

## Application of Network Analysis to Events Management: Using Wedding Ceremony as a Case

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### Abstract

The planning and management of events for individuals, groups or corporations being a timeline of activities is often treated as a project, which should be rigorously timed and scheduled for desired outcomes in terms of cost and effect. However, the inability to work within this scheduled time frame irrespective of the probability of completing the event at a later time amounts to event failure. Sadly, the mastery of the detailed, planned and sequential aspects of event management is sometimes lacking thereby leading to too many slacks in the smooth operation of activities and by extension, the “failure” of the said event(s). Also, setting realistic and achievable time frames and planning the linking programs and activities to aid accomplishment of the target(s) are almost always elusive to events managers, leading to the scramble to get the needed things done and on time, hence this study. This study therefore focused on the application of network analysis to plan and manage events. Specifically, this study attempts to ascertain how network analysis can be applied to successfully coordinate a wedding ceremony, within the Nigerian context. The study adopted the descriptive and survey research designs, while the Activity on Arrow (AOA) of the Critical Path Method (CPM) of Network Analysis was used to present and analyse the activities involved in wedding coordination. The findings revealed that, path two is the critical path with 20 weeks and a day schedule (five months and a day), while the wedding project can be successfully realistic from between 18 weeks (four months and two weeks) to 20 weeks and 1 day (five months and a day) all other things being equal. The study recommended that, event managers should not disregard the place of timely planning and should try as much as possible to schedule such planned activities with a network diagram for easy implementation.

**Keywords:** Network, Analysis, Critical Path, Events Management, Planning

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### I. Introduction

Network analysis is a graphical representation of planned programs and events channelled towards ensuring their timely, scheduled and sequential implementation, accomplishment and result. Network analysis brings to focus logical relationships amongst activities, time and level of results attainable and clarifies the path any scheduled project(s) should take in relation to their importance, distance, impact and urgency. It helps calculate and find critical paths by defining the earliest possible and latest necessary start and finish time of the work or activities.

Timing is an important ingredient in any project. It is as crucial as the successful completion of the said project. A miscalculation of the supposed start and finishing time may induce snowball of events unforeseen and unpleasant. Timing involves the accurate articulation, calculation and approximation of the time required for any one activity chain in the process of completing a project. Project time schedules tend to tilt towards the unrealistic either by being too short or too long thereby either leading to each of the project getting stuck or resources – time, money, materials, personnel and equipments being wasted and overly stretched. An event is a notable timeline of activities for individuals, groups or corporations which is treated as a project and rigorously timed and scheduled for desired outcomes in terms of cost and effect. It involves a whole lot of analytical, innovative and management techniques to achieve. For successful accomplishment and delivery of any event it might be necessary to plot and chart the path for each of the activities to keep track of achieved and pending timelines and also to maintain focus – networking. It then behoves on event managers to device means and

ascertains if there is an applicability of network analysis to event management and its use in the successful completion of the required activities in an event.

### **Statement of the Problem**

Every planned event is normally attached with a specified time lag within which to commence and finish the work required to certify it completed. Inability to work within this scheduled time frame irrespective of the fact that the event was later completed amounts to event failure. This is a result of the opportunity costs (like additional cost, loss of credibility, delay in another activity commencement, and so on) associated with the targeted time frame. Events are made up of different stages comprising several activities that are interrelated. Some activities run simultaneously/concurrently while others precede or are preceded by another. All these relationships must be well articulated, planned and positioned as well as executed in the right order and as at when due hence networking and cataloguing these activities cum events becomes necessary to their success story. Sadly mastery of these detailed, planned and sequential aspect of event management is sometimes lacking thereby leading to too many slacks in the smooth operation of activities and by extension the "failure" of the said event(s). Setting realistic and achievable time frames and planning the linking programs and activities that will aid accomplishment of the target(s) are almost always elusive to events managers leading to the scramble to get the needed things done and on time hence this study.

### **Objective of the Study**

This work focused on the application of network analysis to plan and manage an event and specifically to ascertain that network analysis can be applied in successfully coordinating a wedding ceremony.

