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Uniqueness, Complexity And Risks in Construction Projects: Implications for small/medium Scale Contractor Development Programmes of South Africa

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ABSTRACT

Most small/medium contractors fail because they lack adequate capacity to handle the uniqueness, complexity and risks in contracting. This paper explores the implication for emerging small/medium contractor development in South Africa. Programmes are examined; literature reviewed; established small/medium contractors are engaged in discussion with schedules of questions. Found: on mere paper drawings intangible project with substantially variable components that must all come to tangibly definite whole in specific period through some unstable construction process, is at contractor's risk given definite price that hardly changes. Government departments provide projects, develop contractors, and transfer risk to contractors that lack required capacity to carry such risks. The arising failure implies that programmes must provide emerging contractors with capacity required to handle the risks; lesson can be learnt from how established small/medium contractors handle such risks.

Keywords: Construction, Uniqueness, Complexity, Risk, Contractor, Capacity

1. INTRODUCTION

For the past decade some government building and civil engineering construction projects are being used to support emerging small/medium

black contractors in order to enable them participate in South African construction industry (DPW 2005). However, huge failure rate is being witnessed due to lack of adequate skill/resource capacity of these contractors to handle the unique, complex and risky nature of construction contracting (CIDB 2005).

But the need to remedy socio-economic imbalances makes still makes contractor development attractive. Again, there exists a general understanding that small enterprises, including small contractors, contribute immensely to economic development of countries (SBA, www.sba.gov; ILO 1987; and Croswell and McCutcheon 2001). But DPW (1997) states that contractor development in South Africa is needed for the following reasons:

- They can be powerful tool to create jobs for the 42% national unemployed
- The relatively low skills/resources required at this scale can enable a large number of functional small/medium black contractors to enter and help to decentralize the construction industry historically dominated by established white contractors; it will also develop the platform for growth and redistribution of wealth in South Africa.

These seem to be the motivating factors, but before discussing the complex situation that constrains them, it will be necessary to look at the opportunities for such development.

1.1 Opportunities/avenues for contractor development

Over the years South African construction industry has been attracting large investments. CIDB (2004) states that the combined annual public and private sectors construction expenditure amounts to R57Billion: government sector invests 43% representing R24.5Billion, while private sector invests 57% representing R32.5Billion. In its vigorous drive to use such investment to remedy apartheid legacy, government expects that the emerging black contractors will execute about 80% of its projects, while also taking about 50% of the private sector projects. This expectation amounts to about R35.85Billion representing 63% of the whole. And DPW has recently indicated an increase of the annual amount to R100Billion due to the massive construction required for the hosting of the 2010 FIFA World Cup; the emerging black contractors' share of the projects is also expected to increase in the same proportion. Based on the large investment opportunities, government considers the construction sector an appropriate avenue for the implementation of emerging black small/medium contractor development.

The following are some of the black emerging small/medium contractor development programmes being implemented: Black Prime Contractor Initiative, 1995-2002; Emerging Contractor Development

Programme, 1997-2005; Gundo Lashu, 2002-2005; and Expanded Public Works Programme Contractor Learnership, 2004 till date. These are based on mentorship and structured joint venture partnership coupled with some projects and supports. However, indicators show that their performances are poor due to capacity and operational problems.

1.2 Problems facing the emerging small/medium contractor development

The complex and risky nature of construction contracting creates some seemingly insurmountable problems to small contractor development. Edmonds and Miles (1984); Austen and Miles (1987); ILO (1987); Ofori (1991); Croswell and McCutcheon (2001); Kwesiga (1996); Ssegawa (2001); (Mphahlele (2001) mention that these problems centre on the small/medium contractor's lack of the adequate technical, financial, contractual, and managerial skills required in project execution; contractor's inability to employ competent works and to get continuous work. And there is lack of adequate training and support systems to assist them. These problems lead to poor performance of the South African contractor development programmes.

