ACKNOWLEDGMENT

The National Construction Authority (NCA) through its research department, with support of the industry stakeholder planned the execution of ACoRCE 2015.

The planning of this event would not be successful without mentioning the NCA fraternity who were at hand to accord the conference planning committee the required support. The board of management who trusted the department to approve the conference, the Executive director who worked tirelessly to support the cause of ACoRCE, The departmental heads and NCA staff who were there to make the wheel turn.

It is also important to acknowledge the unending support from the stakeholders who came on board as members of the planning committee and endured the long planning meetings week in week out. The stakeholders who sponsored the event and sending delegates to participate in the conference and those who exhibited their merchandise at the conference all are much appreciated.

The other very key linkage in the whole puzzle was the event management company APRM who came on board at last minute and provided the energy to seal sponsorship deals and publicize the event. Their ideas on planning and strategies of getting sponsors helped the planning committee secure quite a number of sponsors and delegates.

Thank you very much. We also wish to extend a hand of gratitude to all the members of the planning committee and the conference secretariat who worked tirelessly to ensure the success of this event, the sponsors, exhibitors and delegates. It would not have been the same if they all did not participate. Primarily, we thank God for his love, favour and blessings.

ENG. MAURICE AKECH
ACoRCE, 2015 PLANNING COMMITTEE CHAIR
The National Construction Authority is mandated to oversee the construction industry and coordinate its development and one of its key functions is to undertake or commission research into any matter relating to the construction industry. In line with this mandate, the National Construction Authority held the First Annual Construction Research Conference and Exhibition (ACoRCE) from Monday 21st to Wednesday 23rd September, 2015 starting from 8:30am at the Kenyatta International Conference Centre (KICC) Nairobi, Kenya. The National Construction Authority commenced the planning for the conference in April, 2015 upon official approval by the Board. Several coordination meetings took place at the NCA Secretariat with collaboration from various stakeholders in the Kenya Construction Industry including JKUAT, UoN, KIPPRA, KBRC, IQSK, AAK and Kenya Investment Authority. APR&M was appointed as the event managers to assist in the planning and sourcing for sponsorships, exhibitors and delegates. The planning committee managed to secure sponsorships worth Kshs. 1,850,000.00 from 6 companies, exhibitions worth Kshs. 1,550,000 from nine companies and Kshs. 969,000.00 from delegate registration fees. This was the first ever construction research conference in Kenya and to a great extent considered successful despite the challenges encountered during planning and implementation processes.

ACoRCE 2015 was based on the theme of “showcasing innovations in the 21st century for business development”. The primary focus being on subjects like private sector participation in construction in Kenya, construction engineering and management, construction finance and investment opportunities, construction law, emerging trends in construction, construction education and ICT in construction. The conference hosted by NCA was marked with attendance of construction engineers, architects, business & academic delegates and students. There were delegates from United Kingdom, German, America, India, South Africa, Ethiopia, and Zambia among others. The conference covered every aspect and area related to the modern applications of construction.

A total of 536No. against the targeted 800No. delegates participated in the conference. The Cabinet secretary of Ministry of Lands, housing and urban development, Dr. Fred Matiangi, Entrepreneurship guru Dr. Manu Chandaria, Prominent Architect Dr. Reuben Mutiso among other guests graced the opening ceremony by giving quite informative keynote speeches. The three-day event played host to 14No. keynote presentations, 24No. paper presentations and 22No. Exhibitors who showcased their innovations. Additionally, in order to promote the spread of good practice in construction, a tour of ongoing mega construction sites (SGR & Two Rivers Mall projects) was conducted on day three, in which delegates were given opportunity to interact with project managers, workers and construction engineers for these projects. The suggestions produced by the conference participants have also been included in the conference report. The key recommendation to ensure better achievement of future events is to ensure that the planning starts at least six months prior to the event.
INTRODUCTION AND BACKGROUND

Introduction

The first Annual Construction Research Conference and Exhibition (ACORCE) is a one of a kind and first ever event convened by the National Construction Authority (NCA) whose activities were aimed at providing an excellent opportunity for industry stakeholders to showcase their latest innovations that are spurring growth in the construction industry as well as provide a platform for networking and business opportunities for sustainable development. Advanced Public Relations and Marketing (APR&M) was competitively procured as the event managers to assist the conference planning committee in making ACoRCE a successful event, through maximum participation by invited sponsors, exhibitors and both local and international delegates.

