

CONSTRUCTION INDUSTRY DESIGN BRIEF

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Abstract: This study looks at the meaning of the design brief in the construction industry in relations to facilities management. The construction process was examined to identify the purpose and specific requirement for the facility. The study also probed into the dynamics of the design team in relation to facility provision. The interface between the client and the design process was established, and the need for consultation rather than the one way meeting between the client and the designers. The methodology for the pilot study was exploratory survey by means of structured interview of key players and professionals in the industry. The study revealed the importance of good decision making after strategic planning and feasibility study have been conducted to establish viability and suitability of the facility. The need for review of performance and the maintenance of facility was stressed.

Keywords: design brief, construction process, design team, client, facility.

1. INTRODUCTION

The scope of this project looks at a whole range of activities from inception through delivery to operation that will ultimately influence the building's performance and the maintenance of the performance. A good design brief should provide strong client and user satisfaction, transforming the client's desire into design specifications and eliminating activities that don't add value to the facility. The briefing is the interface between the client and the project, and the starting data for the design and it also configure the essence of the client interaction with the design process. It communicate the owner's expectation to the design team, it is a written document, which will be translated spatially and technically by the design team.

Identifying the purpose of a construction facility or project and identifying the specific requirements are the first of stages of the construction process. When you are confronted with a construction situation, you need to analyse the situation before you attempt to solve the problem. Once the problem is fully understood, then you write a design brief. The design brief should only occur after the need for the facility has been identified and a feasibility study has been carried out to ascertain the suitability and viability of the proposal. Management plan and design brief should be put in place after the decision to proceed with the development has been made.

2. METHODOLOGY

The methodology employed for the research presented in this paper, examined different methods in use in the construction industry before conducting the survey, for example experimental, literature review and exploratory survey. But exploratory survey seems to offer the most opportunities, because it was more likely to reveal the key features of the problem rather than any of the other two. Questionnaires were not considered

appropriate as a primary research method due to its obvious disadvantages, of being very rigid, and the fact that the result can not be anticipated.

Interviews were preferred to questionnaire because it could allow you to probe a lot further into matters of interest than questionnaires could. So a structured interview was conducted to solicit responses on the current state of design brief and the briefing tools used in the construction industry. Those chosen for the interviews were professionals with good knowledge and experience in the provision of facilities, those involved on a regular basis in design brief and the briefing process, regular members of the design team. A total of seven professionals were interviewed, four of them were project team manager and the other three were project team leaders at different times and have all been involved in the brief process. The interview centred on what design brief met in construction, how it was conducted and what should be improved if any. Some specific areas were also covered like facility planning process, decision making, design development, the design team, roles and responsibilities of facilities manager, and suggestions for improvement. This pilot investigation is a part of an ongoing study, trying to determine the roles of facilities management at the Scottish airports, currently a list of key performance indicators are being compiled for the Scottish airports, testing and validating the list will follow shortly.

3. DESIGN BRIEF

This is a document that is used as a guide in the design process. It really sets out the terms for the entire process. It is believed that a full brief development will address all the relevant issues, resulting in a design that is a proper response to the requirements of the client/owner, the building users and content. Follow this; the design will be a perfect model of the facility that is proposed. Detailed design and construction will produce the facility. Chanter and Swallow (1996) in seeking the evolution of a solution to satisfy the requirements for a building identified four guiding principles.

- 1- To produce a building that is appropriate and efficient for the function.
- 2- To produce a building that provides the optimum physical and psychological environment for the contents of the building, both animate and inanimate.
- 3- To produce a building that strikes an appropriate balance between initial cost and operating costs.
- 4- To produce a building that is consistent with the needs and aspirations of the community at large

The design brief is a clear statement of problem, which the designer has to solve; in this respect the brief must be short and complete. It must give all the information available about the problem. It will not give answers but information, listing all things to be thought about then leaving the designer to solve the problem.

4. DESIGN PROCESS

In construction the process consists of briefings, seminars and workshops. And it normally starts with a briefing meeting, a situation where the architects are made aware of the client's requirements. There are usually no written briefs on the part of the

small or individual clients/owners to the architects or quantity surveyors. Quantity surveyors are not always present in at briefing meetings; this is clearly unsatisfactory from the communication point of view.