### **Concept of Network Analysis**

To the earliest proponents of Network analysis Walker, M.R. of E. I. Du Pont de Nemours & Co. and Kelly, J. E. of Remington Rand, a network is the graphical representation of the activities of a project arranged in a logical sequence which shows all the interrelationships among the activities. It consists of activities and events; the activities in a network are visible identifiable parts of a project that consumes resources while events represent accomplishment of some or accomplished tasks. Events represent the beginning and ending of activities in a network and do not consume resources unlike the activities. To<sup>1</sup> network analysis is implemented in three phases – network planning, scheduling and control phases and is useful for the following:

- a) Communication of objectives, performance, detailed task analysis, documented project plan and visual aid tool.
- b) Control of performance evaluation, correction of actions and expectations.
- c) Team interaction for quick introduction, functional interfaces, ease of application and synergy between elements of the project.

The phases as itemized and explained by<sup>1</sup> include that the planning stage is where the time cost and resource requirement estimates are developed for each activity. The scheduling takes care of the forward and backward passes computations using the earliest and latest starting and finishing times of each activity and determines duration of a project. Network control on the other hand tracks progress of a project and takes corrective actions when needed to marry actual and expected performance.

### **Critical Path Method (CPM) and Program Evaluation Review Technique (PERT)**

These are the two Network Analysis approaches. CPM is used for determining the minimum completion time of a project and involves forward (earliest start and finishing times) and backward (latest start and finishing times). While PERT on the other hand is an automatic mechanism used for identifying potential trouble spots in networks or events which engenders rapid handling and analysis of data to enable speedy corrections. It enhances flexibility, orderliness and consistency in the planning and evaluation of schedules and events<sup>2</sup>. Generally, CPM measures definite activities and their durations while PERT measures how definite events are reached and the time lag between these events. Also duration of activities are known under CPM while duration of time for activities under PERT are not known.

From the foregoing it can be deduced that events are culmination of activities arranged to produce desired results and seen in a holistic and inclusive frame. Network analysis is a planning technique that has its basis on the graph theory. It displays activities in terms of time and dependencies and is used to monitor the arrangement and recording of scheduled activities with respect to the dependencies and time requirements<sup>3</sup>. This means that network analysis depicts a clear picture of relationship from the start of an event to its end which shows clearly any loopholes, pitfalls and critical paths to follow while pinpointing the earliest start and latest finishing times. This shows that the role of networking in managing project timing cannot be overemphasized as it is one way to ensure accomplishment and completion of tasks and activities as scheduled.

<sup>4</sup>view a network as “a set of links (ties or edges) and objects (nodes or vertices)” that could represent any relationship of activities between people, objects and projects. A project network is deduced to be the graphical representation of the contents and objectives of an event, its interrelated and interconnected activities of events and/or projects processes and progress<sup>1,5,6</sup>

A project or event network is the tool used for planning, scheduling, and monitoring the progress of the event, is developed from the information collected and depicts the activities that must be completed, the logical sequences, the interdependencies as well as the start and finish time expected or allotted to each of the activities. The event when graphed is easy to follow and can be delegated and accomplished stress free. In network analysis there are common terminologies used to denote the important landmarks of every event or project and to<sup>7,15</sup> some of them include:

- a) Activity: Any sequential and orderly occurrence in an event that consumes time if not resources. It is normally depicted by a node and an arrow to show flows and dependencies.
- b) Merger Activity: An occurrence that have more than one preceding or previous activities before it.
- c) Parallel Activities: These are occurrences that start or happen at the same time where one start time is not dependent or does not preclude the other
- d) Path: This includes a line of connected or interdependent activities.
- e) Critical Path: This is the path with the longest duration throughout the network. On this path is where there exists the possibility of adjustment of the events whether in time, resources or cost.
- f) Event: This is a point of occurrence of activities either its starting or finishing, which does not consume time.
- g) Burst Activity: This occurrence is preceded or followed by more than one stretch of occurrences.
- h) Preceding Activity: This is an activity that is completed immediately before another one commences.
- i) Succeeding Activity: This activity commences or follows immediately another finishes.
- j) Concurrent/Parallel Activity: This is an activity that can occur or commence the same time as another one.
- k) Earliest Start Time (EST): This is the earliest time an activity can commence. For a burst succeeding activity, it is the latest finish time of the longest activity in the preceding burst.
- l) Latest Start Time (LST): This is the latest time an activity can finish without jeopardizing the trend of activities or the processes leading to the event. LST is calculated by subtracting the duration of the activity from the LFT.
- m) Earliest Finish Time (EFT): This is the earliest time an activity can finish. EFT is gotten by adding the duration of the activity to the EST.
- n) Latest Finish Time (LFT): The latest time within which an activity must end to ensure that the commencement of another activity or success of the event is not negatively affected.