Background

The National Construction Authority is a state corporation established under an act of parliament No. 41 of 2011 with the overall mandate to oversee the construction industry and coordinate its development. One of its other key functions includes undertaking or commissioning research into any matter relating to the construction industry. In addition, the Authority has the role of disseminating research findings to the stakeholders. In line with this mandate, the National Construction Authority mooted the idea of holding the First Annual Construction Research Conference and Exhibition (ACoRCE). The event was expected to attract delegates with a keen interest in reducing capital and operational project costs in construction business. The main theme of the event was: to showcase innovations in the construction industry in the 21st century for business development.

The main goal for the authority in planning this conference was to provide an open platform for attendees to share knowledge and awareness of current construction practice, as well as a belief that innovative technologies can make a difference in the workplace. ACoRCE, 2015 was the first amongst a series for various other similar conferences the NCA intends to hold. Quite a number of innovations in the construction industry are not implemented due to lack of opportunities to showcase. ACoRCE was designed to take care of that link between industrialists and the academicians.

The conference planning committee was a multi-agencies entity with representation from construction industry stakeholders. The conference committee includes representatives from contractors associations, professional bodies and government agencies. The committee was complemented by procuring an event manager who provided the required professional touch in the planning process.
ABOUT THE CONFERENCE

Delegates
Both local and international participants drawn from manufactures, suppliers, developers, professional bodies, training and research institutions, government agencies, government ministries, foreign embassies, development partners, contractors, special interest groups, banks, private institutions among many other organizations participated in this year’s conference. The planning committee was targeting 800 participants with approximately 50% from the contractors while other professionals could share the other 50%.

The charges per participant were agreed at Kshs. 9,500.00 for Eastern Africa citizens, Kshs. 18,000 for international participants and Kshs. 7,200 for students. The conference charges were meant to cater for entry to the conference halls, meals, conference package and tour visit. However students were later given a further discount of 50% for every 10 students to make the event more affordable. The committee agreed that by virtue of being sponsors, exhibitors, key guests or a member of the planning committee one will not pay conference charges.

The committee had introduced an online registration system but only 87 participants had registered and confirmed attendance prior to the event. On the opening day the registration booths were overwhelmed and at least 500 participants were registered. The distribution of conference attendance was as shown below;

![Fig. 1: distribution of conference participants based on employers](image)

- Press: 5%
- Government Agencies: 5%
- Suppliers & Manufacturers: 12%
- Quantity Surveyors: 3%
- Architects: 4%
- Engineers: 11%
- Contractors: 38%
- Training institutions: 16%
- Project managers/ property developers: 5%
- Others: 4%
- Water: 6%
- Finance: 8%
- Buildings: 22%
- Roads: 20%
- Mining: 12%
- Energy: 28%
SPONSORSHIP AND EXHIBITIONS

The planning committee agreed that the conference will be partially funded by the National Construction Authority and partially by sponsorship/conference participants’ fee. The Targets set for sponsorship was Kshs. 10,000,000.00. There were four categories of sponsorship including; Gold sponsorship, Bronze sponsorship and exhibition. The number of potential sponsors contacted was over 300 and 45 expressed interests but only 23 came on board. The table below shows the companies that confirmed, their category and amount of sponsorship which was totaling Kshs. 4,024,410.00

