Challenges faced by todays construction companies construction essay

There are numerous challenges facing today's construction companies. Starting with construction manager's. Some are new to the industry, and some are centuries old. Many of these challenges are a direct result of construction operations, while others a result of indirect, peripheral activities. A surprising number of challenges are not construction issues but must be addressed and managed by the construction manager (CM) to ensure project success. Some of the construction issues include workforce considerations, safety, time constraints, and the changing nature of the work. Non-construction challenges that CMs face that are part of the business landscape include legal issues, government regulations, environmental concerns, and socio-political pressures.

Nature of the Work

Construction is a complex array of interdependent activities that some would say is at best organized chaos. The very nature of construction introduces challenges typically not encountered in other industries. For example, construction differs widely from manufacturing in that:• the work is often seasonal• each project is unique

Work Force Considerations

As is the case in any business, people are a construction organization's greatest resource. Construction operations depend on the knowledge and skills of people planning and executing the work.

Time Constraints

Time is money to owners, builders, and users of the constructed facility. From the owner's perspective there is lost revenue by not receiving return

on investment, cash flow crunch, potential alienation and loss of clients/tenants, extended interest payments, and negative marketing impacts.

Environmental Issues

The impact of environmental issues on construction has been escalating since the 1970's. Today, owners and constructors are bound to clearly defined duties and liabilities regarding the environment. Nearly all segments and sectors of the industry are affected by one or more environmental issues. Strict regulation, permitting requirements, and enforcement are designed to protect human health and the natural environment.

Legal Issues

Our countries has become a highly litigious society. The number of civil actions is growing at an alarming rate. Businesses across the board are at great risk because of liability and other legal implications. Not many industries are exposed to greater risks from legal issues than the construction industry. Construction business is conducted through contractual arrangements that at times results in disputes. Claims and disputes have been steadily on the rise for years.

Governmental Regulation

Increasing government regulation is another of the challenges facing today's CM. Along with increasing environmental and safety laws, the industry is coming under greater regulation through the construction codes and licensing requirements. These codes provide for public safety by establishing minimum construction standards for structural integrity and fire safety.

Question 1b

During the last 50 years the professional discipline of project management has become well established in the Western business world. Until recently Singapore has been relatively isolated from the influence of Western management practices, and there has in Singapore been no comparable parallel development of the profession of project management. However, since the Singapore economic reforms of the 1980.

Theoretical background

Singapore and Western culture

Culture, consisting essentially of people_s collective deep-held values and beliefs, is a critical factor in shaping people_s conceptions of the world around them. There have been many studies aimed at understanding national cultures and identifying the influences of people different values and beliefs on their life and work. We explore below some apparent areas of difference between Singapore and Western cultures based on three dominant models, namely those of Hofstede , Trompenaars and Schwartz .

1. Hofstede's model

Hofstede first identified four dimensions of culture, labelled power distance (PD), individualism vs. collectivism (ID), masculinity vs. femininity (MA) and uncertainty avoidance (UA). These four dimensions were initially detected through a comparison of the values of matched samples (employees and managers similar in all respects except nationality) working in 53 national subsidiaries of the IBM Corporation.. The data suggest that Singapore is

somewhat different from the UK and the USA on dimensions MA and UA, and more distinctly different on dimensions PD, ID and LT.

2. Trompenaars' model

Trompenaars_ study involved 30 companies in 50 different countries. Seven dimensions of culture were identified. Five come under the broad heading of relationships with people, which includes universalism vs. particularism, individualism vs. communitarianism, neutralvs. emotional, specific vs. diffuse, and achievement vs. ascription. The sixth dimension concerns attitudes to time and the seventh attitudes to the environment.

3. Schwartz's model

Drawing on findings from his individual-level study of the content and structure of values Schwartz proposed a continuum of cultural values representing the relationship between personality and cultural factors. His model was based partly upon Hofstede_s and Kluckhohn and Strodtbeck_s work and was tested using data collected between 1988 and 1992 from respondents in 38 nations. ony). Because it arranges value types and broad dimensions into a continuum, Schwartz_s model is regarded as a refinement of Hofstede_s work. Important dimensional differences between Singapore and Western cultures [6–8, 11–13]Singapore cultureWestern culture (UK & USA)CollectivismIndividualismLarge power distanceSmall power distanceStrong uncertainty avoidanceWeak uncertainty avoidanceLong-term orientationShort-term orientationOuter-directedInner-directedRelationshipContractualConservatism, tension between hierarchy and harmonyAutonomy, tension between mastery and egalitarian commitment/harmonySingapore vs. UK conceptions of construction project