### **Event Management**

Event management is the application of project management to the creation and development of large scale events such as festivals, conferences, ceremonies, weddings, formal parties, concerts or convention<sup>8,9,10,11</sup>.

<sup>8</sup>further saw it as the process of using business management and organizational skills of planning, organizing, coordinating and controlling to envision and execute events. It involves keeping track of time to ensure that all activities of the different vendors required for the event proceeds without hitch and as envisaged even within lesser time schedules if possible. Furthermore, it is studying the intricacies of the brand, identifying the target audience, devising the event concept, planning the logistics and coordinating the technical aspects before actually executing the moralities of the proposed event and requires strong organizational communication, negotiation, budgeting and creative skills<sup>10,5,12</sup>. To<sup>12</sup> it means meticulously planning, creatively organizing and executing an event. Subsumed in the event management is event planning which entails the mapping and coordination of the activities resulting in a program/event and the activities may include budgeting, scheduling, site selection, transportation and sourcing needed vendor<sup>8,9</sup>. <sup>12</sup>sees planning as an identification of aims and objectives and establishment of achievement methods and opines that project planning should be undertaken in a structured and logical manner. <sup>9,13</sup>opined that event planning precedes event management because it starts at the beginning and is charged with outlining the activities needful to the client. Though the activities of both the event planner and event manager overlaps it is assumed that the event manager is more of an executor of the planned activities and that planning is a subset of management.

<sup>14</sup>grouped the process of project management into four phases but his groupings touches the steps spread out and recognized by other authors<sup>5,10</sup>. The phases are:

**Initiation Phase:** Involved in this phase is the identification and description of objectives, work groups classification; feasibility and justification of project. It is done in line with the philosophy of the organization.

**Planning Phase:** This phase involves the detailing, strategizing and mapping of activities and allocations required by the project.

**Execution Phase:** Tasks are assigned, implemented, supervised, monitored and appropriate readjustments done under this phase.

**Close-out Phase:** Involved under this phase is satisfaction verification and benchmarking of achievement with the anticipated outcomes.

<sup>14</sup>calls these phases the process of smooth transition from deliverable creation (the project) to deliverable utilization (the post project life cycle – customer use).

## II. Methodology

### Research Design

Descriptive and survey research designs were used for this study. They were used to find out types and relationship between activities and the final events which included the duration of the activities. Descriptive design was used to gather and organize events describing data and tabulating; also to depict and describe them using visual aids to enable the readers understand the data flow. Survey research on the other hand goes beyond these to draw inference on the probable causalities and relationships involved.

### Sources of Data

Secondary data were used in this study. Data were collected from textbooks, published and even unpublished related works on event planning and wedding coordination and past experiences on the activities involved.

### Analytical techniques

Activity on Arrow (AOA) of the Critical Path Method (CPM) of Network Analysis was used to present and analyse the activities involved in wedding coordination rather than the Path Evaluation and Result Technique (PERT). This is due to the fact that CPM is more suited for a simple event such as is the focus of this study while the PERT (an analysis and evaluation model) is for both larger and more complex events.

## III. Results and Discussion of Findings

In this section the wedding activities (including starting and preceding events) were tabulated and timed and the network events and nodes drawn and analysed using the critical path calculation.

**Table 1: Network Information**

Events and Activities leading to a Wedding			
Activity	Description	Preceded by	Time (weeks)
A	Marriage Class	-	12
B	Set a date	A	1
C	Inform family	A	2
D	Inform actors	A	2
E	Plan budget	B	2
F	Seek family support	C	3
G	Set committee	C	1
H	Fund committee	D	0.429 (3 Days)
I	Outline needs (venue, clothes, menu, music, MC, gifts, cake, decoration, and so on)	D	2
J	Control/finishing	E, F	3
K	Committee feedback	G, H	1
L	Committee activity (execute outlined needs)	I, K	3
M	Wedding proper	J, L	0.143 (1 day)