1.3 Some indicators of the poor performance

Statistics SA (2005) reports that from 1995 to 2005 about 5907 construction companies were formally liquidated. CIDB (2004) states that much more are dormant or out of business but are not yet formally liquidated. NEDLAC (2004) reports that about 90% of the emerging black contractors fail within the 1st year. NALEDI/SAFCEC (2003) report that only 1.4% of the emerging black contractors survive the first 5 years. CIDB, DPW, CETA (2005) report that 98% of contractors registered in Limpopo Province and Ethekwini Metro Council is black owned by 51% share, but going by financial capability, only 11% is actually black owned, with tendering capability of just R0.1Million and less. Only 2 black contractors have tendering capability of R5Million. And an on-going nationwide registration of contractors indicates this same trend. Department of Public Works reports that of some small/medium contracts ranging from R10Million and above, totaling R2.5Billion it awarded in 2003/4 - 2004/5 fiscal years, R531Million representing 21% of the total went to established white contractors. But about 34 established white contractors presented themselves in bogus joint venture partnerships where they fronted some black partners and took another R1.3Billion, which is 52% of the total (www.engineeringnews.co.za, 2005).

As these indicate that the established white contractors are using their competitive edge to take huge chunks of the small projects reserved

for the emerging black contractors, it may also indicate that the black contractors have not yet developed the competence required to handle the complex and risky nature of project execution. The challenge is therefore to find ways to equip them with the necessary skills/resource capacity.

1.4 The position of this paper

It seems that the programmes concentrate on making some projects available to the emerging contractors packaged in mentorship or structured joint venture partnership with established contractors. Evidence suggests that these are not enough because they neither change the unique, complex and risky conditions of contract that govern project execution nor provide the emerging contractors with adequate skills/resources capacity required Egbeonu (2006). Therefore there is need to examine the unique, complex and risky nature of construction contracting in order to appreciate the implications for the contractor development programmes. This will help to determine who should bear the risks and why the emerging contractors must be properly trained and adequately resourced to carry the risks in their business.

2. THE UNIQUENESS, COMPLEXITY AND RISKS

Many authors who mention the problems facing small contractor development also agree that construction contracting is unique, complex and risky due to its delicate and precarious relationship between the client, consultant and contractor, which manifests mainly to the contractor's detriment at the project winning and execution stages (Mccutcheon 1979; Miles 1980; Austen and Neale 1984; Austen and Miles 1987; ILO 1987; Hems and Miles 1987; Ofori 1991; Kwesiga 1996; Croswell and McCutcheon 2001).

However, Ssegawa (2001) explores the uniqueness of construction from financial perspective by comparing some common characteristics between construction and manufacturing firms. Ssegawa concludes that construction operates on delicate and risky financial methods that complicate its operation, which is different from much more certain and stable financing methods obtainable in manufacturing.

As the above is a view generated from comparing manufacturing with construction, McCaffer and Baldwin (1995) state the risk mostly lies in the inability to make an accurate project cost estimate. However, Tyler and Smith argue in Smith (1995) construction is unique, complex and risky compared to other businesses because in other businesses one will know the cost of what one wants before buying it; but construction is the only situation where the client will know what he wants, but will need the work to be designed and specified before he can know what it will actually cost

through a tender submitted by the contractor that will execute the work. Bower in Smith (1995) argues that the client's estimator might use rates and prices of items tendered for a similar project to estimate an idea of what a project may cost, which will help the client to judge prices tendered by contractors. But such estimate is always very inadequate because the client's estimator does not have the knowledge of construction process that captures contractor's operational costs. Bower therefore states that it is only a contractor's estimators that can possibly produce a viable price of a project, and not the client's estimator.

However, Marks *et. al* (1978) state that the difference in complexity between civil engineering and building contracts is beyond the methods of measurement and contract conditions that are usually similar or slightly different; the actual difference lies with the fact that physical environment has much more compelling effect on execution of civil engineering works than in building works; and such compelling effect presents possibility of operational, contractual and safety hazard more in civil than in building works. At this juncture it might be necessary to trace the evolution of this complex and risky situation.

