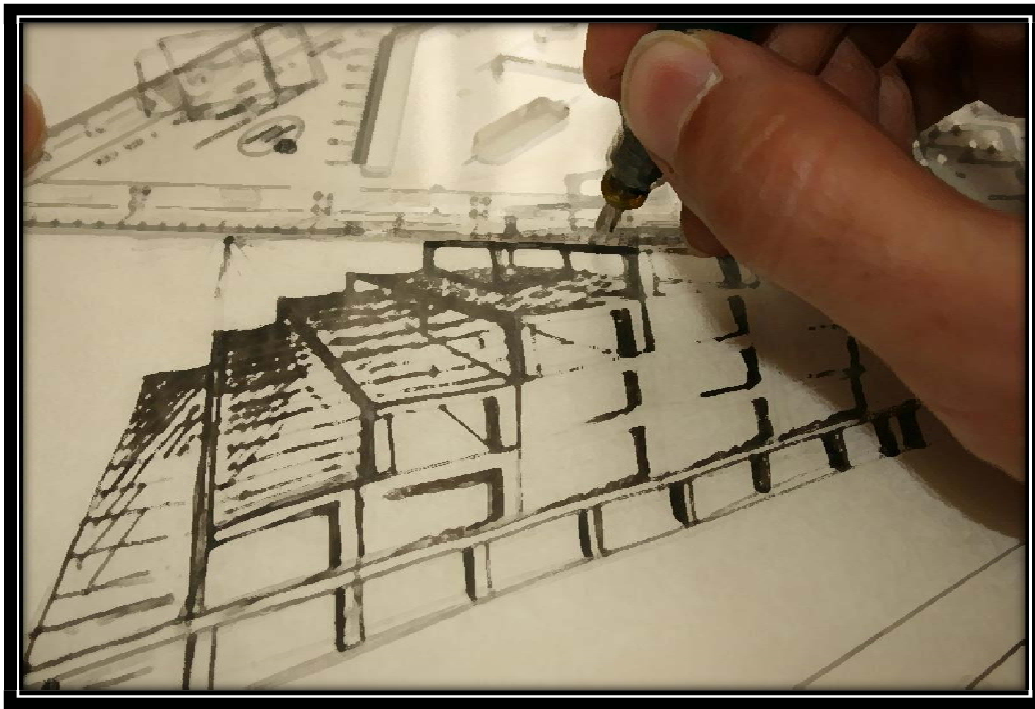


# CHALMERS



## How the Term “Value” Is Perceived and Put in Practice by Architectural Service Provider

*Master of Science Thesis in the Master's Programme Design & Construction Project Management*

**SAMAN YAGHOOTKAR**

Department of Civil and Environmental Engineering

*Division of Design & Construction Project Management*

CHALMERS UNIVERSITY OF TECHNOLOGY

Göteborg, Sweden 2012

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Department of Civil and Environmental Engineering  
Design & Construction Project Management  
Chalmers University of Technology  
SE-412 96 Göteborg  
Sweden  
Telephone: + 46 (0)31-772 1000

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## ABSTRACT

The main purpose of this report is to clear up the concept of value in architectural services and to emphasize on the role of stakeholders in the construction section to shape the value system required by an architect in order to end up with maximum value creation in architectural services.

The significance of this research may be understood when you look at on one hand, the mass of researches carried out over this subject and on the other hand the huge gap between these researches and what is going on in practice. This report claims that the existing deviation between the practice and theory is generally due to the misunderstanding of architects about the term value and ignoring the stakeholders as the key actors in values identification. To examine this claim an in-depth theoretical review and different interviews are applied and the behaviour of different architects is scrutinized. Based on the findings either theory or practice, this report provides a thorough list of typical architectural values. Also, shortcomings and defects existing in current value management models either in theory or practice are pointed out and captured at the end of the discussion. Finally according to all this data, a value management model to be applied in architectural services is presented which leads architectural service provider to a value-generative and customer-oriented service. Through this model he can analyse his information, find the priorities of stakeholders for different values, and make different assessments over the amount and density of each value between different stakeholders.

## KEY WORDS

Architectural services management (ASM), architectural services (AS), value management (VM), architectural values (AV), value, client, architectural service provider (ASP)



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## Preface

This report has focused on the value creation in design process generally, and specifically on the knowledge and management models applied by architects in achieving maximum value creation and customer satisfaction in construction section through design phase. The report has been carried out and written from April 2011 to March 2012 as the Master of Science Thesis in the program Design and Construction Project Management at the Department of Civil and Environmental Engineering, Chalmers University of Technology, Sweden.

My supervisor, Göran Lindahl, is highly appreciated for his help with reviewing my text patiently for several times during this research and providing me with his constructive opinions. I would also like to appreciate all architecture and consultancy companies and their representatives who shook my hand warmly and helped me with sharing their precious experiences and empirical knowledge with me.

Finally, it should be noted that this study could never have been accomplished without the continuous love and support of my dear parents.

Göteborg March 2012

Saman Yaghootkar





# 1 Introduction

*This report describes the challenges with which architects and designers have to face and the approaches they have to take in order to become more value-generative in architectural services such as design. Introduction consisting of three sections of background, research questions, and methodology provides a general overview of the mentioned topic. It highlights the origin of research questions and the necessity of finding the appropriate answers to them. And finally it refers to the methods applied to gather the information and how the argument will be structured.*

## 1.1 Background

The initial idea of this research merged out of the concept of Service Profit Chain Management (Figure1) talking about the relation between the profitability of a service provider and his customer satisfaction. As an architect, the first time I heard about this theory the first question came to my mind was how AS (Architectural Services) such as design can fit this theory.

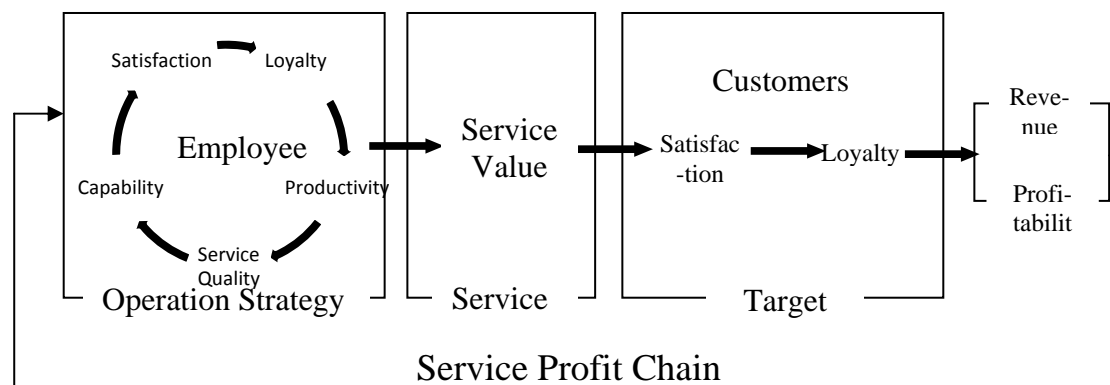


Figure 1 Service Profit Chain (Heskett et al, 1994)

For this purpose, initially it was essential to check whether or not AS qualifies the definition of the term service. Efforts to find a proper definition of service ended up with a definition from Grönroos, giving precise and clear characteristics for this term. He defines the term service as: “A process consisting of a series of more or less intangible activities that normally, but not necessarily always, takes place in interactions between the customer and the service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems”. As you see, his definition necessitates 3 features for a process to be called as a service. It should

- Consist of a series of intangible activities
- Possess interactions between service provider and customer
- Meet the needs of customer

To check the conformity of AS to this definition, a valid definition of AS was needed as well, therefore a definition from Volker & Prins (2005) was chosen. They define AS as an intangible process in which an architect as a service provider has to deal

with the problems and requirements of a customer to translate them into architectural outcomes. As you see, AS definition fulfils all aspects in service definition and supposedly it should fit the theories relative to the service such as Service Profit Chain.

Although AS as kind of service (according to last paragraph) should fit the service profit chain theory, apparently it does not. At a glance this inconformity might appear due to the unique characteristics of construction section and architecture profession such as durability of the products (buildings last for decades), project-based nature of construction, aesthetical and uniqueness aspects of architecture, and remarkable influence of process quality on product quality. But I was looking for a more scientific and reasonable answer. Hence, I focused on the service profit chain instead of AS to find the true reason of this inconformity, which looked more logical and reasonable approach. In this way in service profit chain, I realized a few strong and logical relations:

*Profitability → Employees satisfaction → values → customers satisfaction → profitability*

Most of these relations as you see look quite rational and understandable. For example it is clear that profitability leads to more employees' satisfaction or customers' satisfaction leads to more profitability. What is not clear enough and looks vague are the relations that get involved in Values. Hence, I distinguished the concept of values in AS as a black box which can have the answers of my question about service profit chain in AS and an ample of other questions. Therefore, I put the focus of my research on values in AS which will be discussed and examined in this report.

## **1.2 Research questions**

- What does ASP (Architectural service provider) describe the values in AS?
- How can ASP create values for construction stakeholders?
- How can ASP value the values in AS?

Prior to any efforts to find out the answers of above questions, the reasons behind choosing this topic questions should come up for discussion.

Reviewing pertinent literatures releases this fact that in contrast numerous papers about the value creation and customer satisfaction in construction and also the attempts of governments to formulate new and value-oriented strategies in construction section like UK, still there is a large gap between what the researchers talk about and what practitioners carry out in practice (Sebastian, 2005 and Schmid& Pal-Schmid, 2005). It will sound more abnormal when the enthusiasm of both researchers and practitioners in this subject are considered. Practitioners (ASPs) are interested in this topic due to two reasons. Firstly, it is in direct relation with their profitability (Emmitt et al, 2005). And secondly, to overcome the complexities of construction client (Bertelsen& Emmitt, 2005) and the complexities of AS such as technical (function, form, structure...), social (different stakeholders), and uniqueness aspects (nature of design- Sebastian, 2005) they have to know more about this topic. On the other hand, researchers show great interest in this topic as well. To prove this claim we can point at the significance of new concepts such as Lean Construction

which is in direct relation with value creation for customers or Sustainability which is heavily influenced by AS in construction process (Rekola et al., 2010). Now it should question that while both practitioners and researchers are so interested in this topic why is there a big gap between their perceptions and thoughts about value and value creation in construction section?

Let's go back to the concept of value in service profit chain and look at it once more in the illustrated background in last paragraph. On one hand, it was said that the issue should be in relation to the concept of values in AS. And on the other hand, it was said that both involved parties in this negotiation are so interested to fix this issue. As a result, there should be a shortcoming in the common knowledge and understanding of researchers and practitioners about the concept of value. In other words, this defect should be the result of kind of misunderstanding or miscommunication between these two groups over the term value. Since the ideas and thoughts of researchers were investigated enough, I focused on the knowledge and perception of practitioners over the value concept.

As a result, topic questions in this research aims to cover two main areas. Firstly, defining and categorizing the values in AS which was done based on theoretical findings. And secondly an empirical value management model aids ASP to address the most desired values and make assessment over different stakeholders and the amount of value given by ASP. Although the focus of the second part was brought up by some papers before this research, still there is no thorough and comprehensive approach being practical and convenient enough to be implemented by ASP.

### **1.3 Methodology**

This research is carried out through a combination of in-depth literature review and four interviews. All the interviews are conducted through face to face one-hour meetings and all interviewees have been asked a same set of questions (questionnaire is available as an attachment at the end of the report). Discussion is structured based on scientific and logical comparison between the empirical and theoretical findings. At the end, by identifying the existing shortcomings and defects in management models of ASPs and finding appropriate approaches to cover them, a model to manage architectural values is brought up.