<table>
<thead>
<tr>
<th>Item</th>
<th>NAME</th>
<th>CATEGORY</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mabati Rolling Mills</td>
<td>Gold</td>
<td>500,000.00</td>
</tr>
<tr>
<td>2.</td>
<td>Bamburi Cement</td>
<td>Gold</td>
<td>500,000.00</td>
</tr>
<tr>
<td>3.</td>
<td>Savannah Cement</td>
<td>Silver</td>
<td>250,000.00</td>
</tr>
<tr>
<td>4.</td>
<td>East Africa Portland Cement</td>
<td>Silver</td>
<td>250,000.00</td>
</tr>
<tr>
<td>5.</td>
<td>Rexe Roofing Ltd</td>
<td>Bronze</td>
<td>125,000.00</td>
</tr>
<tr>
<td>6.</td>
<td>Airtel Kenya</td>
<td>Bronze</td>
<td>125,000.00</td>
</tr>
<tr>
<td>7.</td>
<td>East Africa cables</td>
<td>Exhibition</td>
<td>150,000.00</td>
</tr>
<tr>
<td>8.</td>
<td>National Industrial Training Authority</td>
<td>Exhibition</td>
<td>150,000.00</td>
</tr>
<tr>
<td>9.</td>
<td>General Motors</td>
<td>Exhibition</td>
<td>150,000.00</td>
</tr>
<tr>
<td>10.</td>
<td>KCB group</td>
<td>Exhibition</td>
<td>150,000.00</td>
</tr>
<tr>
<td>11.</td>
<td>Kenya Revenue Authority</td>
<td>Exhibition</td>
<td>150,000.00</td>
</tr>
<tr>
<td>12.</td>
<td>East African Portland Cement</td>
<td>Exhibition</td>
<td>150,000.00</td>
</tr>
<tr>
<td>13.</td>
<td>Regional Center for Resources Mapping</td>
<td>Exhibition</td>
<td>150,000.00</td>
</tr>
</tbody>
</table>

Table 1.2: Conference sponsors – (cash sponsorship)

<table>
<thead>
<tr>
<th>Item</th>
<th>NAME</th>
<th>CATEGORY</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.</td>
<td>Stone Technology Centre</td>
<td>Provided advert space in their magazine</td>
<td>-</td>
</tr>
<tr>
<td>15.</td>
<td>Kenya Green Building Society</td>
<td>Sponsored delegates</td>
<td>-</td>
</tr>
<tr>
<td>16.</td>
<td>UN Habitat</td>
<td>Sponsored delegates</td>
<td>-</td>
</tr>
<tr>
<td>17.</td>
<td>Kenya Institute of Public Policy Research and analysis</td>
<td>Planning committee member</td>
<td>-</td>
</tr>
<tr>
<td>18.</td>
<td>Institute of Quantity Surveyors of Kenya</td>
<td>Planning committee member</td>
<td>-</td>
</tr>
<tr>
<td>19.</td>
<td>Architectural association of Kenya</td>
<td>Planning committee member</td>
<td>-</td>
</tr>
<tr>
<td>20.</td>
<td>Jomo Kenyatta University of Agriculture and Technology</td>
<td>Planning committee member</td>
<td>-</td>
</tr>
<tr>
<td>21.</td>
<td>University of Nairobi</td>
<td>Planning committee member</td>
<td>-</td>
</tr>
<tr>
<td>22.</td>
<td>Kenya Institute of Highway and Building Technology</td>
<td>Planning committee member</td>
<td>-</td>
</tr>
<tr>
<td>23.</td>
<td>Kenya Institute of Public Policy Research and analysis</td>
<td>Planning committee member</td>
<td>-</td>
</tr>
<tr>
<td>24.</td>
<td>Technical University of Kenya</td>
<td>Planning committee member</td>
<td>-</td>
</tr>
</tbody>
</table>
Keynote Speakers and presenters

The conference planning committee identified 8 sub-thematic areas for which the speakers could preset their papers. An advert for call of papers was then made in the print media. Several reminders were done through posters and in the social media/internet platform. 38 No. papers were submitted and an evaluation committee preferred 33 No. papers to be presented during the conference. The conference committee agreed to withdraw the registration charges for presenters during this conference. Hence registration for presenters was free. The committee also identified persons of interest in construction industry worldwide who had some influence in line with the thematic areas. 12 No. key note speakers were invited to give talks on the various thematic areas in order to start the sessions.

The keynote speakers who participated in this conference include;

1. Arch. Eric Noir, a director at Design for Abundance, South Africa
2. Dr. Heather Yates, Dean at the Oklahoma University, United States of America
3. Eng. V. K. Rastogi, Director at Stone technology center, India
4. Qs. Martin Smith, Founder of viable computing, South Africa
5. Eng. Grace Olukune, Chief Engineer power utility company, South Africa
6. Qs. Moses Nyakiongora, Inspectorate of Buildings, MoLHUD, Kenya
7. Dr. Humprey Njogu, KIPPRA, Kenya
8. Mr. Kiprono Kittony, Chairman, Kenya Chamber of Commerce and Industry, Kenya
9. Dr. Moses Ikiara, Managing Director, KEN investment authority, Kenya
10. Eng. Solomon Ouna, Engineer Kenya Railways, Kenya
11. Arch Oliver, Landscape architect, Kenya wildlife service.
12. Mr. Tim Hitchens, Athena properties Kenya ltd,

The travel and accommodation arrangements from the international keynote speakers were handled effectively. The guests were put up at Hotel Intercontinental, Nairobi. One of the Authorities vehicles was allocated to provide local travel for the key note speakers.