A good design brief should contain information about the problem at hand, a problem statement, the design task, and what the successful design will do. The problem situation is the basis for the design brief and any subsequent design activities. A good understanding of the situation is essential if the correct problem is to be identified and an appropriate solution found. For client organisation, the brief will need to articulate the needs and aspirations as a client organisation, address issues relating to policy and funding, the site and the situation you wish the design team to address and respond to in their design. Before the appointment of the design team the brief writer may be an experienced project manager or an expert employed specially to fill that task in case of large projects. It could be someone from the client organisation. The process can involve producing a series of draft, to which contributors can review and amend. Blyth and Worthington (2001) believe that every brief should set out the mission, the objectives, performance requirements and measures, priorities, management decisions and responsibilities, timeframe and who is expected to respond.

Design task

The design task clearly identifies what the designers are expected to do or how the designer is expected to proceed. A list of things, a schedule of things and all that is required to be delivered as part of the solutions. What the successful design will do is a description of what the solution will accomplish. It could indicate how well the solution is expected to work and under what conditions it is expected to work.

Bowen and Edwards (1996) believe that subject to certain qualifications the brief is a representation of the client's needs. (1) The extent to which the brief represent the client's need is a function of the client sophistication. (2) The brief is seen as a representation of needs at a specific point in the time, since clients do not always know what they want at the initial stage of the project. (3) The brief is a living concept. Initially uncertain, providing a good basis for preliminary discussion and developed in an evolutionary manner. (4) The brief represent a source of information and is essential communication instrument.

5. DEVELOPMENT IN DESIGN BRIEF

Earlier literatures on design brief have extensive review of the need for the development of a conventional design and construction process in the construction industry. And later literature review tends to concentrate on establishing client briefing as a process to be analysed and improved upon. Turin (1966), Goodacre et al. (1982), Latham (1994), Murray(1995), Koskela (2003) all agreed that there is the need for change by making it more efficient and effective. The poor performances of constructed building projects made the need for change more imperative. Cheong et al (2002) were of the view that any constructed project, the design and construction process should cover the project's expected life span, from the identification of needs to the operation of the facility. By using the project life cycle, it ensures that all issues are considered and provision is made for the interdependence of the different activities

throughout the duration of the project. Spencer and Winch (2002) believe in the continuous interaction and involvement of the client as the basis for satisfying the needs of the client, good understanding of the client's situation will provide a means of working within the design construction process. Construction clients need to be able to express their requirement in a way that describes the operations intention with the facilities and buildings.

The design brief is a development and expansion of the statement of need and feasibility report undertaken during the project appraisal stage. This includes the strategic requirement for the project, which is then translated into technical specifications. Before the design process, there is usually a design programme, which outlines all the design activities, and their related responsibilities, which will then be incorporated in the overall project plan for monitoring, plan and control changes.

Each design brief includes the following parts 1.the situation, which set the context and rationale for the activity. 2. The problem, or challenge statement which clarifies the problem 3. The resources, which are the materials, tools, machines, software and computers available to assist in the development of the solution. 4. The constraints, the limitations, in terms of time and resources, unforeseen circumstances.

6. BRIEFING-DESIGN INTERFACE

Briefing should introduce clients and users requirements for design. Kamara et al. (2001), Green and Simister (1999) all express similar opinion. It is through the briefing that clients explain their needs, their financial possibilities and their requisitions with regards to the project. Lots of designers believe that frequent changes in the brief can result in result in poor development of design. Understanding the client and ability to take strategic decisions are needed for excellent brief representation. Mesquita et al. (2002) stressed that without an intense exchange of information among the players during project development; the result is a badly defined, badly specified and badly resolved project resulting in increasing costs and time overrun.

By ensuring a structured approach is in place during the briefing stage, there is a higher probability that the client's requirement will be attained. Developing a concrete, controlled and consistent approach will avoid unnecessary and costly changes during the design process. The consultation undertaken during the feasibility study should identify the major components of the facility and the design features required. However to refine the plans into design specifications there is the need to consult a wide range of audience, for example potential users, suppliers of materials, design consultants, owners or manager of similar facilities, government and local authority.

People and information are the major resources in an event of this nature. People design and create technology; they are available for consultation and guidance, they make the law and polices in use in the industry. On the other hand information relates to things you already know or may want to know in developing a solution to aid the design brief. Information about other project with similar problems and solutions are important.

Ryd (2004) believes that the construction client is not only active concerning his/her own building stock but also in letting out premises. Therefore, in many ways the role of

the client may be said as being the same as applying to functions with facilities management in companies and organisations using a large stock of premises on account of their own activities.

