EFFECTIVE GROUP DECISION-MAKING: A FRAME-WORK FOR THE IDENTIFICATION PHASE OF BUILDING PROJECTS

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Groups rather than individuals make decisions in the identification phase of building projects. During the decision-making process, groups face a risk of sub-optimal performance that may arise from social and psychological forces. The main forces are group experience, the curse of knowledge and premature cognitive commitments (PCC). The above risk can be minimized by employing an appropriate group decision-making framework. The authors have developed such a framework for the identification phase of building projects.

The proposed framework calls for adequate time for effective presentations and discussion of individual experiences in building project identification and related issues in a face-to-face interaction. The framework is expected to increase chances of gaining group experience and recognizing member expertise as well as minimizing the effects of the curse of knowledge and PCC. Controlling for other variables, the employment of the proposed framework in the identification phase of building projects is expected to yield high group performance and better decisions.

Keywords: building project, decision-making, group process, identification phase.

INTRODUCTION

The fact that activities in the construction industry are carried out by groups rather than individuals is well appreciated both in construction project management practice and research (Kelly and Male 1993, Tutesigensi, *et al.* 1998). For example, data from the Ugandan building sector (Tutesigensi 1999) indicate that on average, eight member groups undertake decision-making in the identification phase of building projects. The attributes of building project identification practice can, therefore, be ascribed to group work.

Schein (1980) defined a group in psychological terms as any number of people who interact with one another; are psychologically aware of one another; and perceive themselves to be a group. This definition is widely accepted in other disciplines outside psychology, including construction project management (Kelly and Male 1993, Bennett 1985). In building a group decision body therefore, the three dimensions of the definition require adequate thought.

Groups in the construction industry can be composed of people from within the same organization (intra-organizational groups) or from different organizations (inter-organizational groups) at any phase of the project. The composition of the groups

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depends on the complexity of the project and the client organization as well as the specific phase of the project. In building projects, inter-organizational groups are common in the identification phase because of the diversity of knowledge and data required in this particular phase of the project (Tutesigensi 1999). This suggests that it is important to concentrate on issues of realizing individual expertise at the earliest opportunity when the group is formed. It also suggests that it is important to provide both the time and material (written or otherwise) that may guide the group members as they develop mental models of the client organization.

Groups evolve right from the point they are conceived to the point at which they are disbanded. By amalgamating the views in organizational behaviour literature, Kelly and Male (1993) outlined a useful model for analysing the development of a group. The model is composed of five phases: forming, storming, norming, performing and adjourning. It is therefore important for any one building a group decision body to consider how each of the phases can be facilitated.

The processes within a typical group (group dynamics) can be analysed under the three generic headings suggested by Hunt, (1986): group norms, group roles and group structure. The authors contend that in building a group decision body in building projects, considerable effort should be given to the following:

- Prescription of acceptable rules and selecting group members with desirable qualities in order to manage the group norms;
- Defining clearly what is required and providing guidance along the way in order to manage the group roles; and
- Choosing the right leadership and management strategies in order to manage the group structure.

GROUPS AND THE IDENTIFICATION PHASE OF BUILDING PROJECTS

The main activities in the identification phase of building projects are mental rather than physical. The activities involve a series of decision-making stances; therefore, groups in the identification phase of building projects are basically decision-making groups.

Effective group decision-making

Building project identification decision procedures are undertaken using the collective wisdom and experience of the group. The tasks require creativity on the part of the group members both as individuals and as a group. Creativity can be viewed as a mental process that is concerned with sifting, manipulating and reconfiguring information (Kelly and Male 1993). Creativity is often subliminal but can be stimulated consciously by tools, techniques and procedures. Each group member is intrinsically creative albeit, to varying degrees, (Kelly and Male 1993) but the creativity has to be stimulated and enhanced for effective decision-making in executing the identification phase of building projects. The above suggest that group effectiveness can be influenced by the tools, techniques and procedures that are employed at every stage during the mobilization and development of the group.