2.1 Evolution of the unique complex and risky situation

In tracing the evolution of this unique, complex and risky formation, Edmonds and Miles (1984) state that the West formed this system during the Industrial Revolution era in Europe and unthinkingly transferred it to the developing countries during colonial times, where it up to date continues to impede the development of local contracting capacity. Towards the end of 18th century, Master Builder suddenly emerged and offered single contract with a price for the work that used to be done by groups craftsmen, artisans under the control of Master Masons. This was opposed but the client saw its attractiveness and accepted it because he would no more make separate contract with each Master Mason. This created a new contract condition that grew in strength. Shortly, 'General Contractor' emerged to undertake and complete the whole contract at a given price; this brought a new and critical implication for some institutional and operational framework: large amount of money began to be staked on projects; bad contract can now lead to contractor's bankruptcy; profit can be determined through quality specification; and a loosely worded contract document can spin huge money in the sense that the shrewd contractor can bid low but must have the ability to make up the difference through variation and extras as project progressed. Open tender system arose; contractors became aggressive in protecting their interest; and clients used engineers/architects to spell out greater detail of work scope and technical documents for project supervision. The immediate consequence of this was that the client wants the most work at the least price, while the contractor wants to do the least work at the highest price. This conflict of interests led to documents

governing the project's technical and contractual details becoming more legalistic and bulky, with professional bodies emerging to regulate practices.

In contrast with other industries, construction contracting is unique, complex and risky because of its split between responsibilities for planning/design and construction. For instance, the manufacturer has direct contact with the consumer and can fail or succeed based on his assessment of the consumers' needs and price they are prepared to pay. But in construction the client hires engineer/architect to design a project, which is handed over to the contractor to construct; then the architect or engineer controls the contractor through supervision. This situation gives an inferior position to the contractor, but it is believed that the contractor can use his formidable practical financial and contractual skills to overwhelm the power of the architect/engineer. As this is hardly the case, it became clear that the split in responsibilities denied the client the opportunity of benefiting from the contractor's skills at the all-important planning/design stage.

However, at the planning/design stage, the client and his advisers – engineer/architect – had eagerly piled up almost all the risks in the construction process on the back of the contractor and had worded the contract document accordingly. The contractors accepted it on the realization that risk transference must be paid for, and the person undertaking the bulk of risk can make big money by sharing it with subcontractors. But this requires expertise in managing the subcontracted network.

In the bid/win situation, the contractor will have to bid lowest in order to win a project amidst competitors; and to make profit requires that the contractor must operate in the pressure of completing work at the shortest possible time with the least possible resources. This is contrary to what obtains in manufacturing where profit depends on quality and quantity of product sold.

Edmonds and Miles state that this framework was not imposed from outside, it rather gradually appeared responsively to accommodate events within the development of the industry in Europe rather than constrained it; it evolved to suit the British contractors and professionals who had dominated their market and had gained foothold in other countries. Edmonds and Miles therefore wonder whether practices in this framework will be suitable to small contractors in the developing world as follow:

- There is practice of piling-up all risks on the contractor with the expectation that he should handle them; but the applicable conditions of contract do not make any exemption for the new small/medium contractor who lacks the capacity to do so.
- The project is made in volumes of legalistic documents of technical specifications and contract condition that is costly, difficult to understand, with sophistication not justified by such small work of

little or no profit. This may be easier for established contractor but too difficult for new ones