7. FACILITY PLANNING PROCESS

The design brief is a phase in the facility planning process. The plan for a facility is usually integrated with the strategic plan, which looks into the long term development of the facility, after a review of existing facilities, the need and opportunities for development couple with the aims and objectives. A feasibility study is embarked on to determine financial viability, suitability, market analysis, at this stage concept and draft management plan are drawn. Both the strategic planning and feasibility study form the proposal stage in the planning process.

The decision to proceed with the project is made after the feasibility has been adopted and a move from the proposal to the project. The project enters the design phase and the management plan and design brief should be prepared. The project stage has the design, the construction and the evaluation stages. Facilities management is at the evaluation stage, where the facility is been operated and evaluated. There is a clear separation of the design stage from the construction stage and both from the evaluation or operations stage. The facility manager at the evaluation stage is responsible for the day to day operation and planning for the maintenance/replacement of the facility through out its useful life. There is the need for FM to be involved early in the life of the facility to ensure optimal resource provision.

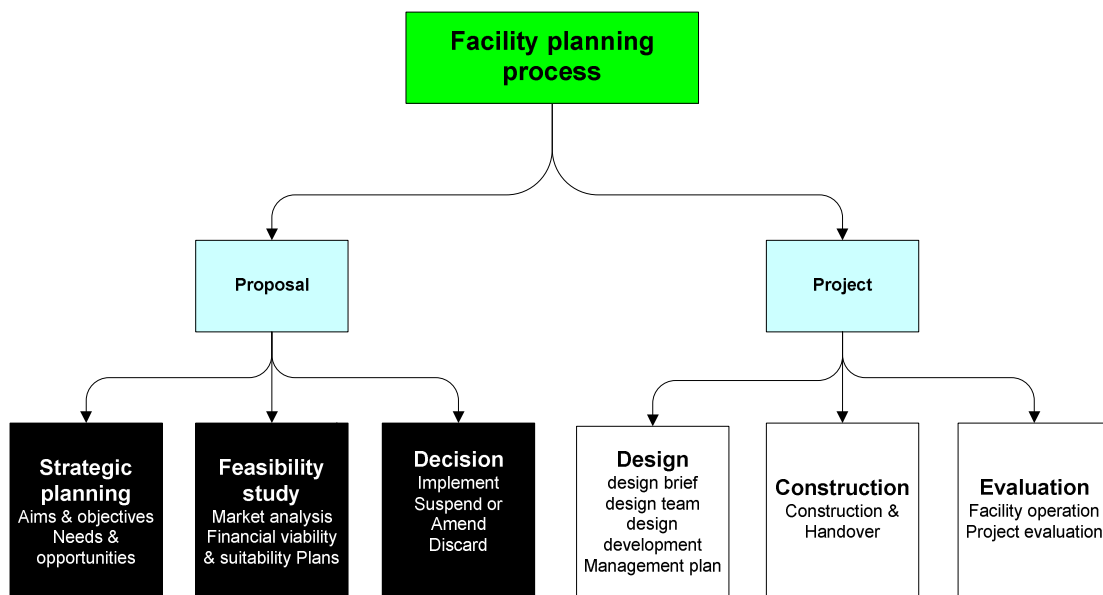


Figure 1: Facility planning process

8. DESIGN DEVELOPMENT

After the decision to implement or procure a facility has been taken, based on the strategic planning and feasibility study, the design development becomes the next logical thing to do in the facility planning process. Here designers review the brief, background materials and identify standards to ensure we understand the project context and requirements. The designers develop draft concept and initial design and select the most appropriate options for further development. This stage is the development of a solution to all the needs and requirements for the facility. It is a major production section of the design projects, all ideas are developed into working solutions. Knowledge and skills developed in the previous stages are then applied and tested. At the design development stage, management plans for the facility are put in place, all the design stages are finalised, the design brief is written, the design team is selected, the schematic design is in place. We are now ready for the next phase which is construction, production of the facility.

9. DESIGN STAGE REVIEW

The purpose of the design stage review is to evaluate the design options against predetermined criteria, to review general development of the design, to review design for compliance with the brief and cost plan, to review the design quality, and to look into the design team's implementation of procedure.

Smith and Jackson (2000) believe that the design team and the facilities managers must make more significant contributions to the initiation stages of a project, since these are the most important for the client. Also there is the need to ensure that before a client commits to any specific, they first should work through their strategic need objectives before allocating resources to action. Aiming to achieve client objectives and providing solutions that are effective, efficient and innovative.