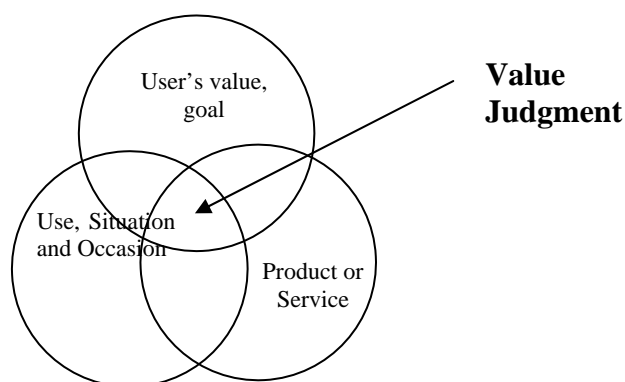
## 2 Theoretical framework

*Through this chapter, the various perspectives and ideas of different researchers on this topic are demonstrated and discussed. Also, a framework to establish the discussion section is formulated. Initially, few key concepts such as value, value management, and architectural service management are explained, and then through a more professional attitude, different values in architectural services will be illustrated through “Value Tree”. Later, value tree will be implemented in suggested value management model to value the values in AS.*

### 2.1 What is the value?

Terminologically, Volker &Prins (2006b) according to Dutch Van Dale Dictionary’s definition, mention three similar meanings for value, including: possession quality, moral or ethical matters, and amount of an item through a defined unit. They notice the second meaning totally different from first and third ones which can be together conveyed as one new meaning for this term. Apparently, this difference displays in the singular and plural forms of this terms well. Thomson et al (2003) define values (plural) as the social and individual beliefs which constitute a foundation for “judgment” while they define value (singular) as the worth or significance of a matter which constitutes an “assessment” being made by an individual against a product or a service based on his values. This idea is advocated by other scholars as well; for instance, Mills et al (2006) highlight this distinction between these two forms and explain that values refer to definite conducting principles while value is a personal assessment of something based on value receiver’s values; in the other words: “values frame the assessment of value”.

Thomson et al (2003) believe that “value is a perception” what is inevitably subjective and immeasurable, whereas objective interpretations are engaged to express it (Figure 2). Kelly et al (2004) partially agree with them and consider two independent subjective and objective aspects for value but believe that value is measurable through either currency unites or comparable scales. They distinguish while objective aspects focus on cost, price, and other economic parameters, subjective aspects focus on satisfaction and purposes behind the decisions and other psychological and cultural attributes. From their perspective, the only expressions of value which make sense in value assessment are monetary terms.



*Figure2 Content of value judgment (Woodruff & Gardial, 1996 cited Thomson, 2003)*

All in all, based on what was discussed above and broad literature review carried out for this research, what is meant by value in this report generally refers to the singular form of this term and whenever its plural forms is used, it is just to show different kinds of values. This perception of value concerns the “Worth” of a product or a service. This value is assessed and evaluated subjectively by its value receiver(s) in a production process individually or organizationally based on his culture and background. Here, it is believed that value is capable to be measured or at least described; and it has direct relation with satisfaction of each stakeholder in a process.

## 2.2 Mathematical Aspects of the Term “Value”

Tangen (2004) defines the value in economy, the worth of a product reduced by the worth of the resources consumed through production process for items such as labour, energy, capital assets, etc. Cook (1997 cited Jensen 2005) argues that the worth left in a product after being reduced by the worth of the resources consists of two parts: customer value (which is more subjective and was already discussed in previous part) and use value (more objective which will be discussed in current part). Formula (1) shows this concept below.

$$\text{worth of the product} - \text{worth of the consumed resources} = \text{value (use value} \\ + \text{customer value)} \quad (1)$$

According to this formula, a product requires to have a positive answer in this formula to be considered as a valuable one; bigger answer, more valuable product. Thomson et al (2003) in their paper by considering the construction background propose a proportion formula of above parameters (Formula 2) and believe that value either in its subjective or objective kind can be defined through this formula; a product with an answer bigger than 1 in this formula is considered as a valuable one and vice versa.

$$\text{Value} = \frac{\text{Benefits (what you get)}}{\text{Sacrifices (what put in)}} \quad (2)$$

The common point between these two formulas is the direct relation of value with benefits and indirect relation with the sacrifices. In a closer look, even it is possible to figure out the influencing parameters for each part of the value separately (use value & customer value). This way, if B stands for benefits and S stands for sacrifices, they may change through table 1 according to objective or subjective assessment of value.

Table1 Parameters in subjective and objective value

Value = B/S	Subjective feature (customer value)	Objective feature (use value)
B (benefits)	User's initial impression & Satisfaction in use	Function & Quality
S (sacrifices)	First cost & Follow on Costs	Cost

Mills et al (2006) modified Thomson's formula and came up with a more applicable one which talks about a new parameter as the priority:

$$Value = \frac{Benefits - Sacrifices}{Resources} \quad (3)$$

The point should be noticed here is that sacrifices in this formula differ from sacrifices in Thomson's one. As they explain more in their paper, by sacrifices, they mean the stuff that stakeholders make to reach at their benefit and it differs from any resources or costs. In fact, it refers to the new parameter of priority. Priority parameter affects the value of a product when there is:

- a group of internally dependant value receivers instead of independent individual value receivers; and
- a collection of values for value creator to work upon

In this situation, it is quite likely that two value receivers have the same expectation as value but in the different priority. For instance, value X can be the first value in the list of Mr A while it is the fourth value in the list of Mr B. In this situation Mr A has to scarify some sources to change Mr B's idea, or ignore value X as his first priority. It will be discussed in coming sections more.

Defining the mathematical meaning of value in product context, as a start point, ease the understanding of value initially. But the term value, in this report, requires to be discussed in service context as well, since the main subject of this report is AS. For this purpose, a mathematical definition of value from Heskett et al (1997) is presented here:

$$Value = \frac{Results + Process\ quality\ Price + Costs}{of\ Accessibility} \quad (4)$$

As you see, in his definition value (for client) in services is influenced by four parameters which include results, process quality, price, and cost of accessibility.

## 2.3 Value Management

Value Management (VM) was proposed for the first time in huge manufacturing companies such as General Electronic at 1940's under the title of Value Engineering (VE) to examine the functionality of final products. During the years of mass production thinking, this technique moved toward the concept of simplifying the product through design step in order to lower the price of final product and consequently achieve a higher level of customer satisfaction (Thomson & Austin, 2001). Contemporary to the changes in the strategies of corporations to deliver maximum profit to the all stakeholders of a corporation, VE matured and changed into a management technique focusing on the concept of value as the shared profit and a criterion for comparing the "gets" and "gives" of each stakeholder in a production process (Mills et al, 2006).

In construction as the focus of this report, VE which has been noticed under the title of VM (Value Management) since 1960's, traditionally used to be attributed to the trade-offs between triple factors of time, quality, and cost (Volker & Prins 2006b). Today, VM instead of focusing on these triple factors, prefers to focus on the expectations of the construction client (Thomson & Austin, 2001), who is the main decision maker of all these factors through a production process.

Clearly, construction client is the representative of different stakeholders who vary in their expectations and have various definitions of any of mentioned triple factors. Hence, various authors such as Kelly & Male (2001) or Thomson & Austin (2001) emphasize on a "value system determined by client" to run the VM in a project. From this perspective the borders of the term value expand from its traditional factors to new concepts such as client satisfaction and performance.

In the modern VM, there is a tendency of producer to satisfy his client by fulfilling his needs and wishes (Volker & Prins, 2006b). New orientation of VM in which "values are in people and not in the objects" has not only clear impacts on traditional structure, but also focuses on accelerating the decision making process (Thomson & Austin, 2001) and encouraging user to accept new production of any production line more easily (Kaya, 2004). Kelly et al (2004) distinguish VM from other management services through 3 main features of this service including value-based system, team-based process, and functional-based analysis (to improve the understanding of the project).

## **2.4 ASM (Architectural Service Management)**

Thomson (2003) believes that achieving a true and thorough understanding of the value concept in Architectural Services (AS) is not obtainable without having a correct perception of the nature of AS. So, what is AS?

Basically, AS through an evolutionary procedure begins in imaginations of a designer and ends up with architectural outcomes in reality. Sebastian (2003) believes that AS is a complex practice and mentions three reasons for his belief. Firstly, he refers to technical difficulty; he expresses that ASP has to cover different structural, functional, and even financial aspects, a combination which definitely results in a kind of complexity. Secondly, he mentions social difficulty which is caused due to the involvement of various stakeholders and participants in any construction project. And finally, he points at uniqueness difficulty which is associated with nature of design (Sebastian, 2003 cited his paper, 2005).

The broad and complex nature of AS on one hand and increasing demand for a higher level of simplicity, reliability, and customization in different products (Beim & Jensen, 2005) on the other hand, necessitate applying managerial and steering techniques in AS, what is called in this report Architectural Service Management (ASM). Sebastian (2005) believes that ASM models can have different focuses such as process, product, and organization while each of them lonely suffers from certain drawbacks (Table 2). In fact, ASM is a mixture of all the triple approaches mentioned by Sebastian (2005) and no one can be privileged by researchers or practitioners. Apart from organizational management which is the necessity of any teamwork, there is no priority for product or process management in AS.

Table 2 *ASM approaches and their weaknesses, Sebastian, 2005*

	<b>Product management</b>	<b>Process management</b>	<b>Organization management</b>
<b>Focused aspects</b>	-Aesthetical & Functional -Technical & Economic -Performance of product	-Effectiveness -Efficiency	-Inter-organizational decision making -Office management
<b>Weakness</b>	<i>Design is considered as a static object, while people and conditions are constantly changing as well as value</i>	<i>A high quality process does not necessarily lead to a high quality product</i>	<i>Limited to administration</i>

Volker &Prins (2006a) state that the uniqueness and differences in team structure of different construction projects prevent researchers to figure out the relation between the product and the process. From their perspective, ASP, as an actor over the triple elements of VM (money, quality, and time) has to take the responsibility of both design process and design product, especially through his traditional role in which he himself must deal with various cultural, engineering, aesthetical, statistical, and economic aspects of this process (Volker &Prins, 2005).

Ballard & Koskela (1998) through an in-depth literature review define ASM (design management) from 3 distinctive perspectives: converter (transforming inputs into outputs), informative (flow of information through time and place), and generative (value generating for client). They believe that ASM should be an integration of all these three perspectives. In the following they describe generative perspective as the one which focuses on eliminating the value loss and fulfilling the client's requirement. Prins et al (2001) emphasize on this perspective and even state that the focus of ASM is facilitation of value creation through strategic management and fulfilling the expectations of all stakeholders in a design process (Prins et al cited Volker &Prins, 2005).

### 2.4.1 Challenges of Management Techniques in AS

Implementation of managerial principles in AS normally faces with particular challenges. Briefly, four of them based on reviewing the opinions of different authors will be discussed below.

First challenge is associated with the reluctance of managers and designers in getting involved in ASM. On one hand managers look at design as a black box, on the other hand, designers generally show no interest to notice management principles in their career (Volker &Prins 2006b). Basically, this challenge emerges out of distinctive attitudes of these two groups toward concepts such as quality in AS. From a manager's point of view, quality is defined as a measurable concept expressed through several definite KPIs and refers to achievement level of defined goals (Figure 4). Whereas, from a designer's point of view, quality constitutes a set of subjective,

intrinsic, and immeasurable concepts which are more about intangible aspects (Prins, 2009). That's why, most of ASM approaches are criticized for not understanding creativity in AS as the core of design process (Sebastian, 2005).

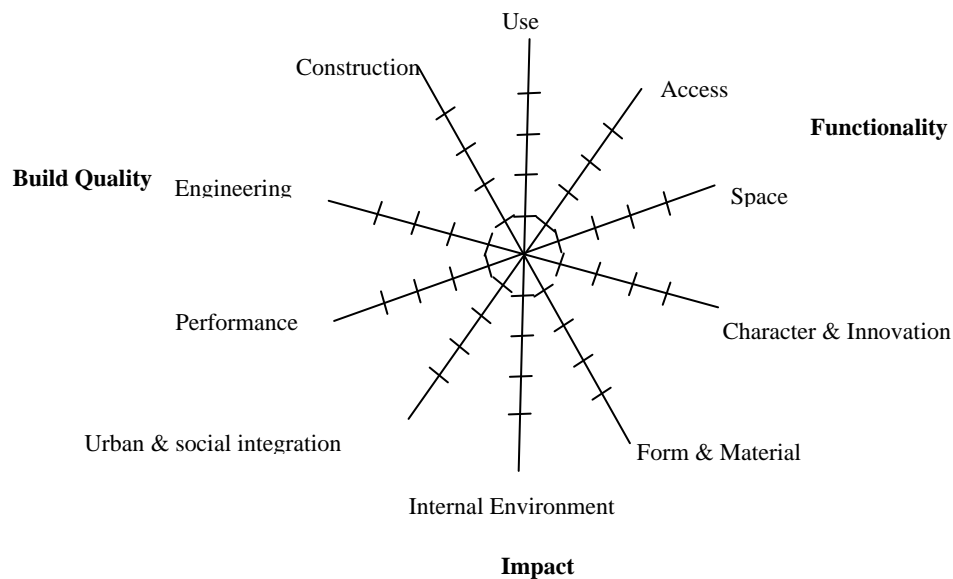


Figure 4 Example of DQI (Design Quality Indicator) assessment Thomson, 2003

For instance, Tunstall (2000) defines ASM as a continuous circular process comprises four phases of analysis, synthesis, appraisal, and feedback, which may be criticized by designers for being negligent to the conceptual and innovative nature of AS (Figure 5). Likewise, Schmid & Pal-Schmid (2005) based on experience; describe an approach for ASM through 11 phases to achieve a valuable and customer-oriented architecture which may be criticized by managers for being negligent to managerial principles (Figure 6). However, besides the two mentioned groups, there is a third group who believes that design and management possess similarities through three aspects of actor, action, and setting which let them interface to each other quite successfully (Sebastian, 2005).

