

Preventing Incidents of the Collapse of Buildings by Implementing Lessons Learned

By O. Chima Okereke, PhD

1. Introduction

Incidents of the collapse of buildings occur every year from time to time with the associated losses of lives, properties and resources in both developing and developed countries. However, by a wide margin, the incidents are more frequent in developing nations. We have chosen to focus on Nigeria, and also Bangladesh and India where the incidents were quite high in the past year. Such catastrophic losses represent disasters and wastes that should not have occurred. Television and other media outlets broadcast and publish reports of the disasters, and some discuss their probable causes. Apart from efforts to help survivors and to provide some accommodation to rehouse them, it is doubtful how we educate ourselves and learn from such incidents in order to prevent reoccurrence.

It appears that generally, in both developed and developing economies, we rarely apply and implement lessons learned from past incidents. This explains why the same mistakes and failures continue to reoccur. It is a recommended practice in project management that at the end of a project, the project team should discuss and record the lessons learned from it, whether positive or negative. However, it has been the case that in many organisations, these lessons are faithfully recorded, then put away and never implemented to effect changes that should stop or minimise the chances of repetition of the same failures.

In this article, we intend to explore this subject as we do the following:

- Make suggestions for the implementation of lessons learned.
- Briefly review some recorded incidents of collapsed buildings including their causes and some of the proffered solutions.
- Discuss generally the causes and solutions recommended and adopted in various cities affected by the collapse of buildings.
- Present concluding remarks which are high points of the recommendations on implementation.

As we discuss causes and solutions to incidents in some large cities in Nigeria, we have also considered incidents of collapse of buildings in Bangladesh and India despite the fact that our readership is mostly based in the UK and Africa. The reason is that we can learn from experiences of how the problems are solved internally within the country, and also how they are resolved internationally by countries with similar problems. The common thread on this subject in Nigeria, India, and Bangladesh is that we are saddled with a problem caused mostly by unsafe buildings put up illegally. Some of the houses have been built in high population growth area, some are illegal conversions of one-storey building to three or four-storey, and some are old and unmaintained buildings. Benchmarking allows us to copy and apply what has worked

for various cities and nations to the solution of our similar problems. If we find such important information, we should use it to avoid “reinventing the wheel” by seeking our own solutions with the associated losses in resources and lives as the problem lingers on.

2. Suggestions for an Implementation Approach

From our research, we would suggest the following approaches for implementing lessons learned in new projects:

- Organisations should state in writing the process function, within the organisational project management teams, which should be responsible for supervising the implementation of lessons learned. This could be a responsibility of the Project Management Office (PMO).
- In the organisation’s project management methodology, there could be a clear description and delineation of points at which the lessons learned could be considered for implementation in a new project being planned, executed and managed.
- It has been suggested that there should be a top-down involvement in monitoring the implementation of lessons learned. Duncan Haughey, PMP, discussed this in his article in Projectsmart, entitled: “Avoid the same old mistakes by focusing on lessons learned”. We wish to add that having established a properly documented database of lessons learned, the project sponsor or any senior member of the steering committee should monitor the implementation. This could be done by requesting to be shown how and where the relevant lessons learned have been applied in a new project plan before approving it. It should be mandatory that referring to and using applicable information from the database of lessons learned should be an activity in the project planning process.

The suggestions for implementation in the preceding paragraphs have been made with the assumption that most organisations have and use a PMO. In addition, it has been assumed that they faithfully document lessons learned but fail to implement them. In reality, these assumptions may not be correct. Many organisations and companies, both in the private and public sectors, especially those in developing countries may not use PMOs or even practise the collation of lessons learned. Therefore, as a starting point, and for this article to be relevant to an organisation, we would suggest that the collation of lessons learned should be embarked on if it is not being done. It could be stipulated as an activity in the organisational project management closing process such that lessons learned have to be prepared and submitted to the PMO, using an approved format.

3. A brief review of some recorded incidents of collapsed buildings including their causes and some proffered solutions.

We tabulate below and also discuss some reported incidents of collapse of buildings in Nigeria, and then in Bangladesh and India.