managementSingapore conceptionsUK conceptionsRelationship with Company Team Client Subcontractors Conflict resolution Organizational structure preference Attitude to uncertaintyEmployee of the company Working for own career achievements and the company _s benefits Family-like, mutual-care Existing long-term team _We _, _own' people _Boss' of the project Make the client happy Working and personal relations Brothers/sisters of the family Long-term cooperation Negotiation first and last No claims Need good relationships Disliking Western-style matrix structures Preferring to use own stable, existing team Too many uncertainties and responsibilities Enjoying final achievement, but feeling pres-sured throughoutManager of the project Working for own career achievements and job satisfaction Friend-like, respect and trust New team, new people _You' and _I' work for this project Provider of project funds Keep the client informed Working relations A member of the team Cooperation for this project Negotiation first Claims when necessary Need good contract Accepting and being used to the matrix structures Liking to know new people through new project Enjoying experiencing new things Enjoying both final achievement and day-to-day challenge

Relationships

The individualism–collectivism dimension provides _structure for the rather fuzzy construct of culture_ and has been the focus of a great deal of research interest in crosscultural issues . The primary characteristics of ID include: (1) relationship between personal and collective interests and goals; (2) emotional dependence on the collective; (3) group solidarity, sharing, duties and obligations; (4) identity based in the social group.. Singapore project

managers will pay greater attention than Western project managers to building and maintaining personal relationships within the project team, compared to the task. Singapore project managers will primarily associate their work identity with the company. Western project managers will primarily associate their world identity with the self.

Conflict resolution

In contrast to the West, Singapore collectivism, harmony, outer-directed and relationship culture may have implications for project managers_ ways of experiencing and resolving conflicts [23, 24]. Consistent with the differences in conceptions of relationships identified above, Singapore project managers are likely to pay greater attention to group harmony, maintaining _face_, and relationships with all involved when resolving conflicts.

Organizational structure

PD indicates the extent to which people accept the unequal distribution of power. UA refers to people_s discomfort with uncertain or unstructured situations, and preference for predictability and stability. The two together may affect people_s preference for form of organizational structure. In Singapore culture larger PD and stronger UA are associated with greater centralization and formalization. Organizations are usually taller, more hierarchical pyramid structures. In contrast, Western organizational structures are usually flatter with a less distinctive hierarchy.

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Methods

. Sample selection - The samples of project managers for this study were selected from construction firms in Singapore and the UK. In order to highlight the cultural influences on project managers_ conceptions the Singapore and UK samples were matched as far as possible in terms of their work experience and the type and size of their current project. The samples for this in-depth, interpretive study consisted of 10 Singapore and 10 UK project managers, selected using a theoretical sampling process from 12 Singapore and 13 UK project managers interviewed.

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Findings

All the Singapore and UK project managers in our samples considered their fundamental task as being in charge of the management and delivery of a project within budget, on time, to a defined scope. From their descriptions of their ways of experiencing and managing their work in order to fulfil the task, the similarities and differences of their conceptions of the work became evident.

Relationship with company

Assigned by their company as the project manager for the current project, all Singapore and UK informants were managing the project on behalf of their company. However, their conceptions of their relationship with that company were markedly different. In contrast the UK informants saw themselves more

as individuals. It appeared that their primary concern was which project to work on, with the choice of company secondary.

Relationship with client

Both Singapore and UK managers stated that a good relationship with the project_client was important, yet with different conceptions underlying their statements. The Singapore project managers conceived their client as _boss_ of the project. The client had the power to award or not award a contract, to appoint or dismiss a project manager and, consequently, his long-term team, and to decide when and how much to pay for the work. It was therefore very important to make the client happy.

Organizational structure preference

The matrix organization is a widely accepted structural form for UK project managers, yet Singapore project managers expressed their dislike of it. They preferred to use their own stable, existing team as if they were their own department members within the company, rather than organizing people from different departments as a temporary project team.

Attitude to uncertainty

Construction projects were conceived by both Singapore and UK informants as fraught with uncertainty. However, the Singapore and UK project managers had quite different attitudes to the resulting challenges. The Singapore project managers appeared to feel more pressured. Although they cherished the final sense of achievement, they complained of too much responsibility and suffering throughout the project recommend any research and other appropriate actions needed to improve the structural safety of

buildings, and improve evacuation and emergency response procedures, based on the findings of the investigation.

Procedure—

(1) Development.—Not later than 3 months after the date of the enactment of this Act, the Director, in consultation with the Fire Administration and other appropriate Federal agencies, shall develop procedures for the establishment and deployment of Teams. update such procedures as appropriate.