Barriers to effective group decision-making

Despite the potential for rich and better decisions, effective group decision-making can have various barriers. Some of these barriers arise from social and psychological forces that may adversely affect the performance of decision-making groups; the authors refer to this type of barriers as process-barriers. Other barriers arise from the complexity of the decision task itself; the authors refer to this type of barriers as task-barriers. The authors contend that effective group decision-making can be realized if the task- and process-barriers can be isolated and circumvented. Obviously, the extent of the effectiveness will depend on how well the barriers are identified and how good and appropriate the methods of circumventing the barriers are. This paper concentrates on process-barriers. Process-barriers are quite common to all groups and have been identified from various literature (e.g. Stasser 1988, Stasser and Titus 1985, Gruenfeld and Hollingshead 1993 and Kim 1997) by the authors as group experience, the curse of knowledge and premature cognitive commitments (PCC).

In a group decision-making process such as building project identification, it is expected that individuals will pool and use their unique information. In so doing, they will achieve a group decision that is better than a decision that would have been achieved by any one of the group members acting alone (Stasser 1988, Stasser and Titus 1985, Gruenfeld and Hollingshead 1993 and Kim 1997). This expectation may however, elude those concerned. The realization of the intended results will depend on the ability and willingness of each individual to share their unique information in the group discussion. As demonstrated in a number of studies (i.e. Stasser 1988 1992, Stasser and Titus 1985), the ability and/or willingness to pool the unique information can be badly lacking amongst the group members. In these circumstances, group discussions often concentrate on common rather than unique information and thereby yield sub-optimal decisions. It is therefore important that any group decision-making process addresses the issue of effective unique information pooling. Care must be exercised because as demonstrated by Kim (1997), there are several mechanisms that might hinder the pooling of unique information. The main mechanisms are a combination of group experience and either or both of the curse of knowledge and premature cognitive commitments (PCC).

Group experience refers to familiarity between group members arising from working together on a number of occasions to such an extent that one knows what the other group members can and will do in specific circumstances. Group experience allows the group members to develop a collective understanding (or shared mental model) of their decision situation, which is an important precursor of quality group decisions. Studies (i.e. Gruenfeld and Hollingshead 1993) have demonstrated the usefulness of group experience in improving group performance. Gruenfeld and Hollingshead (1993) suggested that group experience might be necessary before unique information can be effectively exchanged. Other independent researchers (i.e. Cannon-Bowers *et al.* 1993, Levine and Moreland 1991, Orasanu 1990) have also demonstrated that group experience often enhances performance.

On the other hand, the shared mental model that develops with group experience can be misleading as was demonstrated by Kim (1997). This is because human behaviour is often affected by perceptions of reality rather than reality itself. This is exhibited in what is referred to as the 'curse of knowledge'. The 'curse of knowledge' refers to the concept demonstrated by a number of researchers (i.e. Nickerson *et al.* 1987, Fussell and Krauss 1992) that people rely on their own knowledge when they assess the knowledge of others. Therefore, the content of a group's discussion may be affected

even more by what members think they know in common than what they actually know.

Another problem that is normally encountered with group experience that may prohibit unique information pooling is the members' premature cognitive commitments. Premature cognitive commitments are commitments that are unwittingly made, based not on the meaning of information and their implications but on when the information is presented. Kim (1997) demonstrated that encountering unique information early in group-discussion prompts members to limit the impact of their individual PCC; this in turn improves performance.

From the above, the authors contend that an interaction process in which group experience is emphasized and the effects of the curse of knowledge and PCC are minimized would maximize the benefits of group decision-making. Against this background, the authors have developed a framework that can be employed to facilitate such an interaction process, the **EGroW** framework.