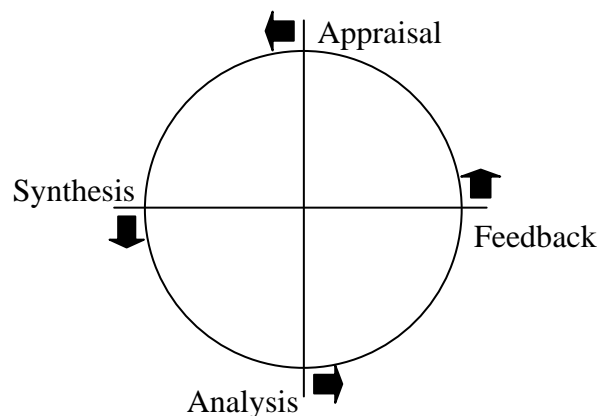


Figure 5 Architecture focused model example - Tunstall, 2000

Second challenge is associated with information sharing in construction section. Volker and Prins (2006) in their paper point at the significance of true communication

and sharing information at the right place and time as one of the requisites of achieving high value creation in ASM. This opinion is supported by Ballard & Koskela (1998) as well, who believe in informative aspect of ASM as one the triple perspectives over it. In contrast all these emphasis, information sharing in construction section is so weak in practice. It is due to two inherent characteristics of construction section which are considered as the reasons of the low productivity in this section as well (Tombesi, 2005):

- Project-based nature of construction section which slows the automatic flow of knowledge and information from one project to another one. This opinion is advocated by Emmitt et al (2005) as well.
- “Contracting system” which restricts the stakeholders to share their information and innovations with others due to competition and work security.

Third challenge is concerning the high variety of stakeholders in construction projects. This challenge leads to two different difficulties for ASP. First one is the high dependency of ASP on the client who is supposed to represent the wishes and needs of all stakeholders in a project, which will be discussed broadly through coming sections. And, second one high variety of requirements of stakeholders which can even occasionally lead to some contradictions as well (Gassael& Maas, 2005). From their point of view, for instance, construction section suffers from the inconformity of client’s value with society’s one. Because while client’s values concerns concepts such as profitability, quality, usability, and flexibility, society is looking for values such as energy saving and reduction of environment pollution. Accordingly, Mills et al (2006) in support of this opinion, generalize this issue to all stakeholders involved in construction process and state that the expectations of each of the stakeholders differs from the others’ one.

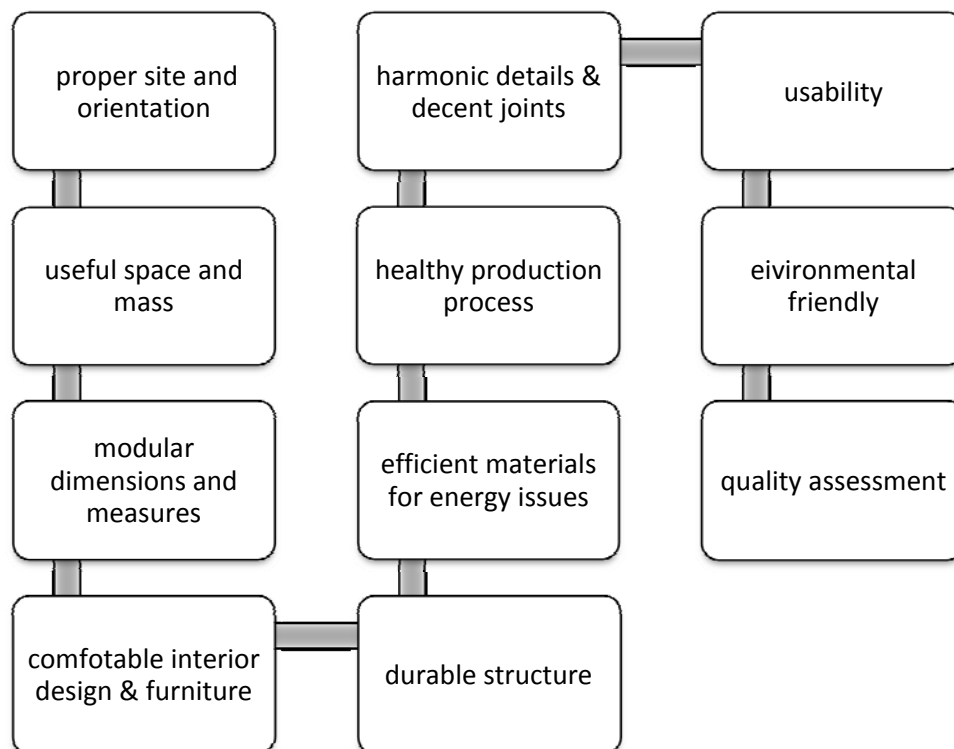


Figure 6 Management focused model example - Schmid& Pal-Schmid, 2005

And the last challenge is about the uniqueness and complexity of any construction project which make any comparison between different projects difficult for experts. Moreover these differences in various projects prevent experts to realise the results of applying a managerial and steering technique in a project (Volker & Prins, 2006b).

## 2.4.2 Client & ASP

From the perspective of the authors of ByggherreForum's report (Sandesten & Bergdahl, 2006) who has the most crucial role in construction section, is client because:

- He chooses all other actors in construction process from planning to furniture and facilities of building (in general speaking he sets the stage for other actors)
- He finances he project
- He purchases construction products

Perng et al (2009) believes that recent configuration of stakeholders involved in construction section has given more attention to client by noticing him as the only actor on demand side against designers, constructors, and consultants and the other actors on supply side. Although client may seem as a single entity, according to the mentioned report, he always represents other groups of stakeholders who cannot get involved the process directly. So, he may represent some or all of below stakeholders (Figure 7).

- End-user
- Operation and facilities manager
- Developer and Funder
- Constructors and suppliers
- Society (regulations and rules of the society – Bertelsen & Emmitt, 2005)

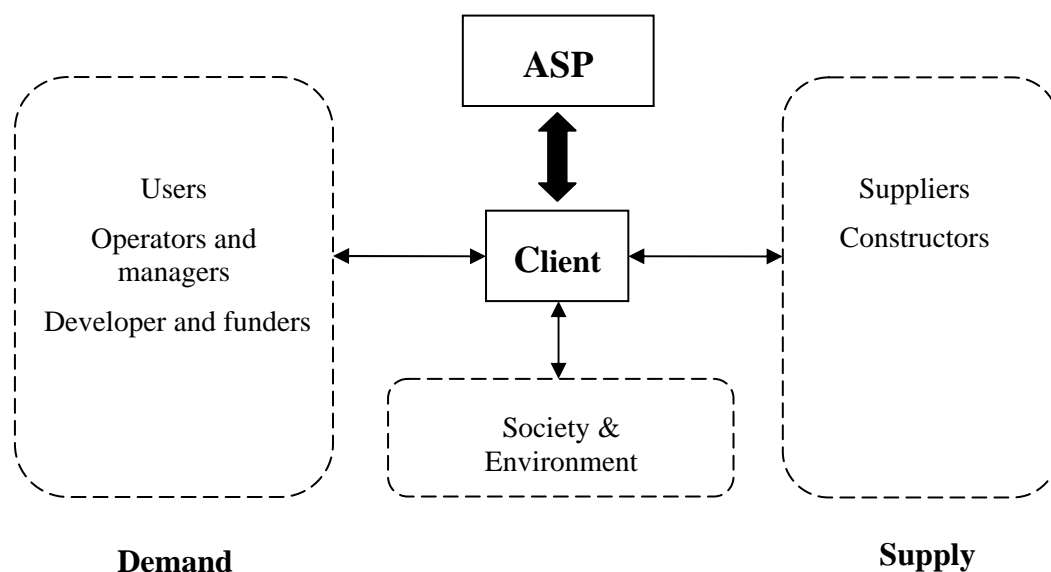


Figure 7 relations between different stakeholders in construction section and the role of ASP



What was mentioned above about client clears up his significant role in construction section and the necessity of his high competence and broad knowledge to handle all these relations and requirements. But as a matter of fact, today construction section suffers from the shortage of client's knowledge and competency (Sandesten & Bergdahl, 2006). Perhaps due to this lack, Tunstall (2000) calls ASP (designers) as the client's agent contributing him to design and manage the construction process. As a result, who is in charge of handling these relations on behalf of client is architect or designer (Perng et al, 2009) who is called in this report ASP.

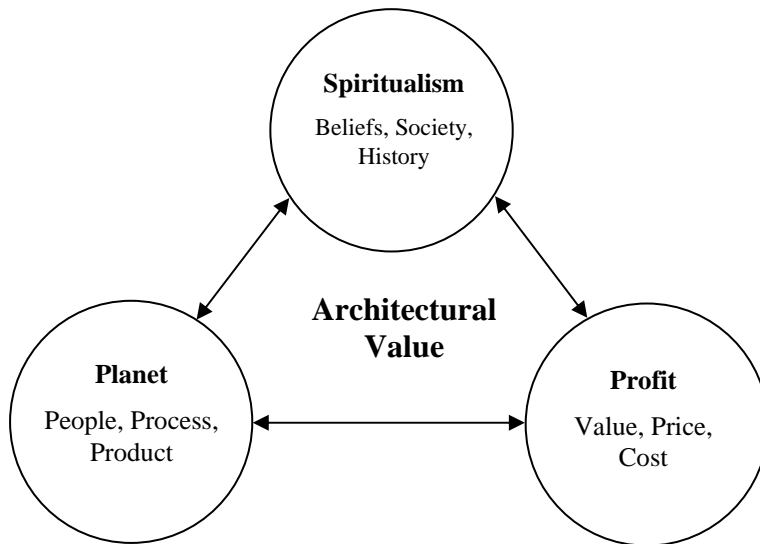
Variety of stakeholders who are supposed to be represented by client and handled by ASP is just one of the complexities of construction client. Actually, Bertelsen & Emmitt (2005) based on Lucas's ideas (2005) about complex systems, describe the construction client as a complex phenomenon. They believe that defining value without identifying the client is impossible. Accordingly, they mention 15 different characteristics for construction client. In the following 5 of them which sound more related to the subject of this report are mentioned:

1. Non equilibrium: various stakeholders who are represented by client are a dynamic group which continuously produce new ideas and thoughts which should be reflected by client.
2. Instability: client's tolerance against mistakes and probable errors is lower than it is supposed, so learning system is crucial in a construction process.
3. Self-modification: the stakeholders who are represented by client as a network are moving in a continuous changing mind process.
4. Self-reproduction: client tends to copy a successful method in a project into next project, which scientifically cannot guarantee another success.
5. Undefined values: the group of actors behind a client can have different values and even values in contradiction with each other, but during the time that the project develops these distinctions particularly compared with other stakeholders such as environment and society considerably change.

## 2.5 Architectural value (AV)

Value in AS or Architectural Values (AV) covers a wide range of dimensions from cultural and aesthetical aspects to functional and economic ones. According to Prins et al (2009) AV derives out of a triad system with dependent elements, including: spiritualism, planet, and profit (Figure 8). In other words he believes that AV can be defined based on beliefs and background of each stakeholder (spiritualism) in relation to other stakeholders (planet) while being influenced by economic parameters (profit).

To go in depth of AV, this paper prefers to come up with a detailed categorization of different AV. A detailed categorization can ease the understanding of AV which is spread through a wide diversity on one hand, and possessing a contextual and subjective nature on the other hand. In this relation, authors such as Jensen (2005) and Emmitt et al (2005) have proposed models to categorize AV, but both of them are suffering from general talking and lack of specific explanations. In the following these two models will be studied and discussed to see the pros and cons of each of them.