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(2) Publication.—The Director shall publish promptly in the Federal Register final procedures, and subsequent updates thereof, developed under paragraph

Construction strategies and methods.

SingaporeAim to be a caring and progressive organization that values its people, integrity, innovative spirits and service eminence. Ensure high safety standards and promote quality excellence in the built environment. Champion barrier-free accessibility and sustainability of the built environment. Lead and transform the building and construction industry by: a. Enhancing skills and professionalismb. Improving design and construction capabilitiesc. Developing niche expertised. Promoting export of construction related services. United States of AmericaCaring and Progressive improvement in satisfying the public welfare through development in construction. Promise high level safety and standardized work. Provide appropriate infrastructure. Have a clear target and take progressive steps.

Identify how measurable benefits could be brought to the construction and post-occupancy management of assets. Building safety enhancement. Regulations of building constructionGeneral interpretationsGeneral safety and health provisions. Environmental sustain and career health. Life preserving equipment and personal covering. Proper protection from fire. Regulations of building construction were seem to be considered to same in western countries and Singapore.

Building materials used in Singapore

Thermal savings, Thermoplastic Roofing, Tile Setting Materials, Tiles, Tilt-Up Precast Concrete, Toilets, Traffic Coatings, Traffic Doors, Transformers, Translucent Wall And Roof Assemblies, Treated Wood Foundations, Unit Kitchens, Unit Masonry Assemblies, Unit Masonry Cleaning, Unit Skylights

Materials used in western countries

General Requirements

Site Construction

Concrete

Masonry

Metals

Wood

Plastics

Thermal Protection

Doors

Windows

Finishes

Specialties

Equipment

Furnishings

Special Construction

Conveying Systems

Mechanical

Electrical

Climatic conditions

Western countries.-The size of heating and cooling system is estimated using typical meteorology data. Pavement design and engineering are effected by temperature, precipitation, freezing and thawing. Storm water management

systems, including retentions and detention ponds are sized using past precipitation data and current definition. Singapore –Hot and Dry Conditions: It may be surprising to consider hot and dry weather as a problem. However, a lack of moisture can have dramatic effects on a construction project, especially on outside work stations. Cold Conditions: Concrete and Masonry: Cold weather can cause ice crystals to form and retain moisture. Cool temperatures can also slow the curing, which may affect concrete strength, promote spalling, and can ruin the finish.

Diagnosis procedure of buildings.

Diagnosis system in Western countriesArchitecture and Project management & related consultantsArson and fire investigationAttorneys and expert witness specializing in environmental law, construction law , and related fields. Air conditioning and cooling systemBuilding codes also see Standards.

Diagnosis system in Singapore

Order to be examined

Whole buildingChillersPumpsCooling towerAir handlerLocal micro-climate.

Case study

Collapse of buildings

In his report, Adeoye (1998) noted that between December 1976 and January 1995, there were over 30 cases of collapse of buildings reported across the country, with well over 250 persons losing their lives and several others being severely injured. In addition, Amanda-Ayafa (2000) noted that between May 1987 and April 2000 over 22 cases of building failure were reported in Lagos State.

Reinforced concrete structures

In the current construction industry in Nigeria, concrete has emerged as the most common building material. It is also worth noting that 100 per cent of the collapsed buildings in Nigeria were constructed from reinforced concrete. Hence, careful consideration must be given to factors that affect the strength of reinforced concrete The constituent materials for concrete are: cement, fi ne aggregate, coarse aggregate and water. Concrete is a very variable material, having a wide range of strengths. Concrete basically increases its strength with age. The precise relationship will depend on the type of cement used (Mosley et al , 2007). It is important that the aggregates for making concrete should be free of all sorts of impurities (BS 882, 1992). The maximum percentage of silt / clay content of sand for which the compressive concrete strength will not be less than 21 N / mm 2 is 3. 4 per cent for mixed ratio 1: 2: 4 (Olanitori and Olotuah, 2005).

MATERIALS AND METHODS

The materials used for this study are structural detailing, the PUNDIT 6 (Portable Ultrasonic Non-destructive Digital Indicating Tester), portable rotary drilling machine, 15 samples of 75 mm diameter cores of concrete, soil samples and a manually operated universal testing machine. The clients of the collapsed building were not willing to provide the architectural plans and structural detailing. Consequentially, as-built architectural plans and the structural detailing were produced from site inspection and by exposing the structural components such as slab, beams and columns. From the as-built structural detailing in conjunction with the as-built architectural plan, enabled reassessment of the structural integrity of the building was carried

out. Results of the reassessment of structural elements for tension reinforcement are given in Table 1 , whereas the summary of the results of the reassessment of the structural elements for anchorage length is presented in Table 2 and the summary of the reassessment of the beam for shear reinforcement is presented inTable 3 . Table 1 : The results of the reassessment of the structural elements for area of tension reinforcement