THE EGroW FRAMEWORK

EGroW is an acronym for Effective Group Work. The **EGroW** framework integrates all the aspects on group decision-making in literature (Cannon-Bowers, Salas and Converse 1993, Bennett 1985, Fussell and Krauss 1992, Gruenfeld and Hollingshead 1993, Hollingshead 1996, Hunt 1986, Kim 1997, Levine and Moreland 1991, Kelly and Male 1993, Littlepage 1997, Nickerson *et al.* 1987, Orasanu 1990, Schein 1980, Stasser 1988 and Stasser and Titus 1985). The framework was designed for a group of knowledgeable people who come together to use their common and unique information to define the most appropriate course of action in the identification phase of building projects.

The **EGroW** framework emphasizes acquisition of group experience by the group members through collective face-to-face interaction that goes on long enough for every group member's comfort. As illustrated in Figure 1, the framework can be explained under the themes of preparation, group experience, information exchange and adequate time.

Preparation

From the discussion on groups in previous sections, the importance of preparation before any group work can commence can not be underestimated. During the preparation stage, opportunities are available for ensuring healthy group development and processes that are very vital for achieving the group objectives. The authors propose that the preparation stage should involve three major activities: selection of the group leader; selection of other group members; and preparation of the terms of reference.

The selection of the group leader is an important activity because the group leader has the capability to influence group norms, commitment of group members and the structure of the group processes. The group leader can also facilitate the interaction that is very vital for group performance. It is important that the group leader is a knowledgeable person who can command the respect and support of each of the group members. Such a group leader will increase chances of group cohesion and provide the necessary guidance that may be required from time to time. Such a group leader can also take part in the selection of the other group members; this may facilitate