Venue

The conference committee preferred KICC due to its proximity to the target participants and ease of access. The venue was set up for the conference halls, exhibition area and the gala dinner. The following venues within KICC were available;

- Amphitheatre: Opening ceremony and plenary sessions
- Lenana Hall: break-away conference sessions
- Courtyard: Gala dinner
- Amphi Foyer: Exhibition area

Conference Advertisement

The conference committee opted to aggressively advertise the event since it was the first one ever. The following media was chosen;

- Capital FM morning radio show
- Classic FM morning radio show
- Television: KTN and Nation TV
- Billboards were placed at globe cinema, Rapta road and Mombasa road.
ABOUT THE CONFERENCE FINANCING

Actual Conference Expenditure

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conference package &amp; venue</td>
<td>12,168,690.00</td>
</tr>
<tr>
<td>2</td>
<td>Conference merchandise</td>
<td>3,057,310.00</td>
</tr>
<tr>
<td>3</td>
<td>Official Launch of ACORCE &amp; NACRA at Panafric hotel</td>
<td>228,000.00</td>
</tr>
<tr>
<td>4</td>
<td>Conference advertisement</td>
<td>8,493,445.00</td>
</tr>
<tr>
<td>5</td>
<td>Site Visits</td>
<td>1,089,880.00</td>
</tr>
<tr>
<td>6</td>
<td>Facilitation of Keynote guests</td>
<td>1,161,125.00</td>
</tr>
<tr>
<td>7</td>
<td>Photography and videography</td>
<td>75,400.00</td>
</tr>
<tr>
<td>8</td>
<td>Consultancy for event management of ACoRCE</td>
<td>3,712,000.00</td>
</tr>
<tr>
<td>9</td>
<td>Conference opening &amp; Gala dinner entertainment</td>
<td>661,400.00</td>
</tr>
<tr>
<td>10</td>
<td>Plaques for presenters &amp; keynote guests</td>
<td>262,580.00</td>
</tr>
<tr>
<td></td>
<td>TOTAL EXPENSES</td>
<td><strong>30,909,830.00</strong></td>
</tr>
</tbody>
</table>

Table 1.2: Actual conference expenditure

Conference Revenue

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amount from direct sponsorship</td>
<td>2,975,000.00</td>
</tr>
<tr>
<td>2</td>
<td>Amount from Advertisements in program</td>
<td>80,000</td>
</tr>
<tr>
<td>3</td>
<td>Amount from delegates fees</td>
<td>969,410.00</td>
</tr>
<tr>
<td>4</td>
<td>NCA</td>
<td>26,885,420.00</td>
</tr>
<tr>
<td></td>
<td>TOTAL REVENUE</td>
<td><strong>30,909,830.00</strong></td>
</tr>
</tbody>
</table>

Table 1.2: Actual conference income

KEY FINDINGS

Opening Ceremony

The conference kicked-off at 9 am with the registration of delegates. The chief guest was Dr. Fred Matiangi, Cabinet Secretary, Ministry of Information, Communication and Technology and Ag. Cabinet Secretary, Ministry of Lands, Housing and Urban Development. Other key guests who graced the opening ceremony were Dr. Reuben Mutiso, Dr. Manu Chandaria and Mr. Kiprono Kittony. In attendance were: PS, Ministry of Lands, NCA Board, Representative from the Chamber of Commerce.

When all the guests made their speeches, it was noted that;

- The construction industry is constrained by lack of a robust National Construction Regulatory framework that addresses the adaptation of emerging trends in construction project financing and development, construction business development, construction materials, and standards.
The NCA is currently conducting a baseline skill survey which will be launched soon. From the survey key issues highlighted include the nature of skilled manpower in the country: 1.2% of the women are involved as artisans and that those between the ages of 18 and 30 have not been adequately trained with only 6% having a major training. 66% of the 6% were masons with the remainder being tile fixers and plumbers. Skill-age split as majority of professionals are above 45 years, the youth being the largest population are mostly unskilled.