Member checked for area of reinforcement Remark

Floor Slab (150 mm) Area of reinforcement provided okBeam (250 mm × 400 mm) Area of reinforcement provided okColumn (250 mm × 250 mm) Area of reinforcement provided okRedesign information : Use of building: Hotel. Imposed load: 2. 1 KN / m 2 (BS 63399-1). Table 2 : The summary of reassessment results of the structural elements for anchorage lengthSerial no . Member Diameter Provided anchorage Required anchorage Remark

(mm) length(mm) length(mm)

1 . Slab 12 75 144 Not ok2 . Beams 16 75 192 Not ok3. Columns 16 75 192 Not okTable 3 : The summary of the reassessment results of beam for shear reinforcement

Serial no. Spans Provided shear Required shear Remark

1 Span 1 Y10@300 Y10@250 Not ok2 Span 2 Y10@300 Y10@250 Not ok3 Span 3 Y10@300 Y10@250 Not okNon-destructive test was carried out on the building using the PUNDIT 6 instrument. The PUNDIT 6 can be operated on the AC mains; however, for field use, an internal nickel cadmium battery, when fully charged, will supply power for about 12 hours continuous use. Pulse velocity= path length/transit timeThe instrument indicates the time

taken for the earliest part of the pulse to reach the receiving transducer measured from the time it leaves the transmitting transducer when these transducers are placed at suitable points on the surface of the material..

Table 4 : Results from UTM (universal testing machine) and the PUNDIT

Member's mm P UNDIT (N / mm 2) Universal testing machine (N/ mm2)

Beam 11. 6 10. 211. 4 10. 711. 4 9. 5Column 11. 4 9. 511. 7 9. 811. 7 9. 6Slab 10. 8 10. 711. 3 11. 710. 4 9. 4

RESULTS AND DISCUSSION

The results of the structural reassessment of the collapsed building are presented in Tables 1 – 3 . Table 1 shows that the design of the structural elements for tension reinforcements (for slab and beam) and compression reinforcements (for column) is adequate and could not have been the cause of the collapse. However, Table 2 shows that the anchorage length provided for tension reinforcements is not adequate. An anchorage length of 75 mm was provided for slab reinforcement, whereas the required anchorage length is 144 mm. An anchorage length of 75 mm was also provided for beam and column instead of 192 mm. Table 3 indicated that the stirrup spacing provided is inadequate. Spacing was provided at 300 mm instead of 250 mm. From Table 4 , the cube strength ranges between 8. 5 and 11. 5 N / mm 2 for the PUNDIT 6, whereas for the universal testing machine the result of the cube strength ranges between 7. 9 and 10. 8N / mm 2 . The characteristic strength of the concrete from the PUNDIT 6 is 8. 8 N / mm 2 , whereas that of universal testing machine is 8. 2 N / mm 2 . The results of the sieve analysis and fi eld settlement test. The percentage content of silt /

clay in the sand used for the construction of the collapsed building is 10. 24 and 10. 78 per cent for sieve analysis and fi eld settlement test, respectively. The average value of the percentage content of silt / clay from the two tests is 10. 5 per cent. The variation of strength against percentage content of silt / clay. Reference'sAdeoye , O . (1998) Analysis of the causes of and effects of foundation failure in building . Post Graduate Diploma Thesis, Nigerian Federal University of Technology. Amanda-Ayafa , A . (2000) Failures in building (a case study of Lagos Metropolis) . Post Graduate Diploma Thesis, Nigerian Federal university of Technology. Brown , M . D . , Bayrak , O . and Jirsa , J . O . (2006) Design for shear based on loading conditions . ACI Structural Journal 103 (4) : 541 – 550 . BS 1881 . (1983) Testing Concrete – Part 120: Method for Determination of the Compressive Strength of Concrete Cores . London: British Standards Institution . Olanitori , L . M . and Olotuah , A . O . (2005) The effect of clayey impurities in sand on the crushing strength of concrete (a case study of sand in Akure metropolis, Ondo State Nigeria) . In: C. T. Tam, K. C. G. Ong and T. H. Tan (eds.) Proceedings of the 30th Conference on Our World in Concrete & Structures , 23 – 24 August, Singapore. Peurifoy, Robert L., Clifford J, Schexnayder , Construction Planning, Methods and Equipment, 8th edition, New York, McGraw-Hill, 2006.

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Building failure - A guide to diagnosis, remedy and prevention, Addleson Lyall –Chapter 3.