- Bill of Quantity and estimates strangely splits projects in items, unit, quantity, rates, and prices; this looks attractive to accountants, quantity surveyor, architect and engineer, but is of little use to the constructor's method of operation.
- Calculating of unit costs is artificial since its optimum project utilization depends more on overheads' rate of placing quantity over the structural layout
- The bidder may have an idea of work volume from item quantity, but must take account of consumption of such items and other resources at different work stages and periods that usually vary the estimated total project cost
- Price of plant, materials and labor needs are more hard to estimate: mixers, dumper, gangs may form fractions of bill item but their cost are recovered bits on work progress
- Quantity Surveyor or estimator costs straight from A to B, but the contractor works through other different things before finishing the A to B. This kind of change adds costs to what has been smoothly estimated on papers.
- Technically proficient contractor, who has a good idea of project resources mix can randomly distribute items; he must smartly contemplate quantity increase, disaggregate and spread prices, outguess the designer by inflating unit prices, and use some front-loading to boost cash-flow. This guess-game can be profitable but can also be hazardous to bidder with poor manipulative skills.
- Contractor puts up about 10% performance guarantees, insurances, and proof of all-financial preparedness before starting work; the requirement that contractor should own a large stock of equipment and machinery contradicts the policy of employment creation through labor-based technologies. However, contractor's difficulty in providing the guarantee, which is rarely extended, increases cost and affects contract validity period. Most small contractors fail to pass this stage.
- Lowest bid/win system expects client to get good value for money; contractor to make profit by limited overhead. But it does not happen like that.
- After surviving the tender/win huddle, other complex problems arise which involves technical and managerial issues relating to programming, scheduling, task designation and supervision. These can overwhelm contractors who operate with poor capacity, but are usually dwarfed by more complex problems generated by the myriad contractual and financial constraints from client's cumbersome, illogical, unhelpful administrative procedures within work inspection, instruction, acceptance and payment process orchestrated by the principal agent's functions.

- The most difficult problem may not lie with putting price on work and the actual work execution; it actually lies in the timing of payment receipts. Contractor usually makes heavy initial cost investment, but must minimize the time gap between cumulative expenditure and income in order to remain afloat. But payment is usually delayed.
- Normally contractor must be smart enough to front-load costs in order to keep a healthy cash-flow over project duration. But, this is not always allowed small contractor because it may not comply with lowest bid/win system, coupled with lack of trust. This stifles cash-flow leading to long delay and sudden collapse.

In all, Edmonds and Miles state that experience shows that the Bill of Quantity/Estimate system coupled with its contract finance, execution, acceptance, and payment system might be good for the client/designer/estimator, but is too costly, burdensome, and risky for small contractors in the developing countries who tend to lack the skills and resources to handle it. This might be suitable to British and European contractors who evolved it, but quite alien and unsuitable to contractors in the developing countries considering capacity issues.

3. SOME CONCERNS REGARDING THE SITUATION

However, it is stated that the unique, complex and risky situation is not suitable to small/medium contractors in the developing countries, but the practices and contract conditions formed from the situation are being implemented in such developing countries to the detriment of contractors in such countries.

From the evolution account, it could be observed that the contractor contributed in creating this situation by presenting the 'one-price' for the whole project. The client seemed to have quickly exploited the situation by cleverly transfer all the risks to the contractor; and again, the contractor accepted it hoping it will increase his profit chances. But on the contrary, the contractor suddenly realized the dilemma he helped to evolve. It could be observed that discusses on the uniqueness and complexity are centered on the fact that almost all the risks are heaped on the contractor, which leads to lots of disputes that either impedes the contractor or results to total collapse. This leads to calls for reform.

Marks *et. al* (1978) state that tendering is actually a test of the contractor's skills and ability to put a price on all the managerial and operational risks including the inevitable vagaries of site and weather conditions in the project execution. Therefore, the reason why the client/engineer transferred almost all the risk to the contractor and refuses to re-absorb them is based on the knowledge that the contractor has the adequate skill/capacity to handle the risks, and in the event of an

unexpected difficulty, it is the skill, care, and resources of the contractor that can be used to control the actual expenditure. Therefore, with some justice, the risk should be borne by the contractor, who is actually the party that has the opportunity to control the expenditure connected with it.

Here, it seems that the client/engineer have made their case clear and strong, and it looks like it will take a stronger argument for them to shift that position. But Marks *et. al* suggest that the client/engineer's objection can to a certain extent be neutralized by the fact that the engineer uses instruction to interfere with contractor's expenditure of provisional sum to cover special risks, which is not flexible to allow the contractor enough freedom to exercise his best skills. Marks *et. al* suggest that 20% of project value should be allowed the contractor to cover and manage the risk. But this does not happen.