Research and development is very important in regulation of the construction industry, monitoring markets, increasing profitability, in achieving Best Quality, Affordability and Timeliness and in risk reduction and management.

For realization of the “Buy Kenya Build Kenya” vision “… The country must commit to buy Kenyan products, and this commitment starts with the top management levels, professionals and the Government at the forefront.

Recognition of local materials and manpower will create jobs and improve the lives. Though a great challenge of inadequacy in skilled or trained manpower locally especially in the construction industry is rampant.

Equity must be a part of every discussions, and efforts should be focused on reducing the inequality gap.”

There a many innovation and technology gap in the construction sector, providing a need for benchmarking and development of standards that integrate ideas including green building, and affordable housing.

There was need to train workers within the construction industry and thereafter license them hence offering them recognition of the skills.

There is a great gap in information sharing and information management within the construction sector, necessary in developing policy and building the sector. Manufacturers are challenged to lend out data that can be used in furthering the area of research and development in the construction industry.

National Building code, which is an integral regulation within the sector, has been revised and is to be tabled in Parliament for debate and approval.

There is an increase in collapse of buildings in the country, and the increased of loss of life within and without construction sites is alarming. NCA was therefore instructed to add this requirement in the Quality Assurance Checklist, and ensure that this is enforced.

Fees charged redundancy in approval authorities and the long-time periods in approval of building plans have been raised by stakeholders as an impediment within the industry.

Harmonization process and reduction of fees for development in the construction industry is ongoing.

more resources should be put in research especially in;

Development of policy on adoption of emerging technologies in the construction of more affordable housing to mass low income population.

Incentives that will encourage Private-Public Partnerships in the provision of Low Income Housing should be engaged.

devising policy options in supporting county governments in growing and regulating the construction sector
- Financing Construction
- Use of PPP's in improving the skill-gap through trainings or certification programmes.
- In upholding professionalism in the built environment personal ethics is essential and should be taken serious by contractors, consultants, manufacturers and suppliers.
- The major issues of gross misconduct in construction are bribery, exaggerating experience by professionals, misleading clients, falsification of documents amongst others.
- Government and its agencies should explore possibilities of resettling slum dwellers within the city and convert them to something of value.

**Day one presentations**

There were 3No. Keynote speakers and 5No. Speakers who had submitted papers. Each presenter had an estimated 10 minutes to present. Due to the delay in starting the morning program most of the program was distorted and several presenter were requested come the following day.

For the presentations done it was noted that;

- Women should be included in the construction industry in order to create the diversity of thought
- Women are disadvantaged in construction industry because; they are the minority and hence they feel uncomfortable, they experience low self-efficacy and juxtapositioning of ideas
- Women who have made it to act as mentors to young girls in the construction industry
- Women should be included in the construction industry in order to create the diversity of thought
- Carry out tracer studies
- People have a lot of knowledge but they are unable to pass it on to others due to lack of social and analytical skills
- People to inculcate a culture of knowledge sharing, with a focus on business, creation of senior management support, provision of incentives, and development of continuous learning and measurement of performance improvement.
- Nairobi was voted as the no.1 city with highest return on investment (at 25%), with Mombasa 2nd (at 19%) in 2013/2014.
- The challenges facing the construction industry include:
  - Unsupervised contractors
  - Delay time in construction cycles
  - Adoption of PPP constrained
  - Unplanned development that constrain provision of public goods
  - Construction financing
  - Mistrust on local contractors, with preference to foreign contractors
  - Safety and reliability
- The challenges facing adaptation of PPPs with respect to the Kenya’s business environment include:
  - Funding gap
  - Adequacy and quality of services
  - Technology/knowledge gap
Information asymmetry and intellectual property rights are real issues in practice and the PPP act, does not address the protection of ideas/intellectual property.

Poor building practices are largely to blame for turning moderate earthquakes into major earthquakes.

**Day two presentations**

There were 9 No. Keynote speakers and 21 No. Speakers who had submitted papers. There were also 6 No. Presenters who could not get an opportunity to make presentations due to very limited time available. Each presenter had an estimated 10 minutes to present.