In the supplement to the client guide for ACP Projects (2002), when the first draft is completed you can review the content of the brief as a whole:

- Does the brief communicate succinctly the particular qualities
- of your organisation and your existing and planned arts activities?
- Does it clearly state your aims for the project and set limits
- for cost and time?
- Does it clearly state your expectations for design quality?
- Does it require the design team to devise a method for
- including the input of artists?
- Does it ask the design team to exploit the opportunities for making
- links to adjacent public space and wider context?
- Have you considered future flexibility and changing needs?

Design Team

The design team is made up of different professions; it is a collective noun for a team of architects, quantity surveyors, structural engineers, services engineers, mechanical and

electrical engineers. Some times fire and acoustic engineers will be part of the team depending on the nature of the project. The design team leader (DTL) is a position often taken by the architect as part of their commission, they are responsible for coordination; strategic design, overall responsibility if there is no project manager Consultant is an expert or a specialist employed by the client early in the procurement process to provide specialist advice or design. They interpret and devise solution to the client's requirement.

Architects are responsible for overall configuration, building contract supervisor if no separate PM or DTL, spatial design, planning the layout of the building, submission of statutory consent, preparation of project specification and tender documentation. Quantity surveyor (QS) are responsible for cost and budgetary advice, preparation of cost plan, bill of quantities, estimate of rates and quantities, preparation of specification and documents for tenders.

Structural engineers are responsible for foundation and structural design: inputs for statutory consent, principles, loadings and calculations.

Services engineers are responsible for electrical and mechanical services, heating and water services design, cost of services and input for statutory consents.

Facilities manager (FM)

At the procurement stage, the FM should be aware of the contractual responsibilities of the design team and ensure that the contractual requirements of the project team are being fulfilled. Ensure that adequate time is allowed for briefing and that best practice documentation is known to those who need to know. Also all relevant information is provided and the needs of the client are taken care of. Changes to the specifications must be handled in a discipline manner to ensure that the design is not compromised.

It is the responsibility of the FM to identify any space planning needs during the briefing process, and also ensure that a special brief is required for non core areas. Ensure designs are appropriate and conform to functionality; checks are made through out the design and construction process. FM should always identify future needs as far as possible and request whole life costing calculations were necessary.

FM must appraise them self of maintenance implications at an early stage in the building design, check for easy of maintenance as part of the services design review. The design team and client should agree on the balance between cost and users needs. FM should ensure that provisions are made for both disable staff and members of the public that will access the facility. Ensure that special or occasional requirement are considered, i.e. storage provision and adequate exist procedure in case of emergencies and fire safety.

In all the FM needs to be very clear on requirements and needs of the facility. Ensure that every single activity is carried out in the most professional manner and that regulation and standards are kept.

10. RESULT

The aim of a design brief is to convert your expectations into reality, by translating the conceptual ideas developed in the feasibility study, into a set of instructions which will guide the design and construction of the facility. And provide value for money through efficient management and allocation of resources. Some of the respondent raised the issue of location, pointing out that the proposed facility should be located such that it can easily be integrated into the surrounding environment. For example the planning of a recreational facility should be sited in an area where there will be enough people to make use of the facility. The input of experienced facility manager is very important in ensure that the design promotes optimum staff efficiency.

On the meaning of design brief and how it was conducted, they were fairly in agreement as to what the meaning was, and only varied on the conduct. It was clear that the design brief is a set of instructions from the client to the designers outlining what he expects the facility to provide. To say what should be included in the design brief, we will need to answer the; why, when, what, where, how process.

Why do we want the facility? The need
When is the facility to be built? The timescale
What is to be built? The need, requirement, type of facility
Where is the facility to be built? Location, site details
How is the facility to be built? Finance

The answer to these questions will provide solution to our situation and guide us on how to fashion our design brief. The conduct has a lot to do with the experience and resources available to the client or the client organisation, the size and complexity of the project. From the interview it was clear that the brief designers or the design team expect to be told what to do by the client irrespective of the experience of the client in such matters. It is possible for the team to let the client know what is available, so that consultation rather than one way brief from the client to the team will be the case. Most of those interviewed stressed the importance of good decision as this can spell the difference between success and failure in the performance of the facility. Barrett and Stanley (1999) were of the view that by improving the quality of information during the design process the client is better equipped to understand the different issues implicated in the project. Design engineers should be in a position to present situations, and their consequences with the effect of their decision, to the client. Most clients rely sole on their consultant to resolve any issue.

One respondent refer to a situation from his own experience how administrative and official bottleneck impaired the ability of the briefing document from acting as a guide for the provision of the facility. Effort should therefore be made to remove any obstacle that will impair the brief from achieving its goal.