Incidents in Nigeria			
Incident	Date and description	Reasons for the failure	Solutions
Incident 1: In Ebute-Meta, Lagos, Nigeria, building collapsed and killed seven.	Thursday, July 11, 2013, at least seven people were killed after a three-story residential building collapsed.	The building caved in because of structural defects, officials explained. There are many badly built structures with poor safety standards in many Lagos neighbourhoods containing old buildings.	Our suggestions for the implementation of recommended remedial actions have been given in the last section of this report containing the concluding remarks
Incident 2: A two-story building in Surulere, Lagos collapsed killing five persons.	This was on July 21, 2013, at Ishaga, Surulere. The State Government had earlier sealed the building under construction.	The government instructed builders to stop work because there was no permit for it. Despite this, contractors removed the seal and worked on, especially on Sundays. The completed unsafe building later collapsed.	
Incident 3: In Kaduna, Nigeria, a three-story building slumped, killing three persons and trapped close to 50 persons under the rubble.	On July 10, the building collapsed. It was supposed to be 101 years old and situated along Hadeja Road by Ibrahim Taiwo Road. It had its three top floors as residential homes, while the ground floor was used for trading.	Lack of maintenance, as a result, no one could see the disaster waiting to happen, until it did.	As explained in the foregoing paragraph, our suggestions for the implementation of recommended remedial actions have been given in the last section of this report containing the concluding remarks
Incident 4: In Port Harcourt, Rivers State, a two-story building under construction crumbled. Properties were destroyed but no life was lost.	This was in 2012, in Rumubiakani/ Rumuomasi in Obioakpor Local Government Area of State, a two-storey building under construction crumbled.	It was reported that the building, initially designed as a two-storey structure, had ended up as a four-storey apartment. It failed as a result of additional burden of two more storeys.	
Incident 5: In Abuja, a story building in a girls' secondary school, collapsed with eight students critically injured.	This was on Friday, September 27, 2013 in Nyanya, a satellite town of Abuja	A section of the balcony of the top floor collapsed as a result of the use of poor materials and also construction.	
Incident 6: Two die as building collapsed in Abuja	This happened on August 27, 2013, at a construction site, Plot No. 2941, Aguiyi Ironsi Way, Maitama District, Abuja. It was a project of Metropole Development Limited. It collapsed on construction workers, and two of them were killed.	Poor quality work and poor materials as the reportedly: "so-called concrete slabs could even be crushed with bare hands".	
Incident 7: A medical clinic at Mpape, a suburb of Abuja, collapsed,	On August 19, 2011, a clinic at Mpape, Abuja, came crashing down, killing two persons.	It was initially designed as a one-storey building, but the owner converted it to a three-storey structure.	

<p>Incident 8: At Dutse-Alhaji, another satellite town in Abuja, a building collapsed killing three persons.</p>	<p>In the early hours of August 8, 2012, the three storey building crashed, killing three.</p>	<p>A building designed as a one-storey structure, received the additional burden of two more storeys.</p>	
<p>Incidents Overseas: In Bangladesh and India</p>			
<p>Incident 9: At Savar, Bangladesh, a 9-storey industrial building collapsed killing 1,127 persons</p>	<p>Wednesday, April 24, the building described as Rana Plaza in the Dhaka suburb of Savar collapsed. It housed five garment factories, several shops and a bank..</p>	<p>Cracks appeared in the building the day before the collapse but the owner boasted that the building could stand “ a hundred years”. Building was not properly maintained and safety standards were poorly monitored.</p>	<p>Government set up safety inspections to examine standing buildings for defects. Buildings which cannot be repaired should be pulled down. The safety standard should be used during planning of new buildings in the locality to ensure that the requirements are observed</p>
<p>Incident 10: A three-story building in the northern suburb of Thane, Mumbai, collapsed</p>	<p>The building was 35 years old. This happened at 2:30 a.m. on Friday. June 21, 9 people were killed.</p>	<p>It was reportedly caused by shoddy construction work that causes buildings to fall. Such work is done without official permits.</p>	<p>Given the scale of the problems in India, it is realistic and safe to agree that buildings which cannot be repaired should be pulled down. This measure while difficult is the better of two evils. The other is the catastrophic death of people in hundreds when dilapidated buildings, waiting to collapse any time, fail without warning. Government approved safety standard should be used during planning of new buildings in the locality to ensure that safety requirements are observed</p>
<p>Incident 11: Another building in Thane, Mumbai collapsed.</p>	<p>This was on April 4, 2013. It was an illegally constructed building. The collapse led to the death of 72 people.</p>	<p>Old buildings crumble and even new ones as most are poorly built without adherence to regulations.</p>	
<p>Incident 12: A portion of the five-story Altaf Mansion in Mahim, Mumbai collapsed.</p>	<p>On June 10, 2013, the building failed after heavy rains, killing 10 people.</p>	<p>Illegally constructed buildings are developed to accommodate a growing population. The quality of the construction has been described as absolutely horrible as there was little regulation or governance.</p>	

