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COMPARATIVE STUDY OF SCHEDULING WITH THE LATEST CRITICAL CHAIN PROJECT MANAGEMENT TECHNIQUE

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ABSTRACT

Since 1997, Critical Chain Project Management (CCPM) method has received a lot of attention and hundreds of successful cases have also been reported and all claims that it is possible to rapidly achieve highly reliable on-time delivery (OTD) with short project lead time (PLT) in multi-project environment. The main reason that CCPM can achieve highly reliable OTD and short PLT in multi-project environment can be contributed to that CCPM makes good use of safety time imbedded in tasks by two changes: logistical change and bad human behaviors change. However, if no bad human behaviors involved, does the mere emphasis on logistical change contributed to the success of project time reduction and OTD improvement? This is the key question still remained. A comparative study of the critical chain and Program Evaluation and Review Technique (PERT) planning methods, no bad human behaviors involved, was performed in this study. The simulation results showed that in terms of mean project time, CCPM is no significantly better than PERT. However, in terms of plan reliability, CCPM achieve higher reliable than PERT did and this is the contribution of CCPM logistical change

SAFETY HAZARD ASSESSMENT IN CONSTRUCTION INDUSTRY

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Construction industry is a deadly working place. Accidents on building sites are inevitable, but could be controlled to prevent minor or serious-consequences on the workers. The accidents may be due to the following factors: - Collapse of building parts and masses of earth. - Falling of objects and pieces of work on workers. - Falls of persons from heights, ladders and stairs.- Loading, unloading and transportation of loads.- Working on machines.- Blasting with explosives. Also many accidents occur due to the use of improper tools and equipment. Construction accidents are the result of injuries and or damage sustained as a result of endeavors to build, improve, repair, clean, demolish , or construct that take place in a specific facility. Construction accidents can range from property damage to personal injury. One of the “root causes” of work place injuries, illness, and incidents is the failure to identify or recognize hazards that are present, or that could been anticipated.Thus, control measures of accidents to ensure safety of workers and minimize the accidents on sites are essential. So if

safety is also incorporated into construction site management majority of construction accidents can be prevented. Safety is one of the vital issues in the success of the project. Safety programme ensures the worker to be mentally and physically prepared to execute a job quickly, fearlessly and efficiently. Safety is a way of life. It must be part of every individual at every time during performance of any activity. Safety means the condition of being protected from harm or other non-desirable outcomes. This project deals with Safety Hazard Assessment in construction industry by identifying the cause for accidents and implementing safety solutions for preventing the accident. For this purpose, initially Literature survey is done and then questionnaire regarding the factors affecting safety in construction industry is also prepared.

SOLID WASTE MANAGEMENT SHED AT THIRUVITHANCODE PANCHAYAT

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Solid waste refers here to all non-liquid wastes. In general this does not include excreta, although sometimes nappies and the faeces of young children may be mixed with solid waste. Solid waste can create significant health problems and a very unpleasant living environment if not disposed of safely and appropriately. If not correctly disposed of, waste may provide breeding sites for insect-vectors, pests, snakes and vermin (rats) that increase the likelihood of disease transmission. It may also pollute water sources and the environment

EVALUATING FACTORS INFLUENCING TIME DELAY AND COST OVERRUN IN PUBLIC CONSTRUCTION PROJECTS

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Public construction projects in Saudi Arabia have been suffering from low performance for the past decade. Cost overrun is one of the most important issues in project's performance and is nearly associated with most of public projects. The aim of this study is to identify and assess the major factors leading to cost overruns in education construction projects in the Northern Province of Saudi Arabia to minimize the risks' effects in future projects. The research methodology started by identifying cost overrun factors through literature review, project's documentations, and experts'

interviews. Professionals who worked at the construction projects undertook a questionnaire survey to investigate the importance of the cost overrun factors. The top factors of cost overrun were identified through the analysis of the factors' occurrence and severity. The study main results included the top causes of cost overrun which are delay in contractors' progress payment by client, difficulties in financing project by contractor, delays in sub-contractor's work, additions of quantities such as excavation, backfill, and concrete works, and bid award for lowest price. The investigated risks in the study should be evaluated and mitigated in future projects to minimize their effects and enhance the industry performance.