Source: Field Event 2019

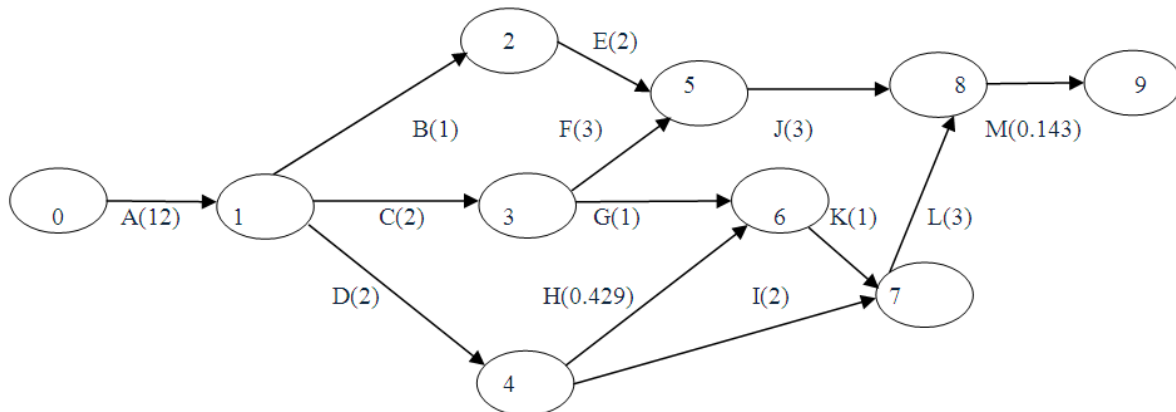


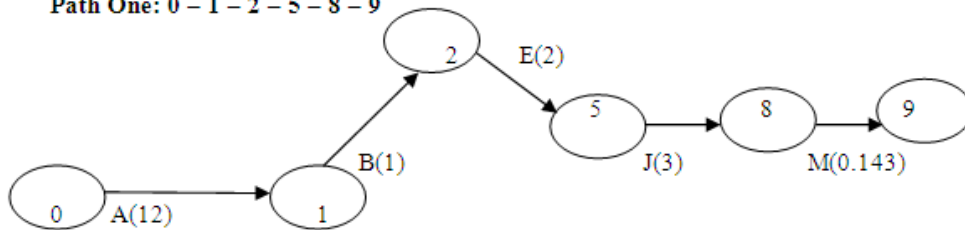
Fig 1: Activity scheduling

Figure 1 charts the tabulated activities, timing (weeks) and linkages in their order of progression leading to the wedding day proper. It clearly depicts the role(s) of each actor(s) and where they are likely or eventually will culminate at. This was done using AOA.

**Critical Path Calculation and Analysis**

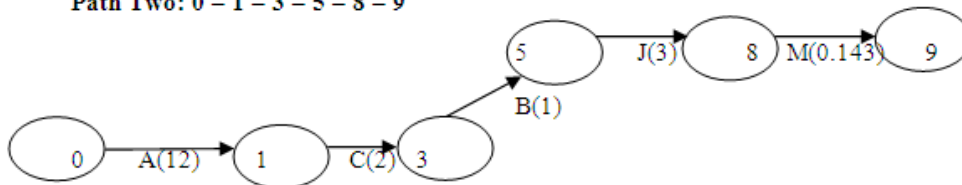
Overall duration of the project can only be ascertained through the calculation and analysis of all the notable paths in the activity schedule. This is achieved by tracing and calculating all the paths individually using their time allotments.

**Path One: 0 – 1 – 2 – 5 – 8 – 9**



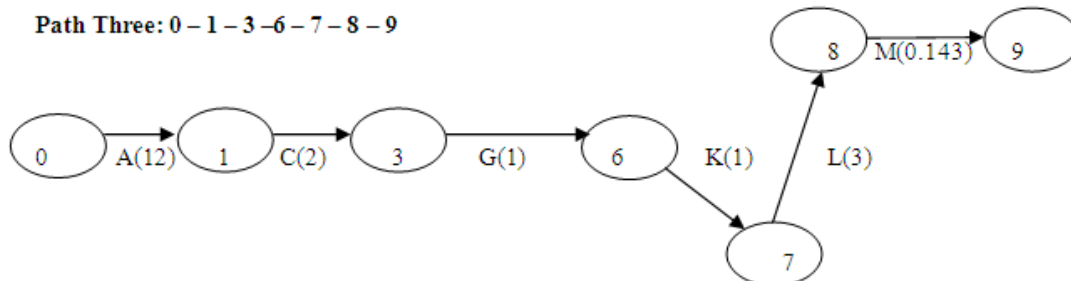
= 12 + 1 + 2 + 3 + 0.143 = 18 weeks 1 day (4 months, 2 weeks and a day)