3.1. General Review of Causes of Collapse of Buildings in Nigeria

We highlight some of the reported causes of the collapse of buildings in Nigeria.

1.1 Unhelpful Court Injunction that provides a loophole for the construction of illegal buildings: One of the challenges facing the Abuja Municipal Metropolitan Control (AMAC), according to Yusuf, the Director, Development Control (DC) in Abuja, is interference by unhelpful court injunctions. He explained that the department had situations where owners of weak buildings go to court. And while the case is still ongoing, with a stay on the department from further action, such owners continue to build. He cited a building in Asokoro, which eventually collapsed and killed a person because the owner continued building during such a court injunction.

1.2 “Cutting Corners” to avoid the correct building procedures: It has been further reported that cases of building collapse in Abuja and other cities are as a result of negligence; people trying to cut corners. Owners and site engineers are not exempted from blame. Often an engineer would give professional advice to the owner on the proportion of materials needed. But in a bid to save money, the owner might “cut corners” by using inferior proportions of mix of materials. In addition, most times, building owners shy away from having to pay fees to qualified professionals, preferring instead quacks who charge less, but ruin the entire project. At other times, site “engineers” might swindle owners by using poor quality materials or even using materials in wrong proportions in order to make more profit.

1.3 The use of “Inadequate regulation by government”, with archaic “laws guiding construction and not reflecting present day realities of development”: Using Lagos State as a case study, the President of Nigerian Institute of Buildings (NIB), Mr. Chuks Omeife, as published in the Nigerian Guardian of Saturday, 27 July, 2013, said: “The regulation we are using today is not different from what was used in 1938, called the Lagos City Council Building By-laws. The rate of construction then was not as high as it is now. At that time, probably a building or two could go up in Lagos at the same time. But today, the rate has grown so fast that many buildings are going up at once.

“Thirty-years ago, in Lagos, there was still close monitoring. Today, the state does not have enough personnel to go round building sites. ...in Lagos alone, we have over 45, 000 developments going on. How many personnel are at the building control department to ensure things are done in the right way?”

1.4 Absence of laws to enforce National Code: Mr. Omeife noted that the requirement for getting a building approval must be broadened to include other areas, in line with the National Building Code (NBC). He lamented that: “most states are copying the NBC and leaving approval the way it has been for many years. According to him, the Code makes it clear that builders should be responsible for management of the building process and supervision of artisans, among others.”

“Unfortunately,” Omeife stated: “The NBC itself has not been able to get the enabling law from the National Assembly. If you consider collapse of buildings in the country today, nobody has been tried in a law court. Nobody has been sentenced to prison; nobody has been punished for any building collapse. And this is the reason buildings continue to fail, because people are becoming more daring. They keep building without going through necessary processes.

1.5 Failure of Nigerian states to comply with the building code: Mr. Omiefe continued: “The engagement of professional builders, which is supposed to be in the Code, is not adopted in most of the states’ building regulations. When a building with an approval collapses, the architect or engineer is not liable. They cannot be sued, because they will tell you they are not responsible for the construction. But if there is a builder recognised by the law, then such builder can be held responsible if a building collapses. The issue of fake materials, shoddy workmanship would also be taken care of when a builder is involved; it becomes his responsibility to ensure that all these

things are in good condition.”