*Figure 8 Architectural values as a complex triad system with mutually dependent elements, Prince 2009*

Jensen (2005) divides all values in construction into four classes, based on methods through which they should be put into practice, including: economize (decreasing input) and efficiency (increasing output) in process and effectiveness (increasing the income by being initiative) and efficacy (increasing the income by being user-friendly) in product. As you see, the classes are so general and might have big overlaps with each other that will likely result in more confusion for ASP. But a considerable point in his paper, being highlighted by other authors as well, is his initiative in dividing the AV into two big groups: value in process and value in product (Hesket et al, 1997). Although in AS, from the perspective of Volker & Prins (2006b) drawing a sharp line between product and process is almost impossible, still this hypothesis can be correct.

From a different perspective, Emmitt et al (2005) initially categorize all AV into two big groups of:

- External value: client's value (the values of the represented stakeholders by client)
- Internal value: participants' value (the values of the suppliers, designers, and constructor)

Then they look at external value and distinguish two minor sources for value creation as the product and the process. The process itself comprises:

- Soft value: quality of communication and conflict solving between client and service provider.
- Hard value: commitment of ASP to keep cost, time, and quality limits.
- Experiments of participants who take part in workshops of briefing, for instance.

And the product value which is about the level of safety, functionality, aesthetic, and sustainability of a building is last value in Emmitt et al (2005) categorization which will be detectable just after the building starts to run by end-users.

Although these categorizations seem comprehensive and thorough enough, still they do not cover all features of AV and they suffer from some overlaps and general talking. In studying these categorizations several useful points were noticed which will be used to formulate the AV categorization in this report.

- Firstly, society in which a building is going to be constructed should be considered as a value receiver.
- Secondly, timeliness should be realized as a main characteristic of value. This characteristic addresses various value receivers (stakeholders) during the life expectancy of a building from its beginning to its demolition. In this relation the idea of Jensen (2005) about value in product and process might be kind of interpretation of this feature of value.
- Thirdly, in AS apart from stakeholders on demand side, creating value through cooperation between ASP and other stakeholders in supply side such as constructors is quite possible (but it will not be discussed here anymore because it is out of the topic of this report).

## 2.6 Value Tree

According to the results of studying two of existing ASM models in last section and relevant literature review, the categorization of AV in this paper is formulated based on the two factors of:

- Time
- Value receivers

Basically, timeliness is one of the characteristics of value which is highlighted by different authors such as Thomson (2003), Lindahl et al (2011), and Emmitt & Bertelsen (2005). All these authors agree that value is a concept whose meaning changes over the time. What intensifies the effects of this feature in AV is the durability of buildings, which necessitates ASP to think about the future of a building as well. This way, different values in a building should be considered for different stakeholders throughout

- Construction time
- Competition time
- Consumption time

The other factor, according to which the categorization of AV is formulated in this report, is value receiver. Regarding the subjective nature of value, value receiver plays a crucial role in defining and assessing value in a construction project. In AS value receivers are all stakeholders who are supposed to be represented by client. As it was said earlier, value receivers in this paper are defined as:

- client
- end-user

- developer or funder
- operator or manager
- society
- participants in supply group

It should be noted that these are not fixed actors and regarding the background of a project some of them may be omitted or some others may be added to them.

However, the categorization of AV in this report compared to its similar ones possesses a broader and more detailed insight toward AV. Firstly, the overlap of different AV is very unlikely, because the time and receiver of each value work like the coordinates of that value and prevent any replication or negligence about any value. For instance, in the categorization offered by Emmitt et al (2005), quality is seen as both hard values in process and value of final product, which can confuse ASP. Secondly, suggested categorization in this report is formulated based on time factor which not only emphasizes on the AV in process (construction time) and product (completion time), but also adds a new category of value which should be received by a group of stakeholders in future (consumption time).

The categorization of AV in this report is illustrated through a tree graph which is called Value Tree (Figure 9). This tree tries to display all typical AV based on two factors of time and value receiver. Again, it should be noted that these are typical AV and according to the background of a project some specific values may be added or some of these values may be omitted. In the following each of these values is explained briefly.

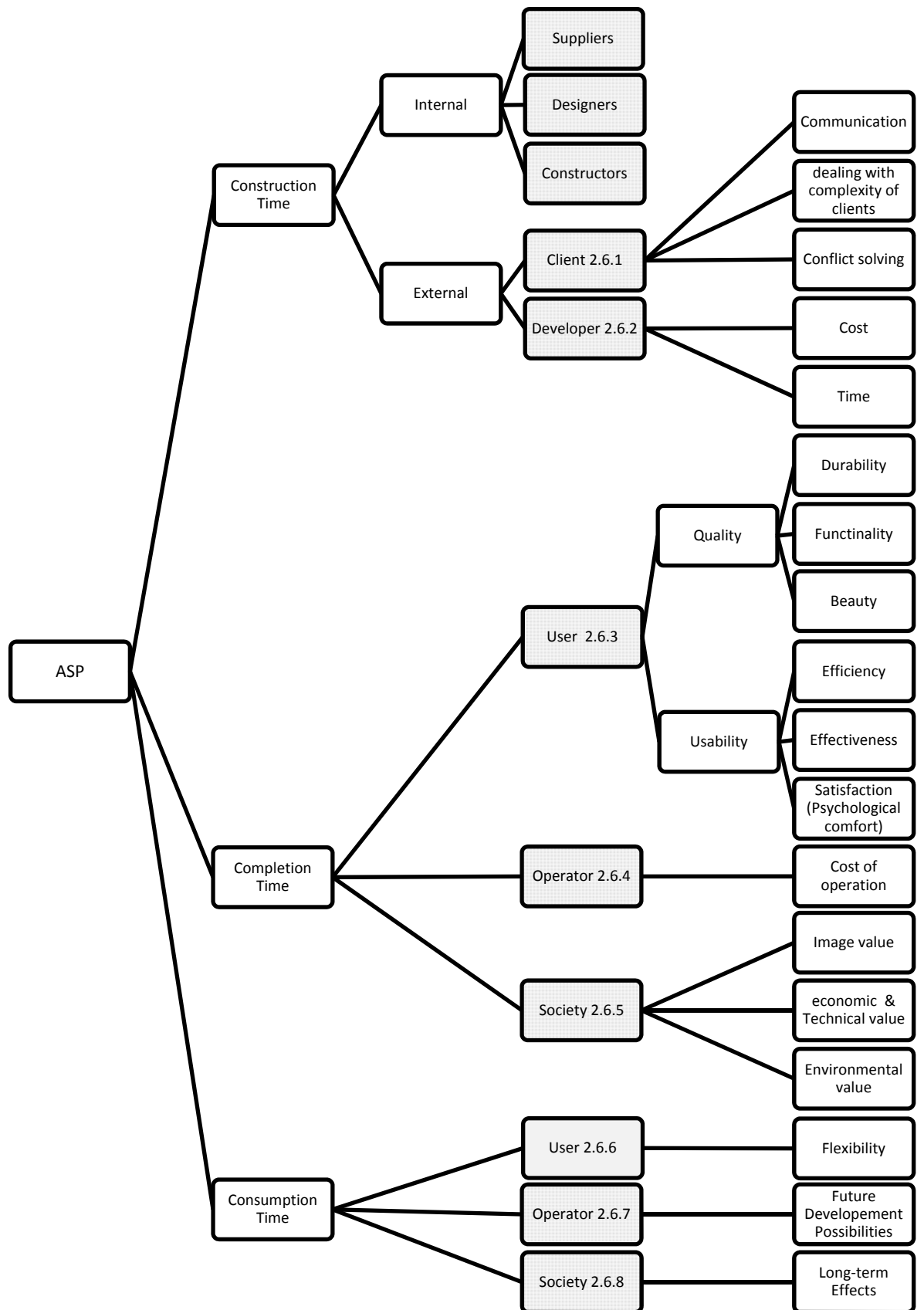


Figure 9 Value Tree in AS

### 2.6.1 Construction time: values for client

This group of values are called Soft values by Emmitt et al (2005) are created throughout the construction time (process) and received by client or any stakeholder who plays the role of client; it may be user, developer, and operator. Based on literature review, these values can be put into practice through below channels:

- Communication and decision making process
- Overcoming complexity of client (such as self-modification and self-reproduction)
- Experiments of participants

**Communication and decision making process:** The point which should be taken into consideration is that the process value in AS is slightly different from process value in other services. This distinction emerges out of the dependency of the final product quality on the process quality. In other words, process in AS is not only a channel through which a product or a service should be delivered to client, but also it is a part of production process and plays a crucial role to structure the final product.

For instance, briefing as a key step in AS to understand the client's wishes and needs (it will be explained more in next sections) is considered as part of the process. To attain a more clear understanding, let's compare ASP with an airline company or a bank. As you know, service providers at these companies always attempt to improve their process quality and customers satisfaction by making their process faster and shorter through new technologies such as on-line services. Whereas in AS, more involvement of client in process through different workshops and meetings constitutes a creative and effective approach for ASP to achieve a higher level of customer satisfaction and process quality (Pemsel et al, 2009).

**Overcoming complexity of client:** Mills et al (2006) believe that communication between client and ASP has an undeniable impact on value creation in AS. From their perspective, it can considerably contribute ASP to identify the different values of various stakeholders and to figure out their needs and wishes based in their background and culture. For example, Tunstall (2000) expresses that communication can be so helpful to user to realize his needs and wishes when he is used to existing circumstances and cannot recognize his real needs and a better situation. Furthermore, this involvement through the whole process of design can display the project fun for client and stakeholders (Pemsel et al, 2009) and encourage them to be more active in decision making process, what can accelerate the process. Finally, it should be taken into consideration that client's involvement in the process can lead to less complexity for ASP in dealing with them – what was explained earlier as one of the challenges in ASM for ASP.

Mills et al (2006) believe that communication in construction section can be configured in two forms of structured and unstructured. Structured form refers to speech, writing, and images in AS (Tunstall, 2000). And unstructured form refers to explicit knowledge between individuals. Of course, today ICT (information and communication technology) and other computer technologies have changed these forms of communication to much better and faster communication channels (Moum, 2005).

### 2.6.2 Construction time: values for developer

Hard values as another source of value creation can be put into practice by ASP during the construction time particularly for developer – of course, it does not mean that other stakeholders are not interested in this kind of value, but normally it is not their first priority. Emmitt et al (2005) describe that hard values are more associated with main parameters in classic VM: time, quality, and cost. Each of these parameters is considered as a potential source of value for ASP which can be applied by him (Since quality normally is the first priority of user client, it will be discussed in later parts).

In case of cost and time, normally it is believed that if supplier keeps commitment to agreed levels of cost and time, he will end up with the value creation for developer. Bertelsen (2004) believes that this value constitutes relative value. From his perspective, absolute value is created when the supplier carries out the project in lower price or shorter time. Jorgensen (2005) expresses that design compared to other phases in a construction project has the highest capability to alter the cost, time, and the quality. From his point of view, at design phase, ASP has enough alternatives to substitute one for another one and attain maximum customer satisfaction. Also, any change at this phase is quite possible without charging the client by high costs, while in next phases any changes may charge client by different high and unexpected expenditures. In this relation, Cooper & Slagmulder (1997) come up with the idea of DfX (Design for X) which aims at improving one parameter (of cost, time, and quality) while keeping other parameters stable.

**Cost Value:** this value covers two smaller values: capital costs value and exchange value. Capital cost concerns fees of land and construction (Kelly & Male, 2001) while exchange value concerns the payback and return of investment. In case of no sale option for the building (the building is built for an operator or an end user for instance) this value will be zero (Kelly et al, 2004). It is clear that any efforts by ASP to reduce these costs will result in more satisfaction and value for developer.

**Time value:** time value covers the duration of construction project since commence till occupation of the building by users (Kelly & Male, 2001). Clearly, less construction time causes less capital cost and more value for developer.

### 2.6.3 Completion time: values for user

A building to accomplish its original mission in providing user with a shelter to support his daily activities gets involved in his routines and consequently influences on his life (Prins et al 2009). This way, the quality of the building impacts upon the quality of user's life or job through criteria such as efficiency, satisfaction, and achievement (Lindahl et al, 2011). On the other hand, it was discussed previously in this report that the key role of AS in framing the quality of a building is undeniable. As a result, it can be concluded that AS is an effective practice in construction section on defining the quality of user's life or job. To put emphasise on the influence of AS on life quality compared to its costs, Lipton (2001) expresses that: "Design represents a minute proportion of the lifetime cost of a building-less than 1 percent- but done well it has disproportionate impact on how well the building and its surroundings perform" (Lipton, 2001 cited Thomson 2003). Worpole (2004) describes that the effect of AS on the life quality of a user is even beyond aspects such as aesthetic but it

addresses the feelings such as security, safety, and identity of a building (Worpole, 2004 cited Mills et al, 2006).