DECISION SUPPORT SYSTEM FOR CONCRETE STRUCTURES

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Processes of concrete waste management can be carried out using various technological and organizational systems. Such systems must meet the boundary conditions of a given project involving deconstruction of a building and will differ in terms of waste management costs, environmental impact and nuisance to the surrounding community. Selecting the most advantageous solution, taking into account numerous standards such as sustainable development, requires a multiple-criteria analysis of such variants. The system presented in this work supports the decision-making process in terms of choosing a technological and organizational solution in the field of concrete waste management

EVALUATION OF SAFETY MANAGEMENT IN CONSTRUCTION INDUSTRY

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Productivity remains an intriguing subject and a dominant issue in the construction sector, promising cost savings and efficient usage of resources. Productivity is one of the most important issues in both developed and developing countries. The developed countries are aware of the importance of economic growth and social welfare. The developing countries which face unemployment problems, inflation and resource scarcity seek to utilize resources and in such a way as to achieve economic growth and improve citizens lives. The aim of this paper is to identify factors affecting labor productivity and also to study causes of labor problems on site and its effects on the construction projects. The problems faced by the labor

on Indian construction sites are dealt in detail. Problems like non-availability of proper accommodation, basic amenities, low wages, safety related problems, security etc. dominate on almost all Indian construction sites. In this work we found out why labor productivity ratios are reducing day by day, which in turn harms organization's profitability. In this study we will try to relate the ill effects of falling labor productivity with the productivity of other resources such as material, equipment and money.

COMPUTERIZED THE RESOURCE MANAGEMENT SYSTEM FOR A SUCCESSFUL PROJECT MANAGEMENT

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There have been continual upgradations of project management software, around the world and numerous innovations and patents are being registered. Development computerized methods emphasize better project scheduling, and converting scheduling and monitoring of a project in common package format for the multi-projects of a company. The author has also developed models for cost benefit analysis of improved systems of mining operations on ground realities and database models. Innovations should be of original substantial nature and there are distinct knowledge contents on the subject. Computer literate persons can develop project scheduling and monitoring, on many user-friendly software now available. The author has developed his data- based computer methods in 14 original models; for the purpose of result oriented planning for multi-project scheduling and monitoring.

POST PROJECT ASSESSMENT OF RISK IN CONSTRUCTION INDUSTRY

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In industrial arena, if any industry to be successful, it has to be safe, reliable, and sustainable in its operations. The industry has to identify the hazards and assess the associated risks and to bring the risks to tolerable level. Hazard Identification and Risk Assessment (HIRA) is carried for

identification of undesirable events that can lead to a hazard, the analysis of hazard of this undesirable event, that could occur and usually the estimation of its extent, magnitude and likelihood of harmful effects. It is widely accepted within industry in general that the various techniques of risk assessment contribute greatly toward improvements in the safety of complex operations and equipment. The objective of this work of hazards and risk analysis is to identify and analyze hazards, the event sequences leading to hazards and the risk associated with hazardous events. Many techniques ranging from the simple qualitative methods to the advanced quantitative methods are available to help identify and analyze hazards. The use of multiple hazard analysis techniques is recommended because each has its own purpose, strengths, and weaknesses.

CRITICAL FACTORS AFFECTING QUALITY PERFORMANCE IN CONSTRUCTION PROJECT

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Construction industry plays a vital role in the development of any country. The development of construction industry mainly depends on the quality of construction projects. Quality is one of the critical factors in the success of construction projects. The level of success of construction industry greatly depends on the quality performance. This research is carried out to scrutinize the factors that have adverse effect on the construction projects. A questionnaire was developed based on identified factors that are taken based on literatures to take opinion from construction experts. The construction experts who have given their responses are engineers and the site supervisors. After their feedback a statistical analysis tool has been used to analyse the responses collected from the construction experts. The analyses used here are mean, variance, reliability and rotated component matrix which has done using SPSS (Statistical Package for Social Science). Using these analyses the most significant factors that affect quality in construction can be ranked. These ranked factors can be improved to attain good quality in construction.

DECISION SUPPORT METHODOLOGY FOR REMEDIATION PLANNING OF CONCRETE BRIDGES

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Bridges are critical and valuable components in any road and rail transportation network. Therefore bridge remediation has always been a top priority for asset managers and engineers, but identifying the nature of true defect deterioration and associated remediation

treatments remains a complex task. Nowadays Decision Support Systems (DSS) are widely used to assist decision makers across an extensive spectrum of unstructured decision environments. The main objective of this research is to develop a requirements-driven methodology for bridge monitoring and maintenance which has the ability to assess the bridge condition and find the best remediation treatments using Simple Multi Attribute Rating Technique (SMART); with the aim of maintaining a bridge within acceptable limits of safety, serviceability and sustainability.

