP analysis we identified seven most critical challenges of ID project procurement.
521 These seven challenges are mainly from three broad categories: project management, host
522 country bureaucracy and ethical issues. In the following we discuss these issues from the
523 contextual perspective and compare with existing literature.

524 Respondents from each stakeholder group identified improper project planning as a critical
525 issue in ID project procurement in Bangladesh. In Bangladesh, ID project plans are usually
526 made by sectoral ministry in line with donor's criteria and requirements of project grant or
527 loan. Planning for ID projects as well as project procurement is undertaken long before the
528 project implementation phase, where project manager is usually not involved. Moreover,
529 beneficiaries of the projects are also not involved at planning stage. This front-end planning is
530 often based on unclear scopes and objectives. Planning based on unclear scopes and
531 objectives leads to series of changes by host country or sponsor in implementation stages
532 which may cause delay or budget overrun or scope creep in later stages of the project. Like ID
533 project procurement, mega projects also consider improper project planning as a possible
534 challenge of poor projects performance (Carlos and Ashish 2017). Perhaps, ID project
535 planning methods can be changed with the option of other planning methods such as rolling
536 wave or adaptive planning (PMBOK 2017).

537 The second most important challenge of ID project procurement is identified as the undue
538 practices in the procurement implementation process which is influenced by host country
539 business culture or environment. During procurement implementation in Bangladesh, undue
540 practices include approving defective or non-existent work or out of scope activities or
541 fraudulent performance, and in paying a witness, expert, or judge in dispute resolutions in
542 order to give a favourable opinion or verdict. The socio-cultural environment in developing
543 countries like Bangladesh is often challenging, and many ID projects need to deal with these

544 undue practices in procurement, which makes the implementation of ID projects difficult.
545 Previous research on construction development projects in least-developed countries also
546 emphasise that undue practices in the implementation phase can lead to poor performance or
547 inefficiency of development projects, and seriously impact the host country's aid utilisation
548 capacity and aid effectiveness (Ngacho and Das 2014).

549 The third most important challenge related to ID projects procurement is government
550 bureaucracy in procurement which is contextual to the host country. In ID project
551 procurement, bureaucratic systems can lead to procurement delay due to lengthy
552 interpretation procedures to conform to government regulations, governmental interference in
553 recruiting consultants (or consulting firms), procedural rigidities of procurement and funds
554 release, lengthy administrative process in obtaining multiple-level government clearances,
555 out-dated rules and regulations, and lack of knowledge of procurement processes (WB
556 2013a). These government bureaucracies consume extra resources in terms of time and
557 money. Previous literature identifies that the bureaucratic administrative systems of a host
558 country government may significantly influence project delivery performance (Kagiri 2013;
559 Carvalho et al. 2015). However, it is hard to change the existing bureaucratic system of a
560 country. Host country government systems like Bangladesh work at their own speed, and
561 project procurement-related decisions are no exception.

562 The fourth most important issue identified in this research relates to incompetent procurement
563 staff at project implementation unit, which is due to lack of organizational procurement
564 related capacity in host country. ID project procurement staff at the PIU level require the
565 skills for dealing with donor rules and regulations, in preparing documents related to project
566 procurement, in handling special contracts that required distinct equipment, and in
567 international supplier involvement or the procurement of items from international suppliers.
568 In ID projects, in the absence of a specific procurement officer, other available existing

569 professionals or government officials on deputation on an ad-hoc basis look after procurement
570 activities. Because their core roles are not project procurement, they often lack the necessary
571 skills and experience to process procurement activities in many ID projects. Hence, to manage
572 ID project procurement properly, host country (such as Bangladesh) needs a skilled and
573 experienced procurement workforce. Our findings on importance of competent procurement
574 professionals for ID project procurement corroborates the observations in construction
575 projects in developing countries (Banihashemi et al. 2017) and in public sector projects
576 (Mahamadu et al. 2018).