Lindahl et al (2011) emphasize on the clear relation between the design concept of a building and the activities which are supposed to be carried out in that building. From their perspective, high or low conformity between these two can result in positive or negative consequences for the user of a building. For instance, a well-designed school can result in better academic outcomes compared to a poorly-designed one. These kinds of value sometimes may be understood intangible and none measurable (Samad& Macmillan, 2005), but it does not matter to their significance. Usability and quality are two terms which are chosen in this report to define these kinds of value.

**Quality:** Volker & Prins (2005) define the quality as the concept which refers to fulfilment of user's requirement. Thomson (2003) in support of this opinion defines the quality of a product as: "An assessment of how well its quality (that is its features or attributes) meet the customer's need". In construction section, a definite level of quality before execution is agreed between client and suppliers (including ASP) through the procurement and contract phase. This level normally is determined with some KPIs (key performance indicators).

The point which should be taken into consideration is about how quality differs from value in construction background, because in some cases they are mistaken for each other by different actors in a production process (Thomson et al, 2003). Through literature review three clear differences are distinguished. Firstly, it should be realized that quality is about the fulfilment of the expectations of only the user (Volker &Prins, 2005 & Thomson et al, 2003) while value is about not only the fulfilment of the expectations of user, but also it is about the expectation of all other stakeholders involved in construction section. Secondly, quality usually leads to higher costs for client and consequently for user (Godfrey 1999 cited Thomson et al, 2003) while the value necessarily does not lead to higher costs; even normally in value thinking, it is tried to keep the costs in lowest level to satisfy the user. And finally, the last difference is about the parameters influencing on these two concepts. According to Prasad in Macmillan (2004), typically quality is influenced by factors such as: Functionality, durability, and beauty (based on Vitruvius's triangle) while value is influenced by factors such as: time, cost, and quality in its traditional definition and new parameters such as performance and satisfaction in its modern definition (Volker &Prins 2005).

**Usability:** use value or utility actually refers to the supportive role of a building in running the activities being supposed to be carried out in that building (Kelly & Male, 2001). According to Thomson (2003) use value benefits directly the user of a building. To express this benefit in a meaningful way, let's state it through monetary criteria. In this case, it is noticed that the cost of life in a well-designed building will be less than a normal one in addition to its more comfort. Likewise, the cost of running a business in a bespoke building is less than a normal one as well. It might be due to different reasons such as its need to less stuff number, for instance. This value being created by ASP can be received directly by the user of a building.

According to Tunstall (2000), traditionally ASP used to utilize "Design Brief" approach to find out the use value of a building. Design brief is a developed version of client's brief - the list of rooms and spaces ordered by client - which is improved and completed by experts and designers according on rules and standards. This way, ASP has to set up regular questioning sessions with user to provide him with different



alternatives and endeavour to achieve a result complying with the wishes and requirements of both sides. In this approach, questioning normally is performed through different workshops and meetings of a small group of clients and designers (Mills et al, 2006). However, from the point of view of Jensen et al (2005), this kind of brief cannot use whole potential of user to put the use value into practice. Hence, they suggest the idea of Dynamic brief, which is based on a continuous feedback process and a collective dialogue between all stakeholders – not only the designer and clients.

Growing significance of use value in recent decades made the experts to set up a more specific and precise definition for use value, what is called later “Usability”. According to ISO9241-11 usability is: “the extent to which a product can be used by specified user to achieve specified goals with effectiveness, efficiency, and satisfaction in specified context of use” (ISO, 1998 in Jensen et al 2011). Lindahl et al (2011) demystify usability by attributing three features to it:

- Efficiency (provide the user with ease of use)
- Effectiveness (provide the user with certain desire effect)
- Customer satisfaction (provide the user with psychological comfort)

Generally, to put into practice the concept of usability, Lindahl et al (2011) believe that the constant user involvement into the process to discover his needs and wishes is essentially required. In the following, they propose two empirical approaches to be applied by practitioners to achieve a higher level of usability in design:

- Management approach which is applied when the construction process is on-going (translate the user’s requirement into design efficiently).
- Eliciting approach which is applied when the building as the final product is being used (getting systematic feedback from user).

#### **2.6.4 Completion time: values for operator (manager)**

Next source of AV for ASP relates to operator or manager, who will run the building or take part in its facilities management. ASP can have a key role in defining the running costs of a building such as repairs, maintenance, and even IT services through his design (Kelly & Male, 2001). Nutt (1997) believes that to achieve a true understanding of this kind of value, a special briefing which may be called “Facilities Management Briefing” sounds necessary during design process. In this briefing even the requirements needed to develop a building in future are discovered and taken into consideration by ASP (cited Jensen et al, 2011).

#### **2.6.5 Completion time: values for society**

It was mentioned earlier in this report that buildings as the final products of construction section have clear impacts on life quality of users or occupiers. But the point is that their impacts is not confined just to users and goes beyond it. Prins et al (2009) believe that AV is such comprehensive that covers not only individual values but also cultural and social ones.

Buildings possess unique characteristics such as immobility and durability which differentiate them from the other manufactures of human (Lecture by Brochner 2010). These unique characteristics end up with a product which has heavy interactions with its environment. Moreover, buildings due to their considerably big sizes, involve a wide variety of audiences, from their users who live inside of to the inhabitants living in their neighbourhood (it depends from how far they are visible to).

All in all, it can be concluded that ASP as the one who designs a building, can affect considerably on the various life aspects of a big group of people. If these effects are assessed positive and satisfying by these people, they can be considered as value and those people can be considered as value receivers who are called society in this report. This value is called by Macmillan (2005) Social value. Basically, social values can divide into three groups.

**Image value:** or Esteem value as Kelly & Male (2001) mention in their paper, refers to aesthetical aspects of a building either internally or externally. Here, what is focused as the value is the external aesthetical aspect of a building which will be understood by society. Nowadays, different towers offices throughout the world are built to provide this kind of value and represent the attention of their owner to beauty and elegance to who watch these towers even at a glance. What should not be forgotten is the attitude of people towards the concepts such as beauty which change over the time regularly, but as long as this attitude does not change, this value stands with a building.

**Environmental value:** Environmental value is more about the impacts of a building on its environment. It can be looked at through two aspects of wastes and resources. In other words, as much as an ASP can decrease consumption of the resources and production of the wastes in operating a building, he adds value for the environment in which the building has been built. Passive houses are examples of this kind of thinking.

**Technical and economic value:** Tombesi (2005) through studying the case of Sydney Opera House concludes that a building has an inherent capability to contribute the improvement of the regulations and policies, technology, and economy of an area in which it is built. For example, sometimes an innovation by an ASP can end up with a new design approach in AS which can be applied by other ASPs as well. Or, the valuable design of a building improves the economic situation of the people in its neighbourhood, even though the initial purpose of the building was not economic improvement. Sydney Opera House is a good example in this case which became kind of landmark for Australia and has improved dramatically the tourist section, as a highly profitable business in this country.

## **2.6.6 Consumption time: values for secondary user**

In addition to usability and quality as a values which are received directly by primitive user of a building, Kelly et al (2004) mentions another kind of value which is received by user but more likely by the future user (secondary) of a building; which is flexibility. This value just makes sense when the long life span of buildings and the high pace of changes in human life and work style are taken into consideration.

### **2.6.7 Consumption time: values for operator**

According to the high pace of technology progress and the need of the buildings to get equipped to new facilities and technologies in order to improve their comfort or reduce energy consumption, elasticity of a building to probable changes in future can be considered as kind of value. This value is created by ASP at present moment to be received by operator of a building in future.

### **2.6.8 Consumption time: values for society**

As it was said earlier, buildings are gigantic products of man, which last for considerably long time at the same place. During this long life, sometimes since a building possesses valuable and unique function or shape, will become able to impact over its society and characterizes it in its own style. In other words, a building can spread its character into its environment and create a collective identity for a society; especially when a building is in a large scale or is the first one in its type. For instance, a theatre hall in an urban area may turn that area into a cultural and theatrical area piled with other theatre halls, cinemas, and cultural centres over the time; or a building with a particular facade or style may encourages the people to build the buildings in that area with the same style to have more conformity with existing building. This aspect is such influent that in some cases like the Eiffel Tower of Paris the initial purpose of the building –whatever it was –is totally forgotten forever and the building turned into a landmark for a city or even a country due to its considerable glory and beauty. Clearly, when the long-term effects of a building are assessed satisfying and valuable, the design idea of the initial building should be considered as kind of value created by ASP for the future society.

### **3 Interviews**

*Since the focus of this research is to bridge the gap between the practitioners and researchers in AS, so in parallel with literature review, several interviews were conducted to gather some information of what is going on in practice. To achieve decent and reasonable outcomes, the interviewees were chosen from architectural companies in different sizes, core strategies, and organizational structures in Sweden, Gothenburg. All of them were asked to answer a same set of questions about value, actors in design process, design management, and value measurement in one-hour sessions. The summary of all this information is captured through following sections to be used in discussion.*

#### **3.1 First interview –Björn E.**

Björn, as the CEO and partially owner of a roughly small-size consultancy and design company with about 13 employees, was an experienced architect with more than 30 years of work experience in design and architecture.

##### **3.1.1 Value definition**

The interview began with a few slightly general questions such as definition of the term value. Although his answers were not clear and polished ones, it was clear that he has some ideas about it. From his perspective, value is the difference between the income and outcome of a process, comprising different qualities such as comfort, efficiency, appearance, etc. Interestingly, he believed that quality is part of the value and value does not confine to just quality and it is a broader concept, but he had no idea what the rest of it can be. Björn expressed that their clients can divide into three main groups of private users, developer, and operators. He explained that they, as architects, are committed to provide all these clients with a certain level of quality called “Well-Fit Design” by him. From his point of view, this certain level can guarantee a relative success for all projects, and any action further than this certain level would be considered as kind of value.

##### **3.1.2 Values of different stakeholders**

About prioritizing the values of the different stakeholders, he realized that the values of seller are as important as the values of user. From his perspective seller cares of time and cost while user cares of quality, and these expectations compromise each other and reach kind of balance. Value of operator occupies the second level in his attitude because his expectation was completely different from two first mentioned stakeholders. Furthermore, when he was asked about society, he stated that society is the one who can always achieve all its expectation in construction section because of rigid rules and regulations. About the values of future stakeholders, Björn believed that providing the future value receivers with their probably expected values might be costly for today investors. For instance, about flexibility as a probable need of future user of a building, he believed that variety of design in building market may compromise this need and it is not worth to be invested today.

### **3.1.3 ASM**

In case of ASM, he completely agreed with implementing management principles in AS due to the large investment and responsibility embedded in design process. From his point of view a good management can guarantee high quality and desired outcomes. Unfortunately, there was not a definite ASM model for this company, but what was explained was more focused on organization and process. The emphasis was on the personnel of the company to do thing right and figure out the needs of client. This model consists of constant observation over the personnel and arranging several meeting with client during the process. Unfortunately, to elicit the results of design and its quality, they were not used to carry out any feedback other than looking at retention rate of their customers.

### **3.1.4 Value Identification**

Identification of different values normally was carried out through a few meetings with client and based on the personal experiences of the company managers. Furthermore, about construction client, he believed that he is not so different from the clients of other businesses except their sensitivity on the product, and it is quite normal; because this kind of product (building) is so big, costly, and visible to all people other than its users and owners.

## **3.2 Second interview – Olof H.**

Olof worked in a company with about 35 employees, since 1973 in architecture, design, and planning projects. The company was owned by its personnel and is managed through a flat and non-hierarchical management structure, what differentiates it from other architecture companies. My interviewee, had spent almost most of his professional life in this company as an architect, about 22 years. His current position in this company was board member.

### **3.2.1 Value definition**

As usual, the interview started with general and basic questions concerning value. As a practitioner, Olof defined the value as the expectation of client. From his point of view, these expectations could be more about the quality of design and architecture. His perception of value was roughly vague and fuzzy; something which is on one hand associated with the design quality and on the other hand is associated with the expectations of client. Although he believed that quality is different from the value, this difference was confined to just linguistic aspects of these two terms and had nothing with practical aspects. So it seemed that he looks at these two terms almost the same or at least with heavy resemblance.