3.2 General Recommendations for Implementing Solutions in Nigeria

We make the following recommendations for implementing solutions of lessons derivable from these incidents. We have quoted some information from some of the commendable and professional remedial practices being carried on in the cases studied.

1. Demolition of Illegal Structures: At the Abuja Municipal Metropolitan Control (AMAC), the Director, Development Control (DC), Yahaya Yusuf, discussed some of the efforts the government is making to minimise incidents of building collapse. The DC department, a government arm with the responsibility of ensuring that the master plan of Abuja is not disfigured by erection of illegal structures, has in recent times demolished such structures and shanties. He explained that the department has already marked buildings around Abuja which portend danger to people as a result of general weaknesses exhibited. He disclosed that there is a timetable for the demolition of the marked buildings. He explained that it is not only shanties that are being demolished, but also buildings belonging to the elite, wherever rules are violated. He cited the ALGON building in Maitama, constructed on a cul-de-sac.

2. Stringent Monitoring of Buildings by Relevant Professionals: The department ensures stringent monitoring of buildings under construction to prevent anomalies that could lead to collapses. Mr. Yusuf explained that one of the policies of government, in this direction, is to engage registered industry professionals outside government to supervise and monitor constructions. This, he said, means that liability during and after construction rests with the professional who has also signed an undertaking to that effect. He explains: “There are so many people taking part in making sure the building does not collapse in the first place. There is a civil engineer or structural engineer that will attest to the fact that he is responsible for monitoring and supervision of the construction on a day-to-day basis. So, when our workers go on routine monitoring, they are expected to see these professionals on site, especially at critical stages of the construction.”

He also noted that any misdemeanour on the part of these groups of professionals is reported to Council of Registered Engineers of Nigeria (COREN), the regulatory body of engineering practice in the country. And in situations where lives are lost, as a result of negligence, the professional involved is handed over to the police for prosecution.

3. Retesting of abandoned buildings before permission to restart building: Mr. Yusuf further stated that “We have also gone round the city to identify all abandoned buildings. We have come to discover that some of them were developed to a point and stopped for months or even years for lack of resources, or other challenges. If we don’t subject such buildings to an integrity test, then we risk a collapse because such might have gone through wear and tear; unable to withstand any load. We were able to compile over 430 such buildings in order to make them go through a revalidation process, which requires us conducting the test on them before certifying them okay or otherwise. For such tests to be seen as objective, they are not carried out by this department, so that people will not say we are biased, we gave them to consultants in

the private sector, as accredited and recommended by COREN”.

He concluded that from last year to early March 2014, about 122 buildings have been revalidated and people are continuing their construction in line with what has been approved.

4. Fortifying the city against flooding: Incidents of collapsed buildings are more common during the rainy season. As a result, another cause of building collapse is flooding; natural disaster, partly worsened by global warming. The department has tried to build the resilience level of the city by not waiting for this kind of disaster to happen.

5. Support by Government and loss of plot of a collapsed building: According to Yusuf, “One thing that has helped us so far in carrying out our task is the high level political will displayed by the FCT Minister, Bala Mohammed, who has given us unparalleled freedom to do our work, even though this affects some personalities in the society,” he said. “The public is now aware that it is a matter of time. If we mark your structure for demolition, it will definitely go because on our part we must have taken all necessary precautions,” he said. He noted that the regulation now in the Federal Capital Territory (FCT), Abuja, is that owners of collapsed buildings automatically lose the plots, irrespective of the approval for such land.

6. Professional Intervention: The Registrar of the Council of Registered Engineers of Nigeria (COREN), Mr. Kamila Maliki, reportedly explained that all practising engineers in the country are mandated to register with the institution as a way of checkmating the activities of quacks. “In any situation of building collapse, if we find our people culpable, their certificates are usually withdrawn and they are handed over to the law enforcement agent for prosecution. All registered engineers with COREN have individual numbers they usually quote on their jobs. That way, we are able to identify easily whoever is involved in whatever job. So, tracking offenders down is not a difficult task.”