577 The lack of co-ordination between ID project donors and key stakeholders is identified as the
578 fifth most important challenge of procurement. ID projects require substantial procurement of
579 goods and services and there are many stakeholders involved in procurement decision
580 making. Major stakeholders of ID projects include donors of the project, state and local
581 government authorities, PIU procurement team, and relevant public-sector institutions. These
582 stakeholders are involved in many decision-making on ID project procurement issues such as
583 tender preparation, supplier or consultant selection, supplier evaluation, contract awards, and
584 disbursement of allocated funds for procured goods or services. The World Bank project
585 completion report identifies that a lack of communication between stakeholders creates
586 serious points of contention among PIU, donors, and the host country, and delays
587 procurement and funds release (WB 2012; WB 2016). The academic literature also shows that
588 a collaborative relationship for co-ordination in decision making between ID project donors
589 with major stakeholders is important to improve the effectiveness and efficiency of
590 development project planning and delivery (Bourguignon and Platteau 2015; Parker et al.
591 2018).

592 We observe that frequent project design change is the sixth most critical challenge for ID
593 project procurement. In ID projects in Bangladesh, frequent project design changes are the

594 norm. Changes in project design are perhaps an effect of improper project scope planning. ID
595 project are designed on unrealistic ground (Mishra 2016). The scope may be unclear, causing
596 later plans to become unrealistic and requiring project design change in the implementation
597 phase. Moreover, project managers in ID projects are only involved in project execution and
598 not in planning. Once a project manager is hired, one of the major tasks of ID project
599 managers is to work on changing project design or subsequent change management activities.
600 Previous research ascertains that during the project implementation phase, changes in design
601 are common in infrastructure development projects in developing countries like Kenya
602 (Kagiri 2013).

603 Unfairness in procurement contract and bidding is the seventh most critical challenge of ID
604 project procurement. These undue practices may include winning a project contract from the
605 project owner's representative, illegitimate payments made to a project designer who then
606 designs a project in such a way that inopportunately favours one bidder over others, bids
607 accepted with faulty or forged documents, single sourcing of suppliers rather than putting a
608 contract out to competitive tender and removing the potential for a conflict of interest, poor
609 advertising of calls for bids or tenders, short bidding periods, poor specifications, non-
610 disclosure of selection criteria, contract awards by lottery, negotiations with bidders and re-
611 bidding without adequate grounds, and corruption involving the donor agency (WB 2013d;
612 WB 2013c). These undue practices can disrupt the procurement implementation process, lead
613 to poor project performance, and seriously impact the country's aid utilization capacity (Ika
614 and Donnelly 2017; Williams 2017). For example, due to unfair practices in the bidding
615 process, Bangladesh's spending for each kilometre of road track is higher than in China
616 (Bdnews24.com 2017).

617 Summarizing the above discussion on critical challenges of ID project procurement, we
618 proclaim that major challenges are particularly related to project management issues

619 (improper planning, incompetent procurement staff and frequent project design change), and
620 ethical issues related to national environment (undue practices in procurement implementation
621 and unfairness in procurement contract and bidding). Our findings are comparable with the
622 findings from a cross country and cross industry research conducted on non-ID projects in
623 Brazil, Chile and Argentina (Carvalho et al. 2015). Carvalho et al. (2015) emphasizes that for
624 project performance, national environment is more important than project management
625 methodology. In ID project procurement research, we identify that project management issues
626 such as improper project planning need to be addressed as a first priority. We contend many
627 ID project procurement issues can be resolved by placing greater emphasis on proper project
628 management practices, such as the proper planning, coordination between stakeholders, and
629 cultivation of procurement management skills. In our research, ethical issues are also
630 identified as important issues. ID project procurement is conducted in a developing country
631 environment. In developing countries weak institutional culture (incorporating ethics, shared
632 understanding, regulations, and norms) can lead to weak enforcement of procurement rules
633 and codes of conduct. We contemplate that ethical issues in ID project procurement may be
634 resolved after improving the project management issues.

635 **Conclusions, Limitations, and Future Research**

636 This study identifies critical challenges to ID project procurement in Bangladesh from major
637 stakeholders' perspectives. Amongst the major procurement issues, the most critical challenge
638 is related to improper project planning. Six other critical challenges were identified as: undue
639 practices in procurement implementation, government bureaucracy, inexperienced project
640 procurement staff, a lack of coordination between donors and other major stakeholders,
641 frequent project design changes, and unfairness in procurement bidding and awarding of
642 contracts. These critical challenges are robust to changes in the priority weights of the
643 challenge-categories.