For the presentations done it was noted that;

- Policy makers should look for ways to regularly make independent audits of buildings and focus on quality control of concrete.
- Resilience of structures is a function of safe design and adequate materials.
- The construction industry should adhere and comply with construction standards.
- Non-destructive concrete testing methods should be developed.
- Intensity floor to land ratio to inform on infrastructure; open spaces.
- There is need for a relationship between density and sustainability-correlation; between density an happiness factor; density and transport.
- There is need to start with economic sustainability in design process.
- Audit of buildings is currently ongoing in Nairobi since Feb. 2015 and so far close to 50% of the buildings are not habitable.
- In order to develop African countries as a potential source of supply of stones, there is need to:
  - Develop Mechanized Quarries of Granite & Marble
  - Setup modern processing factories for manufacture of Slabs & Tiles
  - Install Automatic Machines for making Monuments, Sculptures & Artifacts
  - Set up a Centre of Excellence for Education, Training, Consultancy & Market Research
  - Prepare a Blue Print for Development of Africa as a Potential Source of Supplying stones.
- In construction there is lot of incentives to cheat hence proper enforcement measures to be put in place and engineers should take responsibility for the quality of work in project.
- There is concern about high expense in inspecting for safety and more research should be done on how to bring down the cost.
- Structural audit ongoing is a 3-cycle procedure and there is need for scientific backing of structural audit of buildings.
- Inclusion of CPM in the NCA Board would enhance growth of Project management activities in the industry.
- Formation of a board to regulate the practice and development of construction project management and construction management.
• Development of a scheme of service for the two careers in the relevant departments.
• NCA- Enforce employment of competent CM by contractors as mandatory requirement for registration.
• Approving Authorities- Require submission of and enforce safety and health plan as part of project documents for plan approval.
• Some of the policy concerns from the research findings include:
  o Standards : Shadow (informalities) and shoddy works (poor quality works),
  o Environmental impact,
  o Ease and Cost of doing business
  o Timelines: Delay of projects either in implementation or completion,
  o Safety and security concerns : Workers, End users, among others
• Strengthening the policy framework is necessary and it requires;
  o Review of policy framework – Targeting: needs plus instruments
  o Stakeholders consultations and participation
  o Further analytics : Research support and strengthening (Dynamism which is work in progress)
• Automatic Brick Layer is a technological masterpiece that will fill the market gap in provision of affordable building materials. The machine will circumvent the challenges of:
  o Comprised quality standards and poor workmanship
  o Affordability of building costs by lower classes
• Construction industry in Kenya although very lucrative in Kenya is confronted with accidents - Nairobi County accounted for 46% of all construction related accidents
• Between June - July, 2015 the construction sector was leading with 105,000 accidents. Majority of construction injured workers were casual workers with 42% arising from falling from heights.
• Health and safety should be included right from preparation of contract documents and should be a specified % of the contract sum
• 38% economic saving is attained when reclaimed asphalt concrete is incorporated in the asphalt concrete cold mix manufacture resulting in many low volume gravel roads.
• Government agencies to develop policies and guidelines to allow milled materials from roads under reconstruction to be stockpiled and used use for maintenance of low volume roads in the locality of milling.
• To investigate whether EPS panels have a distinct advantage in damping quarry blasting induced-ground vibrations than masonry.
• EPS panels were better at damping ground vibrations compared to masonry work and should be adopted for construction of structures near quarries.
• The following are some of the causes of building failures and their remedies;
  o Inadequate geotechnical and material investigations
Approval to proceed with the construction of major structures should at all times be subject to production of authentic reports that give evidence that comprehensive geotechnical investigations are done.
  o Lack of customized versions of international specifications
The government must invest in research and performance monitoring of completed structures

  o Lack of ethics
Contracts and other professionals involved in the construction industry, who continuously demonstrate lack of professional ethics, should be struck off the register and be black-listed for a period to be defined in law but should be punitive enough.

  o Poor Supervision
Only engage competent and experienced persons with integrity to supervise the works but keep them motivated and well remunerated

  o Weak Laws
We should review our laws and make punishment for all those who approve, design, and supervise construction.

  o Incompetent design teams (quacks)
Heavy fine or make it a serious criminal offence for one who does not possess a practicing license as an Engineer to design or approve design of engineering structure

  o Lack of Quality Control
Only engage competent and experienced persons with integrity to supervise the works but keep them motivated and well remunerated.