The newly elected President of the Nigerian Society of Engineers (NSE), Mr Ademola Olorunfemi, speaking on Thursday, January 30, 2014, in Abuja while featuring at the News Agency of Nigeria (NAN) Forum threw the following challenge: “Go and check it out, 99.99 per cent of building collapse, it is not an engineer on the register of COREN, it is somebody else,” . He said that the NSE and COREN had begun monitoring to ensure that only engineers were employed to do the work of an engineer while calling for the assistance of the media. Corroborating this, the COREN President Mr. Kashim Ali, said that both the NSE and COREN carry out investigations periodically on collapsed buildings and find that engineers are not usually engaged.

7. Need to correct the lack of professionalism in building management: Mr. Omeife suggests that: “Every building plan approving office should have all representatives of all professionals that will be involved in the procurement process, to check all submissions in line with their colleagues’ input. The town planner should check compliance with development control criteria; the architect should check architectural drawings; the structural engineer should check structural calculations and designs; the builder should check quality management and health and safety plan, as well as the construction programme of work.

“This will act as a double check and reduce inconsistency in planning approval documents submitted. The implication of this is that planning authorities should employ enough professionally qualified personnel to cope with both planning approval and site monitoring. This will take time, as it will require budgetary allocation or vote before personnel can be employed. Planning offices could also be merged together temporarily for effective and efficient discharge of responsibility.”

8. Government Regulations Required: He continues: “Government should make mandatory the preparation and submission of building maintenance manual for all completed building projects in the state. This should form part of the requirement for the issuance of Certificate of Completion and Fitness for Habitation by the Lagos State Building Control Agency. This should be jointly done by all the professional project participants. The value added to the completed building project cannot be over-emphasised.”

9. Lagos State Government to Punish Officers linked with Building Collapse: According to the Guardian of July 28, 2013, the Commissioner for Special Duties, Dr. Wale Ahmed, states that government will take appropriate legal action against culprits of building collapse in the state. The Guardian reported that it is alleged that contractors or their principals influence state officials to ensure rules are bent in their favour. Many of these contractors have political links with some ‘oga at the top’. The commissioner regretted that despite the state government’s drive to tighten building controls, some individuals go ahead to remove seals on buildings, as was the case in the Ishaga collapse. Such action is reportedly almost impossible without direct connivance with persons of note in authority.

3.3 Incidents in Bangladesh and India

Reportedly, general causes of failure in Bangladesh and India are as follows.

1. Poor maintenance: The collapse of Rana Plaza at Savar, Bangladesh, of a 9-storey industrial building, killing 1,127 persons occurred on April 24, 2013, a day after cracks appeared in the structure. Similarly, there was the collapse in Mumbai on April 4, of an illegally constructed building in Thane, reportedly caused the deadliest building collapse in India in decades. At least 72 people died and 70 were injured. It is sad and troubling that more structures are likely to collapse as old ones crumble from neglect and new ones are poorly made. Much of the shoddy construction that causes buildings to fall is done without proper permits. The state government ordered an investigation as police charged two builders with culpable homicide. If convicted, they face lifetime prison sentence.

2. Illegal alterations: Rizwan Merchant, an advocate who lost three family members in the accident in Mumbai, filed a police complaint that blamed the owners of the building for failing to maintain the building, and for making illegal alterations and civic officials for negligence. The city authorities contended that they had not received any complaints about changes made to the structure of the building.

3. Poorly constructed, old and unmaintained buildings: While illegal construction mushrooms in Mumbai to accommodate a growing population, many of the legally built buildings are becoming uninhabitable. Several of the edifices in the older parts of Mumbai are over 70 years old, reportedly built in haste at a time when Mumbai was an up-and-coming commercial hub. “There were opportunistic developers taking advantage of the surge in demand in metropolitan Mumbai,” said Naushad Panjwani, senior executive director of Knight Frank India, a real estate company. “While they were relatively modern buildings for those times, the quality of the construction was absolutely horrible as there was little regulation or governance.”