644 This study is one of the first attempts in the ID project literature to conduct an in-depth
645 analysis of unexplored procurement issues of ID projects from a developing country
646 perspective. The theoretical contribution of the research is the development a comprehensive
647 framework based on contextual, institutional, and organisational issues of projects. The
648 framework is detailed with four challenge categories and 14 challenges. Most of the
649 challenges are identified from the ID project literature from different country contexts. The
650 categories and many of the identified challenges are common in ID projects and in public-
651 sector development projects in other countries. Hence, the framework can be applied to
652 identify the major challenges of ID project procurement issues in Bangladesh and in other
653 countries which receive substantial foreign donations to complement development activities
654 or aid projects. The findings from this study advance the understanding of ID project
655 procurement issues. Our ranking of challenge factors may help donor agencies or multi-lateral
656 donor organisations (such as the World Bank, the Asian Development Bank, and European
657 Union, Australian Aid, the US Aid) to work with host country to resolve major procurement
658 issues and improve appropriate risk allocation or measures before designing or approving
659 funds for ID projects.

660 Despite the contributions mentioned, this study has some limitations and hence has room for
661 improvement. The study takes into consideration procurement issues of all types of ID
662 projects such as size of project, or type of project (such as infrastructure development project,
663 social development projects, environmental sustainability projects). There may exist some
664 specific challenges for a specific type of project, hence in the future this research can be
665 extended in this direction. This study used AHP to identify critical procurement challenges
666 from three major stakeholder group's perspectives. The number of respondents used was
667 justifiable for AHP. However, there might be some error in judgment in choosing non-
668 randomly selected experts from ID projects through the use of purposeful sampling and

669 snowballing techniques. Researchers believe that they obtained a representative sample by
670 using sound judgment. Moreover, the use of purposeful sampling to identify experts from
671 three stakeholder groups may prove to be effective as there are limited numbers of experts in
672 some stakeholder groups. The use of snowballing techniques helps to identify the possible
673 respondents or participants otherwise it is difficult to identify participants in developing
674 countries. Lastly, we identify and rank order the critical challenges of ID project procurement,
675 and further research can be conducted to investigate how the identified critical procurement
676 challenges influence ID project performance.