OPTIMIZATION OF CONSTRUCTION COST AND TIME BY USING MS PROJECT

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Project management is main stream which overall makes a civil industry worth into existence in accordance with the control on constraints such as time and cost. This paper will mainly help out to investigate the behavioural improvements in time according to the relative cost. Microsoft project software is used to enhance the scheduling adding Crashing, Slack time and alternative building material to the work planning activity. Crashing makes a proper inventory behavioural time benefits from the overtime of huge workforce and improvement in the duration of an activity using slack time in software. An alteration with the cost is maintained which helpful in retrogression of overall costs of the project. This project is very much applicable where the time and cost is the major constraint which make a building more economical.

EXPERIMENTAL INVESTIGATION ON FLY ASH CONCRETE

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Fly ash utilization in concrete as partial replacement of cement is gaining importance day by day. Technological improvements in thermal power plant operations as well as collection systems of fly ash improved the quality of fly ash. To study the use of fly ash in concrete, cement is replaced partially by fly ash in concrete. In this experimental work concrete mix prepared with replacement of fly ash by 0%, 25%, 50%, 75% and 100%. Effect of fly ash on workability, setting time, compressive strength and water content are studied. To study the impact of partial replacement of cement by fly ash on the properties of concrete, experiments were conducted on different concrete mixes.

EXPERIMENTAL INVESTIGATION OF SITE MANAGEMENT AND CONTROL OF BUILDING MATERIALS IN CONSTRUCTION INDUSTRY

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Concrete is a very popular material in the construction industry—it is, however, susceptible to quasi-brittle failure and restricted energy absorption after yielding. The incorporation of short discrete fibers has shown great promise in addressing these shortfalls. A natural fiber such as sisal is renewable, cheap, and easily available. It has also exhibited good tensile strength and can significantly improve the performance of concrete. In this study, the physical and mechanical properties of sisal fiber-reinforced concrete were reported. Sisal fibers were added in the mix at percentages of 0.5%, 1.0%, 1.5%, and 2.0% by weight of cement. Physical properties measured are workability, water absorption, and density while mechanical properties reported are compression strength, split tensile strength, and static modulus of elasticity. The computed modulus of elasticity of sisal fiber-reinforced concrete was compared with predicted values in some common design codes. From the study, it was concluded that sisal fiber can enhance the split tensile strength and Young's modulus of concrete but cannot improve its workability, water absorption, and compressive strength

ANALYSING THE CRITICAL FACTORS IN CONSTRUCTION PROJECTS

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The study of project success and critical factors of the project are considered to be mean to improve the effectiveness of project success. This examination plans to distinguish CFs in term of different project participants and their goals with regards to construction industries of Gwalior division in India and help to fix the construction project problems. To accomplish this target, 40 CFs were first distinguished and characterized into five classes' viz. Project management, Client related issues, Cost factors, Time factors and Environment related factors. A literature survey is conducted which give the most critical factors in the construction industry. Analytic hierarchy process (AHP) and Importance index (IMPI) methods are used to provide the relative significance of these factors. The result of this study may serve as a tool in the construction industry to rapidly assess the possibility of achieving project success

EVALUATING FACTORS INFLUENCING TIME DELAY AND COST OVERRUN IN PUBLIC CONSTRUCTION PROJECTS

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The impact of cost and time overruns on construction projects is an undesirable experience both to the clients and stakeholders in the industry. This has regularly led to dispute, unfriendly working relationship, abandonment, low quality and environmental nuisances. This paper evaluated factors contributing to overruns of highway projects and their impact on projects performance at Tamil Nadu in India .Data were collected through questionnaire administration on professionals in the industry. Frequency index were employed to analyse data collected. Increase in material cost, inaccurate materials estimation and underestimating of project costs among others are the most significant cost factors while the most significant time factors include unexpected site condition, increase in project scope, lack of timely progress payment and inadequate planning.