All the respondents agreed on the role of the facility planning process and integrated business development plans as being very vital move in the success of briefing process. Existing literature have shown that there is much interest in the area of strategic briefing tools, but this study has shown that there is limited knowledge of the different types of tools available, and their use within different organisation. Blyth and Worthington (2001) were of the opinion that the more conventional need initiated

briefing process was based on the assumption that the requirements for a structure must meet and can be described with the help of existing work processes and interviews with employees and management.

11. CONCLUSION

The importance of a good design brief in the construction of a facility can not be undermined. Chanter and Swallow (1996) also emphasise that the effectiveness with which these activities are carried out determine the success or otherwise for the venture, it is important then to have a common basis against which these activities can be initiated, planned, monitored and controlled. Good communication between the parties should be encouraged for better result, partnering and team work is also vital. There is the need for the facility manager to be involved early in the design stages so that he can express the needs of the user group and input plans for the operation, maintenance of the facility and create value for money. From all indications therefore, the analytical process outlined in this study is more of an intellectual activity, but in practise there is a structured approach to brief presentation.

Brief collection is a highly skilled requirement; it is usually advice that the designer of the facility be responsible for the collection of the brief from the client or client organisation.

More research need to be done in the area of communication needs and patterns in the construction process, this will lead to investigating the design brief process and the information need of all the design team players. Team work and partnering is the key to successful procurement in construction. Work is currently going on in trying to emphasise the role of facilities in the efficient delivery of the airport performance, and efforts are be made to identify, test and validate the key performance indicators that can be benchmarked in this regard.

12. REFERENCE

- Barrett, P. and Stanley, C (1999). Better construction briefing. Oxford. Blackwell science.
- Blyth, A and Worthington, J. (2001) Managing the brief for better design, Spon Press, London.
- Bowen, P.A and Edwards, P.J (1996) Interpersonal communication in cost planning during the building design phase. *Construction Management and Economics* 14, 395-404.
- Cabe (2002) The design brief, supplement to the client guide for ACP projects September 2002.
- Chanter, B. and Swallow, P. (1996) Building maintenance management. Blackwell Science. Victoria.
- Choeng, S.P., Anumba, C.J., Hill, H. and Bouchlaghem, D. (2003) Improving construction client satisfaction through whole life performance, published in the proceedings of the 3rd international postgraduate Research Conference in the Built and Human Environment April 2003, Lisbon, Portugal 731-746.
- Goodacre, P.E, Noble, B.M., Murray, J. and Pain, J. (1982) A metaphorical analysis of client organisation and the briefing process. *Construction Management and Economics*, vol. 14 No,1 155- 164
- Green, S.D., Simister, S.J (1999) Modelling client business process as an aid to strategic briefing. *Construction Management and Economics*. Vol. 17 63-76
- Kamara, J.M, Anumba, C.J and Evbuomwan, N.F.O. (2002) Capturing client requirement in the construction projects, Thomas Telford Ltd, London.

- Kamara, J.M., Anumba, C.J and Evbuomwan, F.O. (2001) Assessing the suitability of current briefing practices in construction within a concurrent engineering framework. *International Journal of Project management*. No. 19 337-351.
- Koskela, L. (2003) Is structural change the primary solution to the problem of construction? *Building Research and Information*, 31/2 March-April 2003, 85-96.
- Latham, M. (1994) *Constructing the team*, HMSO, London.
- Mesquita, M.J., Fabricio, M.M., and Melhado,S.B. (2002) E Concurrent engineering in construction, study of Brief-Design integration. *Proceedings IGLC Gramado*.
- Murray, J.P. (1995) Effective briefing: the key to project success, international congress on construction, design, build projects – international experiences in Singapore, 5-6 October.
- Ryd, N. (2004).Facilitating construction briefing: from the client perspective. *Nordic Journal of surveying and real estate research* vol. 1 2004
- Smith, J and Jackson, N (2000) strategic needs analysis: its role in brief development. *Facilities*, vol. 18 No. 13/14 502-512
- Smith, J., Jackson, N. and Wyatt, R. (2003) A method for strategic client briefing. *Facilities*, vol. 21 No. 10 203-211
- Spencer, N. and Winch, G. (2002) *How buildings add value for clients*, Construction industry council, Thomas Telford Ltd, London.
- Turin, D.A. (1966) *Building a process*, Republished in *Building Research and information*, 31/2 March-April 2003, 180-187.