### **3.2.2 Values of different stakeholders**

Basically, Olof was working mostly for special kinds of clients such as the city transportation companies, municipalities, and city planners. So he did not have any ideas about the interests and values of other kinds of clients. The kind of client, with whom he was used to deal, is considered generally as big and public client (not

private). So, normally due to authority and high economic power of this kind of client, all the attention and care of ASP should be paid into his wishes and needs, regardless the expectations of other stakeholders in a project. Even, any contact with other stakeholders of the project is depending on the request or permission of the client.

From his perspective, since there is no contradiction between the values of different stakeholders in a project so ASP does not require any prioritization in value creation. In other words, he believed that ASP can give the same attention to all the clients and consequently keep all of them satisfied with the final product. In case of the values of society, he pointed at the background and the context of a building. As he said, it is so important for him as an architect that his building fits its context. About the future values of a building, he believed that flexibility and sustainability are the values which can be created by an architect in a building at present time for future people.

### **3.2.3 ASM**

In relation to ASM, Olof agreed with implementing management principles in design process, but he also believed that final management model should be more flexible, and flatter compared to what is applied in other businesses. From his perspective, more client involvement and more intelligent client will result in a more productive and applicable management model. About their own management model, they were used to arrange different meetings with the client and the people from different parts of their company. As he said, contact with the user or other clients in a project, rarely occurs in their company. All in all, what were more managed in their projects, were the organization and the process (time, cost, and quality), not the product – he admitted it as well.

### **3.2.4 Value identification**

Identifying different values of different stakeholders was not a tough job from his perspective and could be accomplished just by practicing and becoming specialist in dealing with a special kind of client. He himself was happy with his clients and saw them professional and intelligent. And finally, he stated that the soft values such as conflict solving and social techniques are playing a significant role in design process. Even they will find a double importance when the role of the ASP is realized as the mediator between different stakeholders who have to cooperate with each other as one entity (client) in a project.

## **3.3 Third interview – Mats R.**

Mats was the owner and manager of a small-size architecture and design company founded by him.

### **3.3.1 Value definition**

Although it was a small company, Mats believed that his company has a strong strategy to run a customer-oriented business. Hence, his definition concerning value was impacted by this strategy. He described value as the special points, different from the initial expectations and wishes of a client, which can be added by ASP to a

project. From his point of view these points can simply result in value creation. Also, he mentioned that value can be “good architecture” in his profession. In other words, he believed that value is in relation with high quality design. But at this point, he cleared up that what distinguishes the good architecture from bad one is just his feeling and expertise as an architect.

### **3.3.2 Values of different stakeholders**

Since he was running a small-size architecture company, mostly he had to deal with the private clients, which gives him more legitimacy during the design process to run a project through his customized method. He agreed that in a project there may be a variety of stakeholders but he did not see any priority between different values desired by them.

From his perspective, about society as a stakeholder the culture plays a key role. Cultural aspects can be implemented by ASP to end up with values for society. When he was asked about any contradiction between the values of the society and other stakeholders he gave an example about a church designed by him in Sweden for Syrian Christians. He believed that in that case if we consider the social authorities who were supposed to fund the project as the advocators of society’s values, they were less satisfied with the result compared to the Syrian users. Therefore, he did satisfy the users more than local authorities. In other words, he created more values for users compared to society. In case of value receivers in future, either the society or the users, he believed that flexibility can be considered as a value which can be created by ASP in a project for future stakeholders.

### **3.3.3 ASM**

Since he believed more in conceptual design rather than concrete one, so he did not agree so much with the design management, and he preferred to act freely during the design process with as less as possible restrictions. Even he believed that it works better and faster rather than a managed design process. He was used to focus on product rather than the process. About the model being used mostly by him in his projects, he explained that in any project initially he tries to figure out the red lines such as cost or the permitted buildable area, and then run the project in way that the expectations of all the stakeholders can come into practice, and if it is possible go further. It was normally carried out through some meetings and then giving them physical programs and sketches. The final phase was waiting for the client to return and ask the final drawings to run the project.

About the construction clients, he agreed that sometimes they are complicated but experience and long-term relationship can ease dealing with them. Even he believed that in big companies the white-collar employees through the same factors manage the companies. It means personal contacts through long-term relations in addition to their experiences in coping with these kinds of clients are the key drivers of their businesses.

On the subject of the process quality, he stated that a good architect always can manage a good process to a good product. In other words, he believed the process and the product act separately and both are depending on the architect rather than on each other.

### **3.3.4 Value identification**

He was so interested to get feedback and figure out the ideas of the different stakeholders during the design and also after completion. He said that unfortunately he has no definite model to do this, but he mostly carries it out to figure out the practical results of his design. Also retention rate of his clients was another kind of feedback for him.

## **3.4 Forth interview – Björn B.**

My interviewee, Björn, was a young architect educated from Chalmers University who was working in a big-size company. His answers were clearer and shorter than my other interviewees; which might be due to the clear strategies of a big company. The company had a co-ownership structure which gives this chance to all its employees to become shareholders and profit from their common efforts. Also, its flat management model enables its employees to get involved in marketing and bring the project to the company through their individual contacts.

### **3.4.1 Value definition**

He defined value as cost optimization; value is created by ASP when he runs a project cost-effectively and delivers higher quality within the same price. At the same time, he acknowledged that normally running a project cost-effectively is more costly and time-consuming through the initial phases, and this is why a client might not be so interested in a model like this. From his perspective, value and quality are different; since value is influenced by costs and quality while the quality is not.

### **3.4.2 Values of different stakeholders**

Their company because of handling various projects dealt with a wide variety of clients from users to authorities and society. As Björn said, they try to focus on users, but everything depends on the interests of the client who pays the costs of design. Therefore, in case of his interest, they try to figure out the requirements of user through direct contacts (like when they are asked to design a school for municipality). Whereas in case of his reluctance, they never try to get any contacts with the user or other stakeholders (like when they are asked to design a residential complex for a developer). So, it is clear that the first priority in their company should be with the client and others will be ordered according to his interest after him.

About the society, Björn believed that the values can be created by ASP for the society are environmental friendly construction and urban aspects, which are not normally the interest of the client but ASP has to convince him to agree with these features due to his professional commitment. In case of the values for future value receivers, he pointed at the flexibility as a point which can satisfy the future users of a building, which is not again the interest of the client normally.



### **3.4.3 ASM**

About the ASM, he agreed with management principles in design process especially in a big company like theirs, though it should be slightly different from other service management due to high impact of process quality on product quality in AS. But the management model in their company was not a fixed and permanent one. It was because of the flat and non-hierarchical management structure in their company. In fact, the personnel were allowed to run a project in their favourite models. However, he said that normally through design process required communications are carried out through some workshops and meeting during the process.

### **3.4.4 Value identification**

As he said, after delivering the product, during the first year some feedbacks are carried out to figure out how the things are working but again it is normally about the private clients not for all. He believed that the focus of existing management model in this company is both on product and process. From his point of view, product and process are quite dependant in AS. In other words, he believed in a bilateral relation between the process and the product saying if the process is good then the product is good as well and vice versa.



## 4 Discussion

*Through discussion section, the findings of interviews will be examined by the information gathered from literature review. This way, the existing gaps between what is on-going in the market and what is will be detected by. By identifying these gaps and shortcomings, a decent theme will be obtained which can embed an understandable and comprehensive model for ASP to figure out the different values of a project and put them into practice. To ease of job, the discussion initially is divided into four sections based on the subheadings of interviews, and then through a general section summarizes all the mentioned points.*

### 4.1 Value definition

If you recall, the perception of ASP about the term value was our first research question in this report. Accordingly, the first focus point in this section will be about assessing the perceptions of interviewees over this term. Interestingly, the data gathered from interviews supports the perspective of authors such as Sebastian (2005) who believes that there is a huge gap between the ideas of practitioners and researchers in AS. But now the question is that what are these gaps and the hidden reasons leading to them? It is what will be discussed in the following.

Although all interviewed people for this report admitted that they are used to use the term value frequently through their daily conversations with their clients, their definitions of this term were fairly vague and general and even being mistaken with the term quality occasionally. To remind the significance of a true understanding of value let's come back to the ideas of Prins (2009). According to his paper, a true perception of a project and its values is the key factor for ASP to have a value-generative process, what was barely seen in the ideas of the interviewees of this report. At a glance, what the interviewees generally conveyed by value refers to higher quality of a design than the quality expected by client. From their perspective, this extra quality can be considered as the value in case of keeping other parameters fixed such as cost. While according to literature review, this perception is incorrect due to two following reasons.

Firstly, as it was said earlier, value is the client's perception of a product/service (Thomson et al, 2003) which is in direct relation with his satisfaction (Heskett et al, 1997). Hence, the best source to figure out different values for a service/product provider is the people (Thomson & Austin, 2001) who are supposed to receive it throughout its life expectancy. In other words, what is considered as a value by a client is the true and decent realization of his needs and wishes by service/product provider. As a result, what can be concluded in this part is that the value definition offered by practitioners interviewed in this research was not thorough and decent enough. And it can be one of the practitioners' issues in figuring out AV in different projects and putting them into practice.

Secondly, as it was mentioned before, Cook (1997) believes that value of a service/product is the worth left in it after being reduced by the worth of the consumed resources. In other words, he expresses that providing a customer with product/service possessing worth more than it is assessed by him can be considered as kind of value for him. Therefore, it might seem that what was stated by interviewed practitioners is at least partially true. Although this perception from this new perspective might look true, still there is a serious critic against it which can challenge it. The point is that all the interviewees believed that the additional worth should be delivered to client through two items of quality or cost. Of course, by quality they addressed a wide variety of items such as appearance, functionality etc., but it is clear that they did not have a clear image over other items which can end up with value; while these items as they were mentioned earlier are so various. So again their perception is not correct enough, and it can spoil their efforts for value creation.

## **4.2 Values of different stakeholders**

It was pointed out in theoretical review that construction client has to represent different stakeholders who often vary in their expected values in a project. Although this point was agreed by interviewed practitioners as well, they had no idea how they should act based on this fact to achieve maximum value creation. In other words, since they already knew the respective values of various stakeholders in a design project – it will be discussed in next section more – so the only challenge remains with them was how they want to assess and analyze the gathered values and put them into practice. According to the theories, one of the initiatives which can be implemented by ASP to overcome this challenge is kind of guideline or model by which he can prioritize different values in a project (Kelly et al, 2004). And it was exactly what all my interviewees lack in their profession. In other words there was no model to prioritize different values and show them the right way to attain maximum customer satisfaction.

Lack of a clear guideline for practitioners in facing with a wide variety of values in different projects in addition to financial incentives drives them to focus their attention more and more on the client and ignores other stakeholders. As Mats and Björn stated, even in some cases any contact with other stakeholders of a project is conditional on the permission of this client. In this situation, the knowledge and expertise of the client plays a crucial role in shaping the behavior of an ASP about value creation. In the following the effects of this factor on the behaviors of ASP will be discussed.

Basically the behavior of ASP can be a variable following the client's expertise and knowledge while this factor may be low or high (Figure 10):

- In case of non-professional client (low expertise), who has no considerable knowledge and expertise in design and even construction, normally ASP is

given more legitimacy by him to run the project and client has to agree in more cases with ASP.

- In contrast, in case of professional client (high expertise), ASP is given less legitimacy by him and has to listen to him more to figure out his expected values.

In other words, when client is professional, he would know what he requires exactly; while when he is non-professional, he would not know what he exactly requires. And this will be followed by less or more efforts of ASP to figure out the AV in a project. However, in both situations some values are spoiled. In the first case, the values of client will not be identified properly because the ASP relies more on his knowledge and experience rather than client's real wishes and needs. And in the second one, probably the values of other stakeholders are neglected.