A STUDY OF CUSTOMER SATISFACTION IN BUYING RESIDENTIAL FLATS

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The objective of this study is to investigate the factors affecting customer's satisfaction on buying residential apartments and to find out the effect of the quality of indoor and outdoor environments on the customers' buying behavior. The study uses survey responses received from customers to examine the main factors that may affect their satisfaction. A convenience sample of 401 survey responses received from customers. A regression test was used to analyze and examine the effect of buying residential apartments and customer satisfaction

and the impact of indoor and outdoor quality. The results of this study found that there is a positive impact which means that any improvement in the indoor and outdoor factors will increase the demand of purchasing residential apartments, and there is a positive impact which explained that any upgrading and raising on outdoor factors will increase the purchasing of residential apartments

ANALYSIS OF CAUSES AND EFFECTS OF DELAY IN CONSTRUCTION PROJECT

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Delay in construction projects is considered one of the most common problems causing a multitude of negative effects on the construction projects. Construction delays can be minimized only when their cause are identified. The objective of this study was to identify the major causes of construction delays. A literature review was conducted to compile a list of delay causes in construction industry. 101 causes of delays categorized into 9 different groups were found in order to make a questionnaire survey with the respective participants (contractors, owners, consultants and others) of construction industry. The collected data were analyzed through statistical techniques and indices (RII and IMPI). Delays will result in several negative effects like lawsuits between house owners and contractors, exaggerated prices, loss of productivity and revenue, and contract termination. If RERA is properly implemented on construction work then automatically there will be less percentage on construction delays as well as cost and time overrun.

FEASIBILITY STUDY ON HOUSING APARTMENT

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The solution to meet the needs of residence due to the lack of space in Jakarta is to build a vertical system of residence. The most popular type of this vertical system of residence is apartment. This makes the development of apartments as an interesting investment. An investment should be assessed whether it is feasible or not due to the benefit

for the developer. This research was conducted to assess the feasibility of apartment XYZ investment in West Jakarta area with several parameters. The research process begins with collecting sales data along with the payment method. Furthermore, financial analysis was conducted by comparing the initial payment methods and the combined payment method which can provide investment feasibility. Financial analysis will produce some financial parameter values, such as IRR, ROE, NPV, and payback period, which can determine the feasibility level of the investment. The results show that both of payment methods can provide a good level of feasibility. Thereafter, the sensitivity analysis is conducted on several variables, such as sales duration, capital to debt ratio, loan interest rate, construction price, and land price. The results show that this investment is most sensitive to the raise of land price, the raise of construction price, and sales duration.

INCORPORATING SAFETY IN TO CONSTRUCTION SITE MANAGEMENT

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The construction industry involves many operations that can be risky, dangerous, and unhealthy. The number of injuries, accidents, and work related illnesses reported on construction sites exceed that of the manufacturing industry, thus contributing to additional costs and delays on projects. To ensure that a construction site is safe for operations, proper site management procedures have to be put in place, considering safety into account. This paper presents an effort to provide a quantitative approach that will help in maintaining safe and productive construction sites. First, safety issues on construction sites are discussed and the factors that contribute to unsafe sites are outlined. Three aspects are then considered during site planning to improve safety: (1) Defining the necessary temporary facilities needed for safety reasons on construction sites; (2) Defining proper safety zones around the construction space; and (3) Considering safety in the process of determining the optimum placement of facilities within the site. These considerations will lead to a safe site and accordingly increase productivity. A case study is presented to demonstrate the benefits of the three safety measures proposed and future extensions are outlined.

SITE SELECTION AND RISK IN GREEN BUILDING

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A collaborative approach is followed where the owners, engineers, architects, contractor and important stakeholders to bought together to develop a sustainable design process. This helps to combine valuable inputs from different expertise. sustainable site plan is developed based on the discussions and inputs. A sustainable site plan of green building construction is the plan that has less impact on the environment while meeting the project goals of the client. The site plan must fit to the project parameters without compromising environmental concerns.

EXPERIMENTAL INVESTIGATION ON CONCRETE USING COIR FIBRE

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The use of fibres in concrete has demonstrated excellent structural performance, there still exists the need for understanding the durability of fibre reinforced concrete in the environment to which concrete structures are generally exposed. The aim of this study is to evaluate the durability properties of coir fibres in the structural concrete. Experimental investigation explores durability properties such as water absorption, acid resistance and sulphate resistance. The fibre volume fraction ranges from 0 to 3% for a length of 1.5 and 3cm. From the experimental investigation, it was found that there is improvement in durability properties for coir fibre reinforced concrete when compared to plain cement concrete. Also coir reinforced concrete improves the cracking resistance compared to plain cement concrete.