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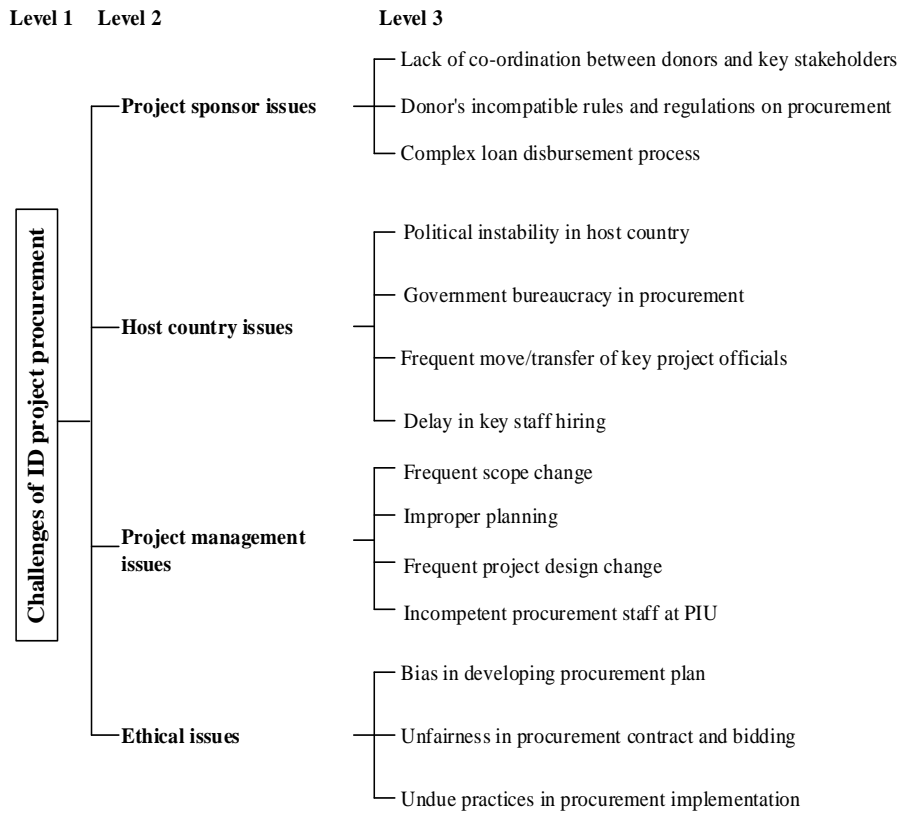
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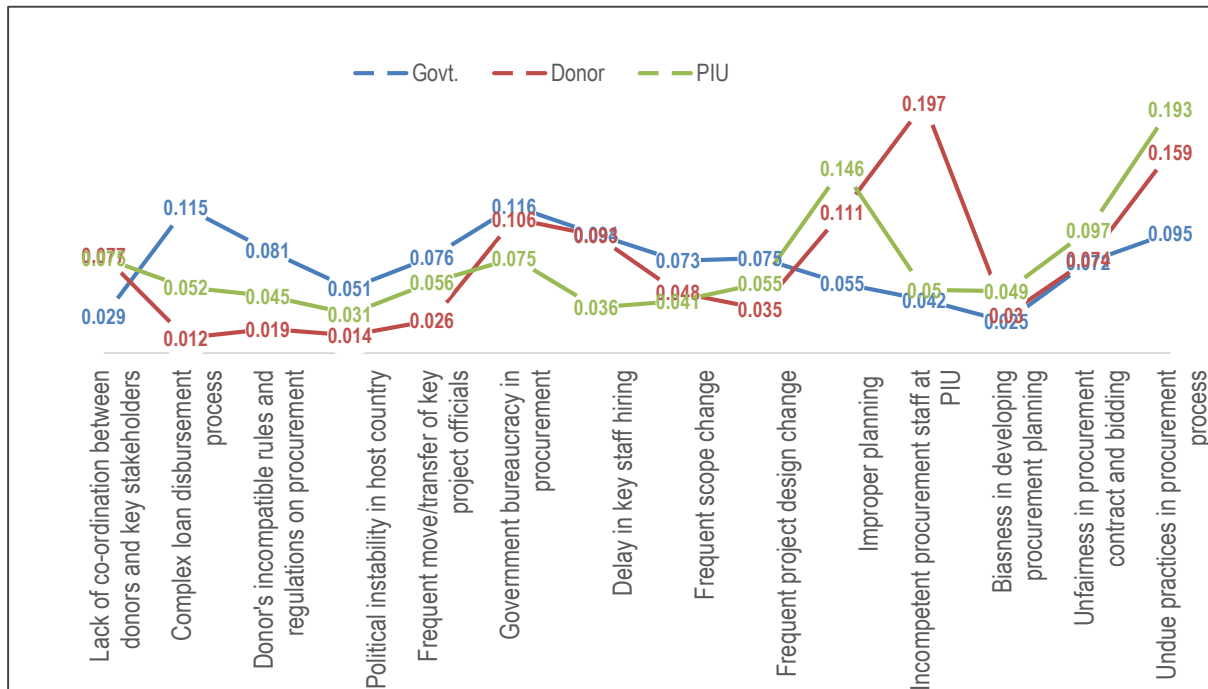
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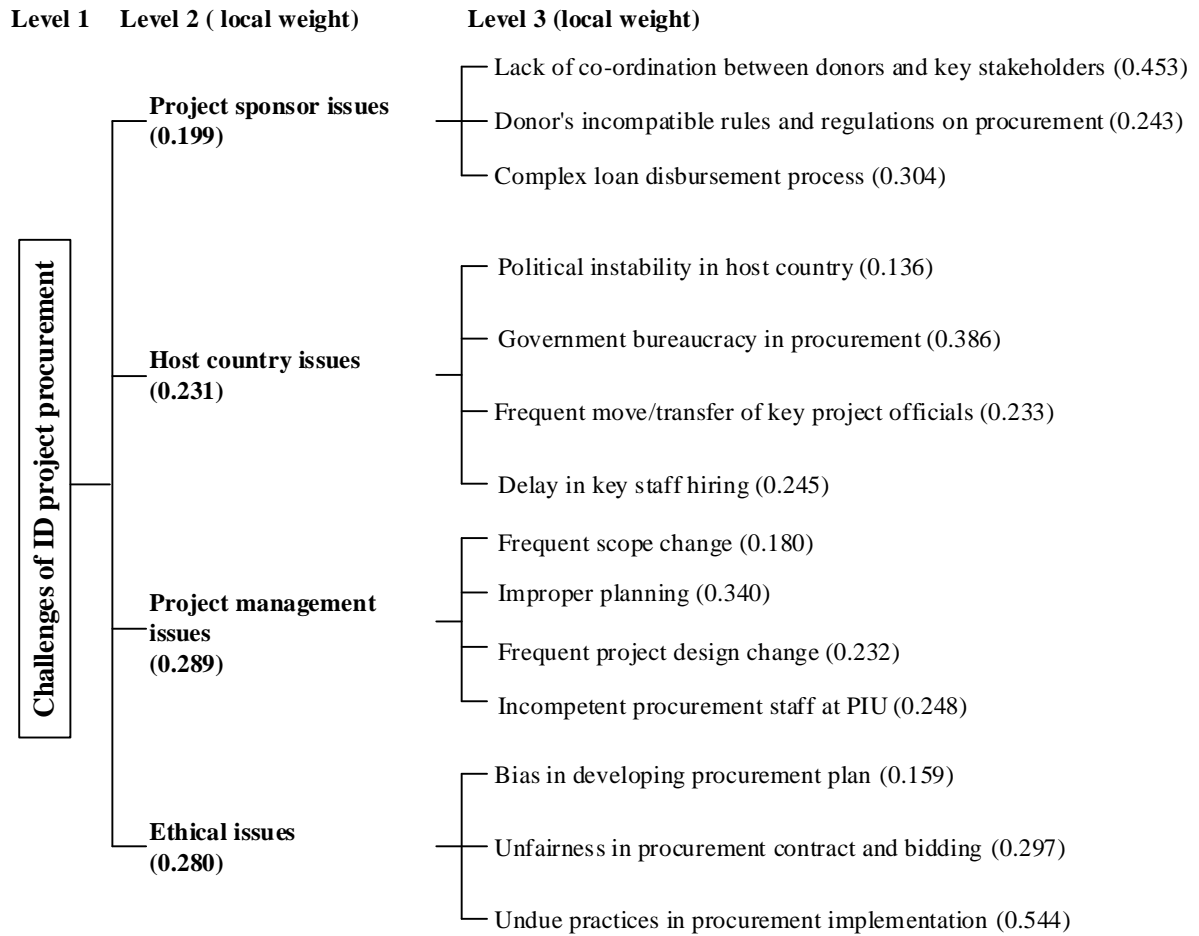
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867 **Figure 1:** ID project challenge categories and challenges in Analytical Hierarchy Process