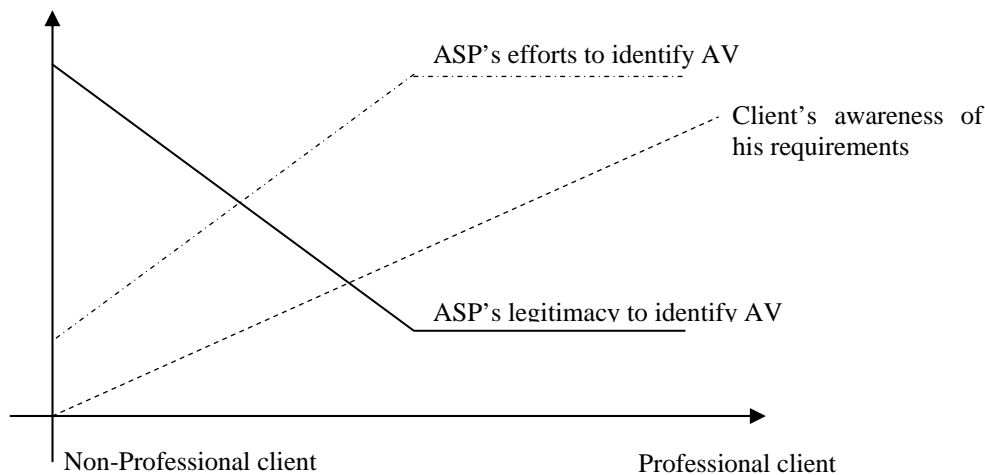


Figure 10 Value identification and ASP

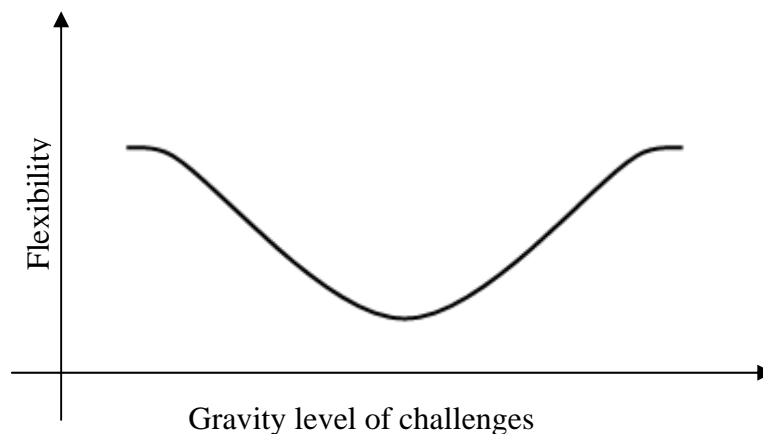
This issue can be looked at from another perspective as well. Through this new perspective expertise and knowledge of client may be considered as kind of barrier for ASP unfortunately. The fact is that since a professional client knows his requirements better than a non-professional one, he shows less interest to coordinate with ASP to identify his other probable requirements which are still unknown to him (future values). This way, an ASP dealing with a non-professional client is more value-generative if ASP is determined enough compared to an ASP dealing with a professional client even if he is still determined enough.

### 4.3 ASM

The perspectives of the interviewees over the ASM were pretty different. While some of them were used to work in flat and flexible organizations the others were proud to have rigid management systems which observe and cover whole the process of a project. Interestingly, if these distinctive perspectives are looked at in a way that the

size of a company is taken into account then a notable point will be found out. The point is that while big/small-size companies tend to have flexible and flat management system, medium-size companies tends toward rigidity in their management system.

Different behaviors of ASPs in case of the management can be the results of gravity level of challenges with which they have to face. Basically, when the gravity level is extremely high or low – like what exists in big or small companies – practitioners have to bring up initiatives to deal with their extraordinary situation, especially when it is high. One of the initiatives being applied by practitioners in big organizations is a flexible and flat management system which leads to more productivity of the company and accountability of frontline employees (Heskett et al, 1997). Flexible structures can function in small organization (those with low gravity level of challenges) as well, where there is not a lot of personnel and big projects so less management, faster and smoother procedure. On the other hand, the medium-size companies who have to deal with challenges whose gravity level is almost normal tend to more rigid and classic management systems which are tried and tested and less risky (Figure 11).



*Figure 11 The behaviour of ASP against the gravity level of challenges*

If you agree with Sebastian (2005) about the triple focuses of ASM (organization, process, and product), it would be reasonable to claim that what were mentioned by interviewees about ASM were more about the organization management rather than process or product. However, they expressed some opinions over the process and product management as well. From their perspective, against the idea of authors such as Sebastian (2005) process and product are quite depending on each other in AS, especially in big projects. In other words, they believed that a good process ends up with a good product and a good product is definitely the outcome of a good process. According to this thought, most of them were process-oriented because it was their belief that if they run a good process finally they will achieve a good product whereas according to theory it is not necessarily correct.

All in all, what can be concluded is that the classic and primitive ASM models being applied by interviewed practitioners, consisting of few meetings and workshops throughout the project process with almost no feedback after the completion,

especially in big projects, cannot be considered as value-generative ASM models (Ballard & Koskela, 1998). This claim is correct because none of the signs of a value-generative ASM model such as value focus, customer-oriented, and feedback analysis is seen in their applied models.

## 4.4 Value identification

It was mentioned earlier that ASM can be defined through three different perspectives: converter, informative, and generative (Ballard & Koskela, 1998). Although a perfect ASM model should cover all these aspects, what is emphasized in this report and by some authors such as Prins et al (2001) is the generative aspect focusing on facilitating the value creation in design process. In this relation, Thomson & Austin (2001) believe that to have a value-generative ASM, a value system determined by client is necessary. They continue that the best source to structure a value system in a project is the people who are supposed to benefit from the final product throughout its life expectancy either as user or businessman.

In contrast with mentioned theories in last paragraph, what is going on in practice is pretty different. The value system in practice does not make sense beyond the terms such as “Red Lines” or “Standards”. These red lines or standards were the only signs of a value system needed for a value generative company, which were mentioned by my interviewees. The point is that although the interviewees realized the stakeholders of a project as a source of value, it was not a key source for them. In fact, they believed in other sources as well, sources which sound occasionally even more empirical and useful than stakeholders. In this relation, they mentioned two sources:

- Long-term relationship with client
- Work experience

Most of the interviewees notably emphasized on their long-term relationships with a special kind of client as a source of value. From their point of view, this special kind of client might be one of the stakeholders such as user or operator who plays the role of the client as well and clearly targets a set of values benefiting him more than other stakeholders in a project. They argued that this long-term relationship leads them to a collection of values which is fairly identical for any other similar client. In other word, they believed that this specialized and targeted knowledge provides them with the typical needs and wishes of a special kind of client and it can work as a shortcut in figuring out his different favorite values. Of course, as it was mentioned earlier it may sometimes prevent ASP to endeavor to figure out the needs and wishes of clients because from his point of view he is fairly aware of them.

The other source to figure out different values in AS from the perspective of interviewees was work experience. They believed that during the years of professional life, any ASP attains a thorough knowledge over the different values of different stakeholders. Clearly feedback and documentation play crucial role in this attitude. These experiences require to be analysed and convert into knowledge otherwise they cannot be useful enough to ASP as a collection of raw points. Unfortunately, most of the interviewed practitioners looked at these experiences as kind of tacit knowledge and even described it through terms such as “good/bad architecture”. As a result, they were interested enough to feedback and but not to work on the results and it was what

ruins this attitude and its probable good results. However although according to literature, work experience of ASP cannot be considered as a first-hand source of value creation, it might be considered as a second-hand source if a decent feedback and documentation is carried out by ASP.

## 4.5 Summery

Regarding what was discussed above; it seems that ASPs and their current ASM models are suffering from different shortcomings and defects in term of value creation. To prove this claim once more briefly, some points from discussion are highlighted and listed below:

- ASPs lack a decent, clear, and empirical perception over the term value which leads different difficulties for them to have a value-generative role in their business.
- ASPs lack a comprehensive and useful ASM model to deal with the variety of values expected by different stakeholders in a construction project, which leads to his high dependency on client to figure out all the values of a project.
- ASPs mostly believe that the process and product in AS are quite inter-dependent therefore they tend to process-oriented management models to attain a good and high quality product, while it is not a correct perception according to the theories.
- ASPs to formulate a value system which is quite necessary for a value-generative AS prefer to implement sources such as work experience and long-term relation with a special kind of client instead of sticking to the stakeholders of a project and digest the information provided by them as the key source of value creation in a project.



## 5 Value the Values

Through discussion section it was mentioned that ASP faces different difficulties about value creation. To overcome these challenges, there are different models and theories proposed by various researchers. For this research a number of these proposed models were chosen and analysed which were presented briefly in previous chapters. Each of them possess its pros and cons, but none of them was perfect from both theoretical and empirical points of view. According to theories and information gathered from interviewees, I tried to come up with a new model which complies with the principles of both theory and practice. Clearly, to formulate this model some points from existing models have been borrowed, but some initiatives have been applied to cover their shortcomings as well. Initially a brief background of value measurement models will be presented and then the suggested model will be explained.

### 5.1 Background

Identifying different values will not end up with value creation necessarily. What is crucial to achieve this goal is a clear and understandable model or framework to address and assess different values besides finding the appropriate means and results (Mills et al, 2006). Although some authors such as Emmitt et al (2005) believe that value is a subjective and immeasurable matter and focus more on its soft aspects, some other authors such as Hansen & Gottlieb (2005) disagree with the first group and emphasize on its objective aspects and focus on the necessity of value measurement through empirical models. From their point of view, an efficient and decent model to benchmark the value of a product is as crucial as other managerial approaches in AS.

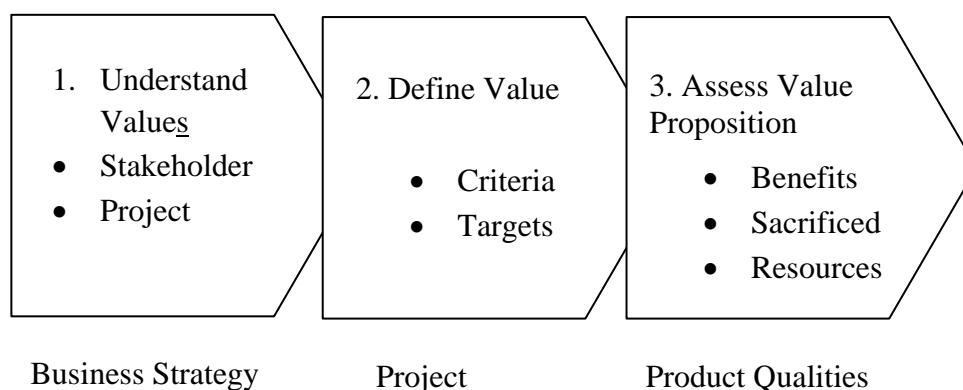


Figure 12 Value framework, milles et al, 2006

Among various models and frameworks proposed by authors, some methods focus on value definition and identifying the values of a project such as Prins (2009) while some others focus on measurement and assessment aspects of value creation such as Hansen & Gottlieb (2005). The only model which covers both aspects has been proposed by Mills et al (2006) which comprises three phases of understanding, defining, and assessing value (Figure 12). Hence, this report aims to structure a new model covering all steps of understanding, defining, and assessing of values based on

the model proposed by Mills et al. But the difference is that new model due to more details and empirical structure will be more likely to be applied by ASPs in practice.

## 5.2 Suggested VM model for AV

This model as the final result of this report aims to improve value creation in AS and provides the practitioners with easier and clearer guidelines about it through 6 steps presented and explained below.

**Step 1:** It was said earlier that the project-based character and the variety of the stakeholders in the construction sector make ASP to deal with a unique set of values in every construction project. Although, some practitioners believe that long-term relationship and work experience can reduce this uniqueness and even change it to a repetitive pattern, researchers such as Mills et al (2006) still think that the first step in any project to have a value-generative project is to understand the values before any other thing.

From their perspective, values consist of values of stakeholders and values of project. Accordingly, they explain stakeholders' values as the organizational culture and core strategies and project's values as values which are in common for all the involved stakeholders in a project. Therefore, in the first step ASP requires to digest the gathered information from different stakeholders and extract the values from them. In other word, he needs to translate their ordinary words about their needs and wishes into professional language of AS. In this way, organizational values plus those detected as the common values of all stakeholders shape the initial collection of values is a project.

**Step 2:** If the initial collection of values obtained from stakeholders in the previous step is entitled "General values", there is another set of values as well which can be entitled "Specific values". Specific values complementing the general ones consist of the values which are not desired by stakeholders but the knowledge and experience of ASP necessitates them. In other words, specific values are those which are not realisable for stakeholders but can be realized easily by an experienced ASP. For instance, the principles of sustainable development can be a good example as a value which might not be desired by stakeholders in construction projects but in case of being applied at ASP's insistence, will benefit stakeholders finally and lead to their satisfaction.

All in all what should be obtained in this step is a collection of all values including general and specific ones. The initiative of value tree with two features of time and value receivers would be a helpful mean to ASP to cover all values and not to miss any of them. Also it should be taken into consideration that the value tree presented previously in this report is about just general values and excludes any specific one.