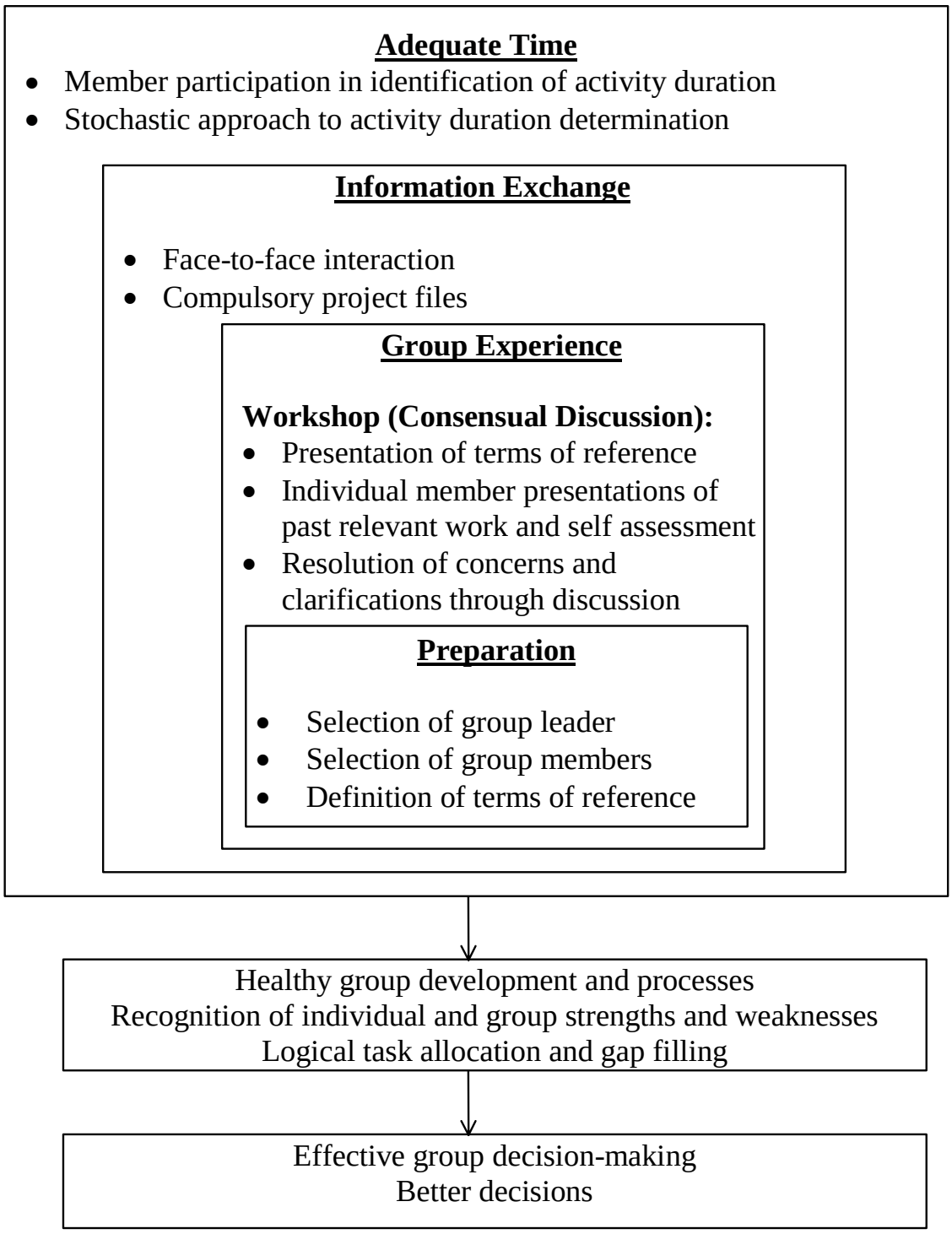

Figure 1: Illustration of the EGroW Framework

quick definition of the group norms and build the necessary affective acceptance and loyalty that are very important for group success.

The selection of other group members is an important activity because the composition of the group will among others, determine the quality of the output as well as the group processes and effectiveness. The involvement of the group leader in the selection of the group members may prove invaluable as it may decrease the likelihood of adverse group development and processes. This may however depend

on the quality and experience of the group leader. It is important to select the right individuals for the job, because the quality of the output can never be superior to the quality of the resources that produce it.

The preparation of the terms of reference is another important activity that should be handled with great care. Before the group is formed, it is important that what is expected of it is clearly known and communicated clearly in a comprehensive document, the terms of reference. The terms of reference can be helpful in defining the group roles and expected deliverables as well as providing valuable information about the organization and facilitating the development of the group members' commitment to belonging to the group. Terms of reference can also identify the expected group structure and standards that may influence the group members at an early stage in ensuring coherence as well as development of checking and correcting mechanisms to ensure compliance to standards.

Group experience

Group experience contributes a great deal towards the group members' psychological awareness of each other that is a major characteristic of what might be referred to as a group. Group experience may also provide an opportunity to the group members to recognize member expertise. Ability to recognize member expertise is an important factor in increasing the level of performance of a problem-solving group as demonstrated by Littlepage (1997).

Ideal group experience is achieved by working together on a given project. In the construction industry, such group experience may however be difficult to realize because of the wide diversity in project teams and uniqueness of projects. The author contends that an artificial group experience may be developed however through a workshop in which individuals present their relevant past work and their colleagues are given chance to seek clarifications and raise concerns. Such a workshop is beneficial in two main ways. First, from individual presentations a picture of what working together might entail is obtained; it becomes easier to tell what each individual's ethics and experience are for the benefit of the entire group. Second, from the questions asked and concerns raised the individual's critical areas of emphasis and specific expertise can be identified. If the presentations are thorough and enough clarifications are made and time allowed for digesting the facts and building up the meta-knowledge, a reliable artificial group experience base similar to a real one may be built.

In order to benefit from the attributes of group experience, the **EGroW** framework focuses on individual and collective group experience through a workshop conducted by a facilitator or group leader soon after the group is mobilized. During the workshop, the following should be the concerns: common interpretation of the terms of reference; allowing for formal and informal introduction of individual members so that everybody can understand what everybody else has done in similar and/or related problems; and discussion.

Because the terms of reference are the main working guidelines of the group decision body, it is important that everybody has the same interpretation of the terms of reference as early as possible. For this reason, it is suggested that a member of the client organization should participate in the workshop to present and discuss the terms of reference. This discussion should precede any other activity in the workshop.