• VBS applied in residential buildings results in significant reduction of weight of concrete of close to 33% in floor slabs. It then allows weight reduction on the amount of steel and results in fewer columns and beams. Slabs can achieve spans of 7 x 7m slab area without beams.
• There is need for NCA to register material suppliers
• Need for incentive driven construction sites and NCA should budget for a reward system for the public
• There should be a periodic audit of contractors to file their safety returns
• There should be research on the labour based contracts and in areas where the client is building by himself
• The Automated Machine Guidance in road construction inputs 3D designs of road and is accurate to the millimeter. This technology has never been used in Kenya and the government should develop the CORS (Continuous Reference Network) infrastructure which enables this technology.
• Directorate of TVET is decentralizing the training activities to address the skills gap in the industry. HF Foundation has been working to invert the labour pyramid by creating the 1 million artisans
• Companies are importing trainers from foreign countries to train their staff which impacts on the cost. This is due to the fact that there is a lack of professionally trained workers at the operative level
• Industry demands are becoming more sophisticated hence the need for the reorientation in staff training
• With NCA endorsement, private sector can take a lead in training for industry demanded skills which may not fit within the existing academic curriculum
• There is conflict between the county government and the national government in the regulation of the construction industry, hence bringing a proposal to repeal the physical planning act.
• The legislation within the construction industry sometimes conflict due to the large number of laws and hence there is the need to harmonize all the laws relating to construction
• NCA should be expanded to be an umbrella body to oversee all other laws and bring harmonization
• The benefits of 3D laser scanning in the construction industry include;
  o Quality Control: used to reduce work
  o Reduction of Human traffic at work, hence less accidents
• NCA to consider acquiring these equipment and then train industry players on how to incorporate this technology.
• Nairobi would lose 800 to 3500 residential and commercial buildings in the event of a collapse, resulting in thousands of death and injury
• Government should encourage the development of seismic resistant designs for concrete structures
• The NCA should design a reporting and open-data program to improve on structural safety since building collapse is the main cause of death during earthquakes. The use of non-destructive testing of concrete during construction should be encouraged.
• There should be an educational website, forum, and quality awards program by the NCA guided by the stake-holders on structural safety of buildings.
• Land acquisition procedures are the main cause delaying projects. Land policy towards infrastructure development is ill-defined leading to arguments and litigation.
• There is a shortage of large construction firms in Kenya who can partner with the EPC contractors to realize 40% local content in Mega constructions e.g. SGR
• There needs to be provision of incentives for promoting construction/developers putting up educational construction sites and allow industry to learn from these sites.
• Need for developers to get more information on where they should invest so as to enjoy the incentives.

CHALLENGES AND POINTS NOTED
A number of challenges were noted during the planning and execution of the conference. These include;

Sponsorship.
• Many potential exhibitors and delegates expressed fears due to the uncertainty of the turn-out ACoRCE 2015 being the first one of its kind.
• The preparation time was very short given that approval and node to proceed had eaten some of the planning time. This culminated in late invitation to exhibitors who had closed their financial budgets for the year.
• The decision to award complimentary exhibition booths came up late and hence some exhibitor expressed lack of lead time to the event.
Delegates
• A majority of the delegates expressed concerns that the conference fee was too high.
• The liaison between ACoRCE planning committee with professional bodies on award of CPD points to their members who attend conference was done late and in essence left doubt amongst potential delegates.

Presentations
• The final program was posted to the website later than expected due to late confirmation of keynote speakers and late arrivals of power point for the paper presenters.
• Conference planning committee had a target of 50 papers but received only 38 abstracts. This implied the low uptake of research opportunities in the industry.
• There were grave concerns on time management and delegates expressed concerns on why the program was not followed to the extent of not allowing some presenters not to present.

Venue
• KICC had double booked the venue and there was a conflict in whom to occupy grounds. Motor show participants had not vacated courtyard by 21st September, 2015 therefore decision had to be moved to the Amphi-foyer.
• KICC had allocated parking space for delegates but on the conference days it became evident that most of these space were occupied.