**Path Two: 0 – 1 – 3 – 5 – 8 – 9**



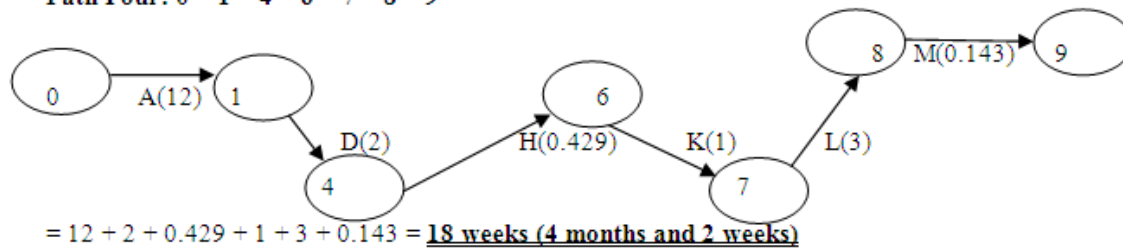
= 12 + 2 + 3 + 3 + 0.143 = 20 weeks 1 day (5 months and a day)

**Path Three: 0 – 1 – 3 – 6 – 7 – 8 – 9**

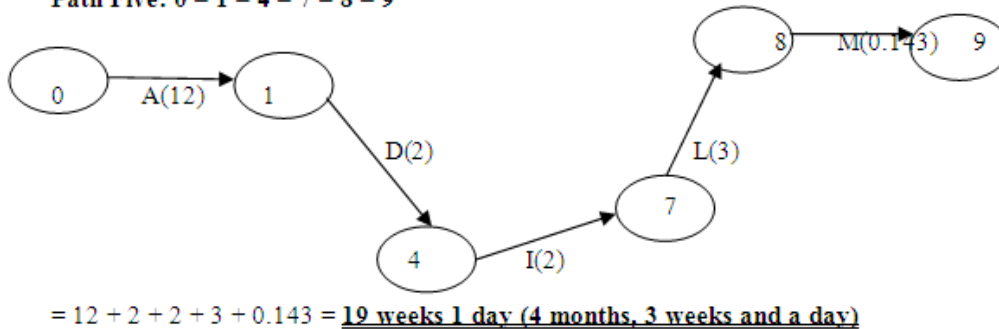


= 12 + 2 + 1 + 1 + 3 + 0.143 = 19 weeks 1 day (4 months, 3 weeks and a day)

**Path Four: 0 – 1 – 4 – 6 – 7 – 8 – 9**



**Path Five: 0 – 1 – 4 – 7 – 8 – 9**



From the analysis it can be deduced that path two is the critical path with 20 weeks and a day schedule (five months and a day). This means that any reduction in time can be done on this path without jeopardizing the wedding project schedule overly much. The analysis also depicts that the wedding project can be successfully realistic from between 18 weeks (four months and two weeks) to 20 weeks and 1 day (five months and a day) all other things being equal.

**IV. Conclusion**

From the foregoing it can be deduced that applying networking analysis to event management is a possibility and may go a long way in reducing the rule of thumb in decision making or blind scheduling. This is so when event planning and networking is done earlier enough so as to outline visibly the activities and paths to be followed in order to identify the possible areas of adjustment if need be. Worthy of note is also the fact that utilizing network analysing could reduce the stress associated with planning any event of commendable measure because it helps chart a traceable smooth path that might even flow without much supervision or little prodding given that all responsible for assigned tasks know their timelines.

**V. Recommendations**

The researcher recommends that:

- i Event managers should not disregard the place of timely planning and should try as much as possible to schedule such planned activities with a network diagram for easy implementation.
- ii Event managers should as a matter of necessity acquire and master the art of networking and scheduling to enable them deliver the required measure of success for their clients.

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