Avijit Matra (1999) in (Holroyd 2003) noted that every time an engineer puts an idea on paper, he or she may commit people to work in a hazardous environment, that is, he or she creates a risk, and it will not be right for the responsibility of such risks to be transferred to other parties.

Here, Avijit is quoted from a health and safety risk concerns, but it is possible to also argue that by designing project to client's specifications, the engineer/architect and client have actually created all the construction process risks involved. Therefore, it will not be proper for them to transfer to another person the responsibility for the risks they created. As it seems that this line of argument is not being used to challenge the client's position, the contractor continues to bear almost all the risk to his detriment.

Regarding this, contractor is deemed to have the requisite skills/capacity even if the reverse is the case. Therefore, any suggestion that the risks should be shared, must first defeat or weaken the client's position before stating how it should happen. The contention that client creates the risk and therefore should not transfer its responsibility to another person sounds benign to the contractor. But it does not look as if it has actually defeated or weakened the client's position. For example in fierce competition to outdo one another, each contractor attempts to give a price he considers good enough for him to undertake the project. This could mean that the contractor has used an adequate competence to properly value and give a viable price to the project regarding all known and anticipated operation costs, and he has placed himself in the position where he can adequately carry the associated risks. Therefore, the fierce competition scenario tends to give a solid credence to the client's position, for it leaves the client with the opportunity to accept an offer. This may help to understand why the risks are still not being shared.

Latham (1994) recommends that all parties involved in the project should have clearly specified duties, which they must carry out in an atmosphere of mutual cooperation, with a shared financial motivation, based on a 'win-win' solution approach to a problem that might arise.

Therefore, risks should be allocated to the parties best able to manage, estimate and carry them.

Here, Latham presents what might relieve the contractor of some of the risks, but for example it neither states exactly from where the client should re-absorb some of the risks nor defeats/weakens the client's contention that the contractor is at the best position with the capacity to carry and manage the risks. Sharing the risks to project team may require delictual liability whose enforcement might become another source of adversity. However, it might be quite contentious to determine how the client will reabsorb the project risk, which the contract has already given an acceptable price to.

Egan (1998) recommends that the project team, including the client, engineer/architect, and contractors be integrated, with contractor and subcontractors being involved from planning and design stages in order to reduce the contractor's risks in the very complex situation. This again seems benign, but it does not state how it can be done. For instance, it has earlier been stated that excluding the contractor from the project planning/design denies the client the chance to benefit from the contractor's skill. In that case, it will be necessary to examine how the contractor can adequately fit into the design process. Can the contractor advise or determine particular technical, material, functional and aesthetic formations and details of project that might be contrary to what the client wants? If a contractor that will not construct the project is involved in the planning/design of such project, then such contractor will have to put up a price for his involvement; another issue will be to determine what price will be good enough for that contractor to play such role. It looks like a contractor can contribute ideas at that stage from a general contracting processes viewpoint, but awarding the project to another contractor might miss the very contracting idea used in conceptualizing that project. But if the project must be awarded to the contractor that contributed ideas in the planning/design of the project, then, it may mean an automatic award on a possibly negotiated price, method and condition favorable to that contractor, which may to some extent remove the competition advantage the client usually enjoys. Will there be a rule that makes it compulsory for a particular contractor that is involved in the planning/design stage to either be excluded or included in the project execution?

As part of efforts to minimise or prevent the adversarial nature of contracting, New Engineering Contracts –NEC – was in 1991 published for use in the UK construction industry; and Latham report in 1994 promoted it as being capable of saving costs and preventing dispute. However, in 2001, the National Audit Office report - "Modernising Construction" -audited the construction industry in UK and stated the inefficiency of the lowest bid project procurement award system as follow: 75% of government projects were over budgeted, and 70% were delivered late. On 66 government projects with a total value of 500million Pounds carried out in 1999, 75% of the projects exceeded their budgets by 50%, while 67% exceeded their

original completion dates by 63%. And the major factor leading to this poor performance is the adversarial relationships that exist between the client, consultant, consultants, subcontractors and suppliers.

Cooke and Williams (2004) state that NEC is promoted by Latham, but it ranks among the least used form of contract in the building works; but there are indicators of widespread use of NEC in civil engineering works.