Milind Sawant, deputy municipal commissioner of improvements, said buildings that are 60 to 70 years old have simply surpassed their life cycle and need to be rebuilt. “The cost of maintenance is at times higher than the cost of redevelopment,” he said.

4. Substandard buildings: Newer buildings, however, often have structural problems as developers compromise quality for speed. “The problem is that land has become so valuable that people are building on the land quickly, just to get something in place, and not with the intention of occupying it or keeping the inhabitants in mind,” said Matias Echanove, co-founder of URBZ, an urban research organisation. “The acceleration of this process means that substandard apartments are quickly put up for purely speculative reasons.”

5. Poorly and ill maintained: The gradual decay of buildings is most commonly a result of the lack of periodic maintenance, especially when the buildings fall under the Rent Control Act, which severely limits the amount a tenant’s rent can be raised. With buildings that have many long term tenants, the rents can be so low that the landlord has no commercial incentive to renovate or maintain the structure.

Others blame the red tape involved in acquiring the necessary permissions to make small modifications to buildings, which leads frustrated residents to seek local contractors to make renovations without the advice of a structural engineer. “The focus of the civic authorities is not on safety but on checking who is making a small modification to the structure, so that they can pressure the person to pay a bribe,” said Rahul Srivastava, the other co-founder of URBZ.

6. Dilapidated buildings – “Accidents waiting to happen”: Meanwhile, the scale of the problem remains unclear. According to a pre-monsoon survey carried out by Mumbai’s municipal corporation, there are 959 dilapidated buildings in the city that house 100,000 people. However, real estate experts say that this figure is probably an underestimation.

“According to the Maharashtra Housing and Area Development Authority, there are over 16,000 buildings which were built before 1940, so to say only about 1,000 buildings in the whole city are dilapidated is a bit of a stretch,” said Mahesh Khalap, associate director of strategic consulting at Jones Lang LaSalle India, a real estate research firm.

3.5 Reported Solutions

Only the following two points are considered here because other points have been touched on in other sections of this report.

1. **Government Panel and Health and Safety Investigation and Improvement:**

Following the collapse of the Ranar Plaza, the 9-storey industrial building in which 1,127 persons were killed, the government set up a five-year plan which calls for independent safety inspections. It also requires retailers to help finance fire safety and building improvements in factories with which they work. In addition, companies who sign on to the plan will have to terminate business with any factory that refuses to make necessary safety upgrades.

2. **Eviction to prevent disaster:** In a desperate measure preceding last year's monsoon, the city's civic chief, Sitaram Kunte, said residents of buildings that were declared dilapidated by the city authority had until June 15, 2013 to evacuate. If the residents did not move out by then, he said, the authorities would resort to extreme measures, like cutting off the electricity and water supply. According to Section 354 of the Mumbai Municipal Act, the civic administration has the authority to evict residents from dilapidated buildings. In many cases, residents are unwilling to move out of buildings deemed dangerous as they fear that they will lose their homes to bureaucratic delays in reconstruction. On the day of the deadline, 5,000 people protested against eviction notices, saying that they had not received the permission to repair their building privately.

4. Concluding Remarks

We here summarise some lessons that we could garner from the research on all the areas covered both internally and internationally. Our recommendations for implementation are as follows:

- **Use of qualified professionals:** The relevant government authorities need to ensure that only qualified and duly registered professionals should be used to approve building constructions. This is reportedly already being done in some states, particularly the Rivers State and the Federal Capital Territory, Abuja.
- **Train and deploy professionals in the building industry to stop further collapses:** In the same vein, only qualified professionals should be used in the building industry. One of the complaints raised, especially in the Lagos State, is that the much increased rate of building activities and the number of construction sites are such that there are not sufficient professionals to supervise the projects. It certainly follows that the building industry is a veritable area for the investment on our professionals. More engineers, architects, builders, etc., should be trained and deployed to approve, supervise, and inspect building construction activities in the country. In a country where there are many unemployed professional engineers, architects, etc., we should train and deploy them to the building industry which promises to continue growing for the foreseeable future. There is every business and economic justification to embark on such an investment; if nothing, to minimise or stop the sorry and costly incidents of collapse of buildings and the collateral irreplaceable loss of lives.