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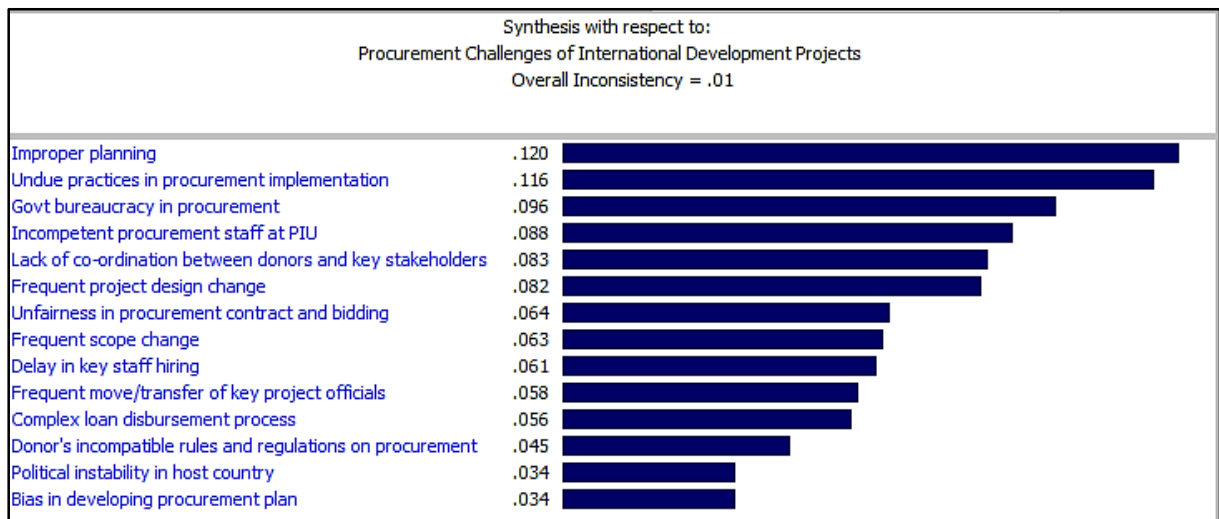
869 **Figure 2:** Global priority weights of critical challenges for each stakeholder groups