Based on the above, one would wonder why there seems a reluctance to use NEC considering its perceived ability to save cost and other goodness it promises, since Latham considered it very useful and accordingly promoted it in his 1994 report.

However, even if all the role players should be integrated as Latham and Egan suggest and to some extent provided for in the NEC, one would still wonder how the emerging small/medium contractor in a development programme who does not have adequate skill/resource capacity can make a meaningful contribution in that project planning/design stage? Deliberations on these issues might help to shed more light on the possibility of integrating the project team for the risk reduction purposes.

As it seems that the recommendation for project team to be integrated, and clients to carry the responsibility of the risks they created are not being mainly adhered to, this squarely leaves the contractor, and nobody else, with the onerous task of acquiring all the necessary skills/recourse capacity required to adequately identify, assess and manage the risks within his trade (Gilbreath 1992).

This view bears some serious implication for emerging small/medium contractor development programmes in South Africa. But before examining such implications it will be good to see the views of some established small/medium contractors in South Africa regarding what they consider the sources of the uniqueness, complexity and risks in construction and how they manage them based on their contracting experiences.

4. VIEWS OF ESTABLISHED SMALL/MEDIUM CONTRACTORS IN SOUTH AFRICA REGARDING THE COMPLEX AND RISKY SITUATION

Some schedule of questions was used to engage in discussion with some established small/medium civil engineering and building contractors who started and survived the first 5 years and above performing projects with value ranging between R0.5 Million and R20 Million. They were asked to state from their experiences what they consider the sources of the stated uniqueness, complexity and risk in construction contracting; and how they manage the situation. Some understandings established from the discussion are summarized and presented below as follow:

- Through mere paper drawings an intangible project with substantially variable components that must all come to a tangibly definite whole within a specific time period through a construction

process that involves unstable role players, is at the contractor's risk given some definite price that hardly changes. Therefore struggling with the great difficulty to arrive at a profitable price, is usually a great risk to the contractor.

- It is impossible to accurately quantify and cost all the necessary materials, tasks, and overheads; usually, during actual construction, land conditions emerge different from the originally anticipated, to increase costs the contractor mostly bears.
- Contractor puts up some percentage of the project value as a performance guarantee, and then, with his money begins to work through the stages of the project before being paid; there is always high possibility of delayed or nonpayment that impedes the contractor
- Improper design, wrong specification, vague detailing can vary the scope of projects, which might require contractor asking for variation but if the client rejects it, such work will continue at the contractor's expense; litigation doesn't always end in the contractor's favor, cost and time of litigation has led to collapse of most contractors.
- Client's agent inspects, rejects or accepts contractor's work before approving payment; in this process the agent might become hostile and instruct alteration or total rejection of work, which costs more time and money to contractor and may lead to long litigation.
- Supply of materials can be delayed due to importation, transportation, haulage and tariff problems, and sometimes total unavailability; this can be costly to the contractor
- Clients demand that projects be completed on short durations; contractors even works at shorter duration with minimum amount of resources in order to make profit; this places greater time pressure on the contractor, which leads to costly mistakes
- Clients that lack confidence on contractor's competence are very difficult to please: they contemplate and orchestrate contractor's failure using instructions and delayed payment
- Skilled/experienced workers can be lost to competitors at critical time; this exposes contractor to risk of poor performance or paying more than budgeted amount in order to get good replacement; the market suffers from depletion of skilled/experienced workers
- Social unrest, strike and unpredictable weather condition might disrupt scheduled project period and the contractor has to bear an addition cost that usually arise from them.