- **Pulling down unsafe buildings:** Unsafe buildings should be pulled down so that they do not collapse and pull precious human lives into untimely death and graves. This is reportedly being practised in Abuja and India.
- **Criminalise unapproved increase in the number of storeys of a building:** It should be made illegal for a house to be upgraded from one storey to two, three or more storey building without approval. Such houses, if built illegally should be pulled down to avoid collapse in future since a lot of the failures have happened because houses were illegally built with more storeys than approved.
- **Enact Enabling legislation for professionals to be solely responsible for building work approval and supervision:** It should be legislated that regular inspection of buildings in cities should be supervised by a selection of professional groups. The Federal Nigerian Government could assign such a responsibility to Council of Registered Engineers of Nigeria (COREN), Nigeria Institute of Building (NIB), Nigeria Institute of Architects (NIA) and any other relevant professional bodies. They could work together, as reportedly practised in the Rivers State and Abuja, not only for approval of new buildings and supervising their construction but also for conducting regular inspections of all existing buildings. The National Assembly should enact relevant and necessary legislations to enforce the practices nation-wide.

About the Author



O. Chima Okereke, PhD, PMP

Herefordshire, UK



Dr. O. Chima Okereke, Ph.D., MBA, PMP is the Managing Director and CEO of Total Technology Consultants, Ltd., a project management consulting company working in West Africa and the UK. He is a multidisciplinary project management professional, with over 25 years' experience in in oil and gas, steel and power generation industries. Before embarking on a career in consulting, he worked for thirteen years in industry rising to the position of a chief engineer with specialisation in industrial controls and instrumentation, electronics, electrical engineering and automation. During those 13 years, he worked on every aspect of projects of new industrial plants including design, construction and installation, commissioning, and engineering operation and maintenance in process industries. Chima sponsored and founded the potential chapter of the Project Management Institute (PMI®) in Port Harcourt, Nigeria, acting as president from 2004 to 2010. Dr. Okereke has a Bachelor of Science Degree in Electrical Engineering from the University of Lagos, and a PhD and Masters in Business Administration (MBA) degree from the University of Bradford in the UK. He also has a PMP® certification from the Project Management Institute (PMI®). He has been a registered engineer with COREN in Nigeria since 1983. For many years, Total Technology was a partner for Oracle Primavera Global Business Unit, a representative in Nigeria of Oracle University for training in Primavera project management courses, and a Gold Level member of Oracle Partner Network (OPN). In the UK, the company is also a member of the Herefordshire and Worcestershire Chamber of Commerce. More information can be found at <http://www.totaltechnologyconsultants.org/>.

As a certified project management consultant, Chima has a flair for consulting, teaching, writing, conducting research and publishing professional articles. Between October 2002 and November 2013, Total Technology Consultants trained over 350 project practitioners in Oracle Primavera project management courses. Two recent assignments include: (1) working as a visiting professor; teaching a class on a Master's degree programme in Project Management in the Far Eastern Federal University, Vladivostok, Russia. The programme consisted of Strategic Project Management, Financial Management, Risk Management, Quality Management and conducting seminars and lectures on current developments and topical issues on international education on project management; and (2) In August and September 2013, he conducted a ground-breaking, personally developed training programme for seventy six well engineers of Shell Nigeria to projectise and enhance the efficiency of their operations.

Chima is the publisher of [Project Management Business Digest](#), a blog aimed at helping organizations use project management for business success. Dr. Okereke is also an international advisor for PM World. He can be contacted at chima.okereke@totaltechnologyconsultants.com or info@totaltechnologyconsultants.org.
Website: <http://www.totaltechnologyconsultants.com>
Phone numbers: +441432851899, +447802718845

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