The formal and informal introduction of individual members should concentrate on work previously done on related projects; what problems were faced; how the problems were solved; important lessons learnt and how the lessons relate to the current problem. Emphasis should also be put on taking opportunities for self-assessment in which individual strengths and weaknesses are identified so that tasks can be allocated and gaps filled logically.

The objective of group decision-making is to benefit from each of the individuals for a synergy result. This objective cannot be fully realized if the individuals cannot engage in discussion about the issues. For example, Hollingshead (1996) demonstrated that groups that are asked to rank/order options perform significantly better than those asked to pick the best option; this superiority in performance was attributed to the fact that the rank order decision procedure provoked further discussion. This demonstrates the fact that discussion is very important for group decision-making. In order to benefit from the attributes of discussion, the framework focuses on individual and collective participation in rigorous discussion. On each and every point, each member should give individual views; the collection of views should then be discussed until consensus is achieved after which a collective decision is made.

Information exchange

Group decision-making involves a great deal of information exchange. Information exchange may involve writing, speaking or body language. The timing of the information signals is also very important in information exchange for it determines the relevance and usefulness of the information. Timely information can play an important part especially when unique information needs to be exchanged. Indeed, Hollingshead (1996) demonstrated that groups that operate with individuals' physical presence perform significantly better than those that operate without the individuals' physical presence, say via letters, telephone and computer. Individual's physical presence maximizes the four dimensions of information exchange: writing, speaking, body language and timing and therefore provides a more conducive environment for information exchange. Therefore, the superior performance above can be attributed to the communication environment that was conducive for effective information exchange. Effective information exchange in decision-making can be maximized if the group decision body operates with individuals' physical presence.

Against the background above, the **EGroW** framework focuses on providing an interactive medium of communication in form of face-to-face interaction and up-to-date project files to be kept by each of the team members in order to ensure effective information exchange. The face-to-face meetings need to be well organized, preferably in a secluded, comfortable place with minimal interference from clients, the telephone and other obstructing agents. Project files must have all the pertinent documents and data that may be useful in justifying one's argument. The project files may need continuous development as more discussions are held and recollections made. These measures provide as much opportunity as possible for anybody to expound personal experiences when they are presenting their work and the participants to seek clarifications as well as back up arguments in a quick and convincing manner.

Adequate time

All the events in the **EGroW** framework occur in time. For each activity, there is a minimum theoretical time required for its execution. Provision of time less than the

required minimum means that the activity will not be fully accomplished. Provision of time greater than the required leads to wastage of resources and may demoralize the team leading to sub-optimal decisions. Good management of the group work must therefore include the determination of adequate activity durations. Owing to the uncertainties associated with activity durations, the determination of the activity durations in the identification phase of building projects should adopt a stochastic approach. The Programme Evaluation and Review Technique (PERT) is a well-known stochastic approach that has successfully been used in the determination of activity durations (Anderson *et al.* 1994). The PERT is recommended for the **EGroW** framework. The team leader should take the responsibility of determining and communicating the expected duration (D_e) of each important activity from the following expression:

$$\boldsymbol{D_e = (D_p + 4D_m + D_o)/6}$$

Where D_p = Pessimistic duration;

D_m = Most likely duration; and

D_o = Optimistic duration.

The parameters above can be obtained by asking the direct participants to identify the pessimistic, optimistic and most likely duration in that order and computing the expected duration from the formula above. The expected duration can then be used as a basis for managing and scheduling all the activities.

CONCLUSIONS

Group decision-making is important for the identification phase of building projects.

In order to benefit from group decision-making, the development of groups, group processes and barriers to effective group decision-making need to be carefully addressed.

The EGroW framework is a useful model because during its development, attention was given to facilitating healthy group development and group processes as well as circumventing the barriers to effective group decision-making.

The EGroW framework emphasizes provision of adequate time for mandatory presentations and discussion and physical presence of each member as well as comprehensive preparation as a matter of policy. These measures are expected to lead to effective group decision-making and consequently, better group decisions.

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