4.1 Building projects:

- Bill of Quantities calculates building costs more closely; however, there are still things where contractor will do some guess work,

which always remains places of great risks; calculated items and costs, could still vary at the construction stage

- Building projects have smaller land coverage, but sometimes subsoil conditions vary from the anticipated; this might not amount to too much extra cost, but emergence of unbuildable land condition liker dolomite discontinues the project, at contractor's costs.
- Building being more labor-intensive can enable contractor start without an initial capital; however, adequate enough cash flow is required to pay workers on planned time schedule

4.2 Civil engineering projects:

- Long stretch of land in road project presents a possibility of subsoil conditions varying at any point from the anticipated; this might cost more time and money to the contractor than the client is willing to pay.
- Continuous mobilization of large number of workers, equipment and materials along the long stretch of road exposes the contractor to higher risks of damages and costs
- Bad weather conditions are more likely to impede work along the long road distance
- Dealing with different communities along the long stretch of road is also a risk factor

4.3 Managing the unique, complex and risky situation

- Study applicable contract conditions including practices, role players, duties, rewards, liabilities, and remedies; negotiate and write clear contract and follow it accordingly
- Assess, analyze and prepare to manage the complex and risky situation
- Acquire the necessary skills and resources required for project execution; engage and motivate competent workers to work according to project specification, time and cost,
- Ensure that actual project cost is lower than the allowable price in order to make profit, possibly use some graph to monitor the expenditure accordingly
- Maintain good relationship with client/agent and all role players on the project performance and delivery chain
- Always negotiate things over; do not fail to use contract procedural rules regarding demand for specific performance where any role player(s) fail in their functions

4.4 Implication to the contractor development programmes

In all the contractor development programmes it is clearly stated that projects awarded to the emerging small/medium contractors must be executed using the conditions of contract based on the client/consultant/contractor relationship, whereby almost all the responsibility for risks are transferred to the contractor, as earlier discussed. This might present the following implications to the contractor development programmes

- Government department as the client/consultant that plans/designs the projects has actually created all the operational risks involved in the project execution, and, as earlier argued, it might not be proper for government to transfer the responsibility for all the risks it has created, to the contractor who did not create them.
- If the client contends that the contractor should carry almost all the risks because the contractor has the skills/resources capacity to carry them in the project execution, then, the small/medium contractors who are under the development programmes because they lack the adequate skills/resources capacity, should not be required to carry such risks because it is known that they do not have the capacity to do so.
- If government department client insists on transferring almost all the project risks to the small/medium contractors under the contractor development programs implemented by government department, then, it will only be proper for the development programmes to find out, and equip such contractors with all the necessary and adequate skills/resource capacity required to carry the risks before awarding them projects; if not, it would seem as if the contractor are being exposed to failure arising from risks they do not have adequate capacity to handle.
- If the government department client insists on transferring the responsibility for almost all the risks it has created to the emerging small/medium contractor, as is the case, it must also allow even much more than the recommended 20% additional project value for risk handling so that the developing contractor can hire adequate capacity to manage the risks

5. CONCLUSION

It is possible to see that the unique, complex and risky nature of construction spreads through the project planning, design, winning, performance, completion and payment process chain. This nature is formed by the involved parties who wished to dominate and protect their interests therein; this therefore gave rise to all the risks. As the contractor

tends to bear all the risks to his detriment, relief calls are made; but these calls are not being adhered to considering the client's contention that the contractor should have the adequate skills/resource capacity to carry such risks. Coupled with the fact that this position has not been defeated, the contractor seems to have no practical choice now than to acquire the necessary and adequate skills/resource capacity required in the area of his trade. Even if the client agrees to reabsorb some of the risks, the development programmes must be ready to equip the emerging small/medium contractors in with the adequate skills/resources capacity required to handle such risks. But while the programmes attempt to do so, such contractors also have the duty to acquire such important capacity because they are the people that actually need it for the successful performance in their trade. Here, it seems that the development programme and the emerging contractors being developed may learn from the experiences of established small/medium contractors