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871 **Figure 3:** Local priority weights of the procurement challenge categories (L- means local
872 weight)

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875 **Figure 4:** Overall priority ranking of the procurement challenges (CR = 0.01)

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Table 1: Job titles and years of experience of the participants interviewed

Respondents	Stakeholder group	Position, experience and roles
Respondent 1		Project procurement specialist of a renowned international donor organisation/bank, more than 6 years' experience in project procurement, and member of the Chartered Institute of Procurement and Supply (CIPS).
Respondent 2	Donor	Senior procurement specialist and contract administration professional of a donor organisation/bank, more than 10 years' experience in development project procurement, and member of CIPS.
Respondent 3		Procurement specialist of a donor organisation/bank, more than 10 years' experience in developing international projects.
Respondent 4		Five years' experience in overseeing procurement policy development for the government sector. Currently working at Ministry of Planning and overseeing development project budget planning.
Respondent 5	Host country government (Govt.)	Government bureaucrat with around 20 years' experience in developing/overseeing development projects and relevant procurement activities.
Respondent 6		Assistant project director, working for Ministry of Planning, more than 7 years' experience in dealing with development project from host country government perspective.
Respondent 7	Project implementation unit (PIU)	Executive engineer and procurement specialist of a government construction organisation. More than 16 years' experience. Oversees many development projects in terms of developing project scope, tender evaluation, selection of suppliers or consultants, and performance monitoring.

Respondent 8

Retired chief engineer and procurement consultant. More than 25 years' experience in development projects run by Government of Bangladesh in conjunction with other donor organisations.

Respondent 9

Retired chief engineer and procurement consultant, extensive experience (more than 26 years) in managing international development projects from PIU.

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Table 2: Relative weights of procurement challenges identified by different stakeholders

Major challenge category	Sub-categories of challenges	Stakeholder		
		Govt. (3 respondents)	Donor (3 respondents)	PIU (3 respondents)
CR		0.080	0.080	0.090
Project sponsor issues				
	Lack of co-ordination between donors and key stakeholders	0.132	0.716	0.434
	Donor's incompatible rules and regulations on procurement	0.357	0.175	0.265
	Complex loan disbursement process	0.510	0.108	0.301
Host country issues				
	Political instability in host country	0.152	0.060	0.157
	Government bureaucracy in procurement	0.345	0.443	0.379
	Frequent move/transfer of key project officials	0.224	0.109	0.284
	Delay in key staff hiring	0.279	0.388	0.181
Project management issues				
	Frequent scope change	0.298	0.123	0.141
	Improper planning	0.224	0.285	0.500
	Frequent project design change	0.306	0.089	0.181
	Incompetent procurement staff at PIU	0.172	0.504	0.170
Ethical issues				

Bias in developing procurement plan	0.131	0.115	0.145
Unfairness in procurement contract and bidding	0.375	0.280	0.287
Undue practices in procurement implementation process	0.494	0.606	0.569

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Table 3: Sensitivity analysis of ID project procurement challenges

ID project procurement challenges	Initial ranking	New rank order of challenges for change of weight for 'project management issues'		New rank order of challenges for change of weight for 'ethical issues'	
		from 0.289 to 0.260 (10% decrease)	from 0.289 to 0.317 (10% increase)	from 0.281 to 0.252 (10% decrease)	from 0.281 to 0.309 (10% increase)
Improper planning	1	2	No change	No change	2
Undue practices in procurement implementation	2	1	No change	No change	1
Government bureaucracy in procurement	3	No change	No change	No change	No change
Incompetent procurement staff at PIU	4	5	No change	No change	No change
Lack of co-ordination between donors and key stakeholders	5	4	6	No change	No change
Frequent project design change	6	No change	5	No change	No change
Unfairness in procurement contract and bidding	7	No change	No change	11	No change
Frequent scope change	8	10	No change	7	No change
Delay in key staff hiring	9	8	No change	8	No change
Frequent move/transfer of key project officials	10	9	No change	9	No change

Complex loan disbursement process	11	No change	No change	10	No change
Donor's incompatible rules and regulations on procurement	12	No change	No change	No change	No change
Political instability in host country	13	No change	No change	No change	No change
Bias in developing procurement plan	14	No change	No change	No change	No change

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