Conference merchandise
• Some of the conference merchandise arrived at the conference venue late some delegates missed important merchandise.
• The registration & ushering team did not have briefing meeting on time which might have contributed to the miscommunication that led to dissatisfaction of the delegates.
• Conference ground team should have been rewarded for good efforts. The conference planning committee did not have budget for reward schemes.
• Name tags for the keynote guests were displaced and registration team had to improvise.

Other service providers
• The official conference photographer did not perform as expected and in essence lost very many key photos of the event. The photographic memory for the conference was not captured.
• The billboards advertisements were put up later than as planned this was because the supplier rejected the contract very late on grounds of low pricing.
• The procurement of the tents for the lunch at construction sites was done eleventh hour hence obtained at high cost. This was because the planning committee did not capture it in the planning but due to the prevailing weather had to be included.
• The event coverage in the media was not hype.
CONCLUSION

ACoRCE 2015 was successful by all standards given the fact that it was the first of its kind in Kenya. The delegates expressed a lot of appreciation for the knowledge and contacts gained. This indicated that the NCA achieved its key objective of improving construction business by showcasing innovations and creating network platform for construction practitioners. The close interdepartmental relations within the NCA fraternity were also evident given the cooperation to make the conference a success.

The conference attendance was 563 delegates close to 70% of the targeted participation. 90.8% indicated that the conference was worth their time and 55.3% thought the information shared was beneficial to their business. The sponsorship of 4,024,410.00 was very low in respect to the targeted figure 10,000,000.00 i.e. 40%. The delegates’ registration fees were also low in respect to the planning committee targets.

RECOMMENDATIONS

Drawing from the challenges experienced and responses by potential sponsors, the following recommendations should be considered for future events as this:-

- Planning to start at least 9 months before the actual event to enable most companies to incorporate or consider it in their financial budget.
- Publicity should be undertaken earlier to create awareness of the conference prior to contacting the potential targets (delegates & exhibitors)
- The agreement between NCA and stakeholders coming on board on complimentary exhibition should be communicated earlier
- There should be clear communication on the issuance and number of CPD points to the relevant professionals and contractors well in advance.
- There should be a special consideration on pricing especially in situations where some delegates wish to attend for a specific number of days.
- The program should be finalized two months before the event so delegates can plan their days and know what is of interest to them.
- Invitations to be sent at least 3 months to the event so as to get maximum sponsorships.
- Select a date and month when there are no other events related to the same industry taking place.
- Enough merchandise should be ordered so that everyone participating receives a packet. Merchandise management should exquisite to avoid mismanagement.
- Briefing on such activities as registration and coordination should take place prior the event and if possible be able to practice so as to execute the activities as effectively as possible.
- There should be a plan in place such as pay points or any other workable solution to avoid double registration or fraudsters. E.g. online payments systems.
- There should be improved planning for purposes of easier way finding, smooth and effective coordination of activities
- There should be a very strict guideline on time management so as to avoid things running behind schedule. This will enable success as well as maximum achievement of all activities planned.
• It should be made clear during the planning/briefing or prior to the event on who should be in charge of what area as ushers so as to avoid the confusion and unnecessary complaints from exhibitors. This will ensure that we have someone or some people responsible and held accountable for all that goes on pertaining exhibitions.

• The opening ceremony should be done day prior to the event to allow for guests to interact over dinner or a cocktail. This will avoid delays waiting for chief guest to officially open conference causing a butterfly effect in time management.

• The communication to foreign delegates should be properly structured and clearly indicate reasons for invites. This will go a long way in getting maximum and desired participation by them.

• During prayers, all faiths should be considered such that there is a Christian, Muslim, Hindu or any other religion represented. This will ensure that all participants feel comfortable and appreciated.

• Maximum respect and excellent customer service and/or relations by organizers should be observed throughout such an event. This includes being friendly, polite and clear communication. This will go a long way in ensuring good relations and protecting the image of the organizers as well as motivating participants to attend another event when invited. Being the first event, first impression really matters.

• The choice of artists for entertainment for future should be based on a group that is cut out to entertain people from all walks of lives in such a way that participants can easily relate and enjoy.

REFERENCES
1. ACoRCE 2015, event manager close-out report authored by APRM.
2. ACoRCE 2015, Rappoteurs report
3. ACoRCE 2015, delegates’ feedback report