6. REFERENCES

- Austen, A and Miles, D (Eds.) (1987) Guidelines for the Development of Small-scale Construction Enterprise. Geneva: ILO.
- Bower D. (1995) Information Technology in Estimating. In Engineering Management, Project Cost Estimating. Ed Smith, N. Thomas Telford Ltd., Thomas Telford House, 1 Heron Quay, London E14 3JD
- CIDB (2004) A Strategic Assessment of Black Economic Empowerment In the Building and Construction Industry Systems in South Africa 2003 – 2015
- CIDB, DPW, CETA (2005) Towards a common framework for enterprise growth and sustainability. Sustainable contractor development, National Workshop 2005
- Cooke and William (2004) Construction Planning, Programming & Control 2nd Edition Blackwell Publishing Ltd, Oxford OX4 2DQ, UK
- Croswell, J and McCutcheon, RT (2001) Small Contractor Development and Employment: A Brief Survey of Sub-Saharan Experiences in relation to Civil Construction. In: RT McCutcheon and Taylor Parkins, (Eds.) Employment and High-Standard Infrastructure. WORK Research Center for Employment Creation in Construction, University of the Witwatersrand, Johannesburg.
- DPW (1996) Procurement Task Team. Public Sector Procurement Reforms in South Africa: Specification for the Implementation of an Affirmative Procurement Policy – APP2: Joint Venture (general) May 1996.
- DPW (2005) Public Works Unearths Shocking Levels of Fraud, www.engineeringnews.co.za
- Edmonds and Miles (1984) Foundation for Change: Aspects of the Construction Industry in Developing Countries. ITP Ltd, 9 King Street London WC2E, UK.

- Egan, J (1998) Rethinking Construction. Report of the Construction Task Force on the Scope for Improving the Quality and Efficiency of UK Construction, Department of the Environment, Transport and Regions, London
- Egbeonu, E (2006) Structured Joint Venture Partnership in South African Contractor Development Programme: Examining its appropriateness and the concept of substantial quid-pro-quo. In conference processing: first built environment international conference, Johannesburg, South Africa, June 18-20
- Gilbreath, RD (1992) "Managing construction contracts: operational control for risk management. 2nd edition. John Wiley & sons, Inc. USA.
- Holroyd, T (2003) Buildability: Successful Construction from Concept to Completion. Thomas Telford Publishing Ltd, 1 Heron Quay, London E14 4JD
- Latham, M (1994) Constructing the team. Final Report on Joint Review of Procurement of And contractual Arrangements in the UK Construction Industry, HMSO, London
- Kwesiga, M (1996) Small Contractor Development in the Road Sector: A Review of Current Developments. Urban Forum. Volume 2. 1995: 122-128
- Marks, RJ; Marks, RJE; Grant, AA; and Helson, PW (1978) "Aspects of civil Engineering contract procedures" Pergamon press Ltd., Headington Hill Hall, Oxford OX3 0BW, England
- McCaffer R. and Baldwin A (1995) Estimating for Construction. In Engineering Management, Project Cost Estimating. Ed Smith, N. Thomas Telford Ltd., Thomas Telford House, 1 Heron Quay, London E14 4JD
- Mphahlele, G (2001) Contractor Development in South Africa. Conference on Developing the Construction Industries in Southern Africa. DPW, April 2001.
- National Audit Office (2001) Modernising Construction. Report by the Controller and Auditor General HC87. The Stationary Office.
- NEDLAC (2004) Construction Sector Summit, Business Position Paper Submitted to NEDLAC on 11 June 2004.
- SAFCEC/NALEDI (2003) An Overview of South African Construction Sector in 2003
- Ofori, G (1991) Programmes for Improving the Performance of Contractors in Developing Countries: a review of approaches and appropriate actions. Construction Management and Economic. Vol. 9. Pp19-38
- SBA. Winning Ideas for Small Business
www.sba.gov/goper/business/success-
- Schloss, R (2002) Course notes: Application of Legal and Commercial Procedures in Construction. Wits University
- Statistics S A, (2006) Statistics of liquidations and insolvencies.
www.statssa.gov.za
- Ssegawa, (JK 2001) "The unique characteristics of the construction

industry and their impacts on the financial management of construction firms. In Conference on Developing the Construction Industries in Southern Africa. DPW, April 2001

Tyler A. and Smith N (1995) Estimating at the Design Stage. In Engineering Management, Project Cost Estimating. Ed Smith, N. Thomas Telford Ltd., Thomas Telford House, 1 Heron Quay, London E14 5JD