**Step 3:** After formulating value list by implementing the idea of value tree, it is time to prioritize different values. As there currently is a confusing variety of values, prioritization of values will provide the ASP with a reliable platform on which he can act to attain maximum customer satisfaction. But how can ASP prioritize the values of

a project? Initially prioritization of value list should be carried out by each of stakeholders separately. Prioritization can be accomplished through different approaches but one of them which sounds easier than others, is the one proposed by Kelly et al (2004). In their method, each stakeholder is asked a series of double-choice questions while all his answers are being registered in a matrix (For example, one can be asked about his preference between value A and G, and he may prefer value G or between value C and E, he may prefer value E and so on). As a result, ASP ends up with one matrix for each stakeholder, in which the sum total of each value through whole the matrix is written at the bottom row in the column of that value. Finally, according to scores of each value at the bottom row, ASP can attain the favourite order of values for each stakeholder (Figure 13).

A							
B	B						
C	B	C					
A	D	C	D				
A	E	E	D	E			
A	B	C	D	F	F		
G	G	C	D	G	G	G	
H	B	C	D	H	H	H	H
3	4	5	5	2	1	4	4
C	D	B	G	H	A	E	F
Scores							
Priorities							

Figure 13 An example of value matrix for a stakeholder, Kelly et al (2004)

**Step 4:** It was mentioned earlier that AV in a project should be defined based on the interests and beliefs of all stakeholders in relation to each other (Prins, 2009). Hence, to attain a single ordered list as the final prioritization, ASP needs to analyse all the value matrixes of all stakeholders and structure final list based on all existing opinions. To accomplish this phase, an initiative can be implemented by ASP. In this approach he should find the sum total of all scores for each value and calculate the average score for that value by dividing it into the number of stakeholders. The average score of each value shows the significance of that value from a perspective of all stakeholders.

To get a better understanding, look at the table below as an example (S1 is the stakeholder whose matrix was illustrated in last step). This table is formulated for a project with 4 stakeholders (S) with 8 different values (A-H).

Table 3 Example of the scores and the priority of each value for each stakeholder

	A	B	C	D	E	F	G	H
<b>S1</b>	3	4	5	5	2	1	4	4
<b>S2</b>	7	3	3	4	5	3	1	2
<b>S3</b>	2	1	6	6	3	5	6	7
<b>S4</b>	3	4	5	7	4	3	2	3
<b>Total scores</b>	15	12	19	22	14	12	13	16
<b>Average</b>	3.75	3	4.75	5.5	3.5	3	3.25	4
<b>Priorities of different values for different stakeholders</b>								
<b>Priorities for S1</b>	C (1)	D(1)	B(2)	G(2)	H(2)	A(3)	E(4)	F(5)
<b>Priorities for S2</b>	A(1)	E(2)	D(3)	B(4)	C(4)	F(4)	H(5)	G(6)
<b>Priorities for S3</b>	H(1)	C(2)	D(2)	G(2)	F(3)	E(4)	A(5)	B(6)
<b>Priorities for S4</b>	D(1)	C(2)	B(3)	E(3)	A(4)	F(4)	H(4)	G(5)
<b>Final Priorities</b>	D(1)	C(2)	H(3)	A(4)	E(5)	G(6)	B(7)	F(7)

As you see, the value D is the most important value with highest score (5.5) and value F or B is the least important value with the lowest score (3). Priorities for each stakeholder are not useful at this phase but they are needed to value assessment in next step.

**Step5:** Through discussion section, it was said that value is not more than the decent and true realization of the wishes and needs of different stakeholders by ASP. In other words, ASP to have a value-generative AS just needs to know exactly what is desired by different stakeholders and put it in practice. So, who is the key decision-maker about the values in a project are stakeholders and ASP just plays the role of a distributor of resources between different values in the way desired by stakeholders. Hence, in last step, an approach whereby ASP and stakeholders can communicate and understand each other was discussed. But it is not all of what this information can provide ASP. In fact, by processing this information further, ASP would be able to reach new materials which enable him to assess the accuracy of final prioritized value list. This assessment ability aids him:

- To realize who will get the most and the least value and whether or not it is following the core strategies of the project
- To balance the density of resources in case of massing of the resources over one value or one value receiver and conversely
- To inform the value receivers about the final results of their resource allocation and provide them with an opportunity to change their mind to get more favourite outcomes

To calculate the value, the formula of Mills et al (2006) is applied here:

$$\text{Value (x) for S (y)} = \frac{\text{Benefits - Sacrifices}}{\text{Resources}}$$

In this way, the amount of each value for each client is measurable. There are three parameters of benefits, sacrifices, and resources in this formula:

- Benefits: the sum total of scores given to value (x) by all stakeholders
- Resources: the sum total of scores given to value (x) by the stakeholder (y)
- Sacrifices: [(the difference between the priority of value (x) for all stakeholders and S(y)] multiplied by the average score for value (x)

**Table 4** Example of calculating the amount of each value for each stakeholder

	A	B	C	D	E	F	G	H	Tot.	%
<b>S1</b>	$[15 - (4 - 4)] * 3.75 / 3 = 5.00$	-0.75	2.85	4.40	5.25	6.00	0.00	3.00	25.75	20%
<b>S2</b>	$[15 - (4 - 1)] * 3.75 / 7 = 0.53$	1.00	9.50	8.25	0.70	1.00	13.00	12.00	45.98	36%
<b>S3</b>	$[15 - (4 - 5)] * 3.75 / 2 = 9.37$	9.00	3.16	4.58	3.50	0.00	0.00	1.14	30.75	24%
<b>S4</b>	$[15 - (4 - 4)] * 3.75 / 3 = 5.00$	0.00	3.80	3.14	1.75	1.00	3.25	6.66	24.60	20%
<b>Tot.</b>	19.90	9.25	19.31	20.37	11.20	8.00	16.25	22.80	<b>127.08</b>	100%
<b>%</b>	16%	7%	15%	16%	9%	6%	13%	18%	100%	<b>100%</b>

Note that no unit can be defined for this formula because on both top and bottom of dividing line the parameters have same unites which finally by dividing practice they will be omitted. Hence, the final results would be better to be expressed as a percentage of total amounts. To ease of understanding of how above formula works,

let's look at an example based on the information in Table 4 and calculate the amount of each value for each stakeholder.

As you see in the example, different stakeholders may get different amounts of value for different values. In some cases they got zero which means the resources consumed ended up with no result for those stakeholder and in some other cases they got minus which means their strong deviation from others not only resulted nothing for them but also it wasted the resources for other values of those stakeholders as well. However, what is helpful to ASP in this table are the bottom row and right column which show the density of total created value between different values and stakeholders (Figure 14).

**Step 6:** In this step, ASP can assess the accuracy of final prioritized value list and in case of big deviation between the list and results of calculation in last step take appropriate actions. What he can do is informing the stakeholders about the results and asks some of them to reduce their expectations or some others to pay more attention to some values. This way he can balance the expectation and results before any action occurs. In mentioned example the order of list is a bit different from the order of result. As you see in Figure 14(a) the values from the highest to the lowest are: H, A= D, C, G, E, B, and F; while according to the list they were D, C, H, A, E, G and B = F. Although D will not be the highest value in practice, still it is the second one and just 1% is lower than the highest value. Also, you can see that values B and F in both orders are at the lowest. All in all as it was said there is not a big deviation in this example otherwise ASP has to take appropriate action to balance it.

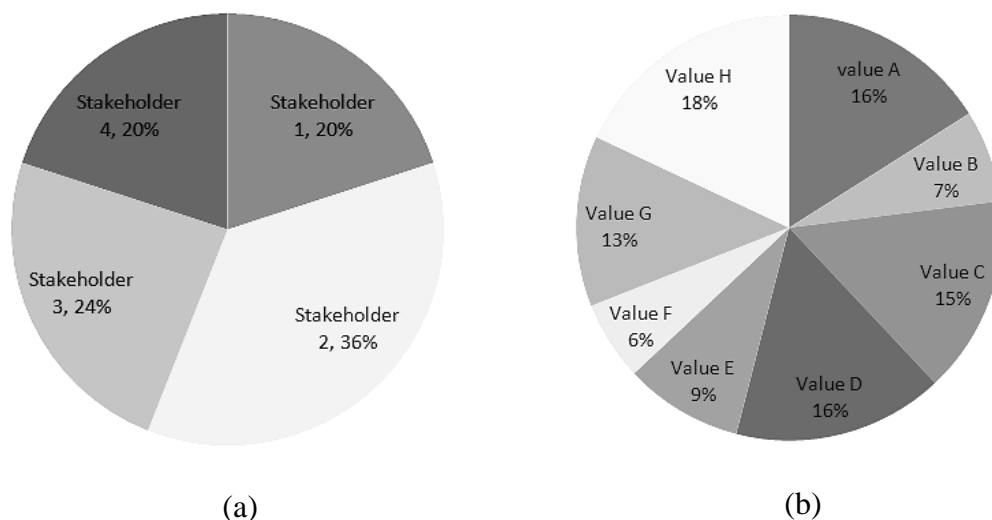


Figure 12 Example of the density of the total created value between different values (a) and stakeholders (b)

Moreover, in Figure 14(b) you can see the density of created values between stakeholders. This option enables ASP to see whether or not the results will follow the general strategies of a project. For example if stakeholder 2 is assumed as user and the strategy of a company is to create the most value for user, then ASP can be sure that the project is following the strategies of the company.

### 5.3 Conclusion

To sum up, ASP in practice has to deal with serious difficulties in value management in AS. According to in-depth theoretical review and practical findings from different interviewees, these difficulties are generally due to lack of the true perception over the term value and lack of an appropriate VM model in AS.

To handle these challenges and achieve a really value-generative service, this report suggests ASP to apply three below steps:

- Revise his conception over the term value and attain a true and decent definition of it
- Believe in variety of values in a project and produce the unique value list of each project including general and specific values through the initiative of value tree which is formulated according to two coordinates of time and value receivers
- Apply the suggested VM model presented in this report which enables him to assess and predict values at the end of the project and balance the expectations of different stakeholders to achieve maximum value creation

Next step for this research is to design the required workshop and process in which the proposed model would be able to put into practice. Also, implementation of the proposed model in a real construction project and studying the positive and negative consequences of it would be further extension of this research.

Although this model might be criticized due to its numeric and mathematical appearance which displays it complicated and tough to apply, undoubtedly it can be a start point for more applicable and understandable models in future based on the same concept. These models can contribute ASPs to assess and predict the final results from value creation perspective. It can be carried out as a step in feasibility studies and provide them with an image of the accomplished project and its consequences.

## 6 Attachments

### 6.1 Questionnaire

#### General:

1. To start, as a practitioner, give a short and simple definition of Value in architectural services background which is created by you and received by your clients.
2. Do you believe that value is different from quality? If yes, please explain how it is different.

#### Stakeholders:

3. Which kinds of client do you have in architectural services? And how do you prioritize them for value delivery?
4. By accepting the society as another value receiver in AS, in case of any contradiction between values of society and other clients, which one is privileged by you?
5. As you know, buildings as the products of architectural services last for decades and will likely be used by future people as well. Do you consider these future users as a group of value receivers in architectural services? If yes, which values are created for them by you today?

#### AS Mandvalue management:

6. Describe the scope of architectural services in a construction project through time, cost, and responsibility features?
7. Do you agree with implementing managerial principles in architectural services? Doesn't it spoil the creativeness of this process?
8. Do you manage your projects based on kind of model or pre-defined procedure? If yes, please explain it.
9. Do you think that your management model (previous question) is more focused on process, product, or organization? Why?
10. Recently, value management has focused more on concepts such as customer satisfaction, efficiency, and performance rather than the classic concepts such as time, cost, and quality. As a practitioner, have you been involved in this change? If yes, what changes have you had to make due to this new attitude in your management model?

#### Value identifying and assessment:

11. How do you identify different values of different stakeholders in a project regarding this point that construction is a project-based industry and two projects cannot have many same values? Do you implement kind of model for this purpose? If yes, please explain it.



12. Could you mention some of complexities and difficulties to deal with construction client?
13. Part of the value in architectural services is created through practices such as communication, problem solving, etc. How effective do you assess this kind of practices in satisfying the clients? (if we consider total customer satisfaction 100)
14. DfX (Design for X) is considered as an empirical approach to create value for client through cost, time, and quality. Have you tried this method so far? If yes, what are the advantages and disadvantages of this approach?

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