Improving Design Quality and Value in the Built Environment through Knowledge of Intangibles

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Abstract—**Raising design quality and value in the built environment requires continuous improvement, drawing on feedback from clients or occupiers and other industry players. The challenging task for architectural and engineering designers has always been to use their intellectual knowledge to deliver both forms of benefits, tangibles and intangibles, in the built environment. Increasingly as clients demand best value for money, there is a greater need to understand the potential from intangibles, to see projects not as ends in themselves but as means to improved quality of life and wealth creation. As we begin to understand more about how – through the design of the built environment – to deliver these improvements in outcomes, clients will be better placed to expect their successful delivery from designers, and designers themselves will be better placed to provide them. This paper discusses cross-disciplinary issues about intangibles and is aimed at designers, clients, investors and entrepreneurs within the built environment. It presents some findings from a minuscule study that investigated intangible benefits in a new primary school.**

Keywords—**Built environment, designers, design quality intangible benefits, value**

I. Introduction

Major infrastructure and construction projects involve large amounts of capital investment, and investors seek high levels of financial return. Hence built environment clients, investors and entrepreneurs demand good design quality and value for money. Value, in its simplest form, is a need to gain benefits for which clients are willing to pay. However, their needs are often expressed in quite general terms – floor space, plot ratio, net-to-gross percentage, and standards of ventilation, temperature control, and noise limits. These elements are relatively easy to measure – they provide tangible benefits – and there is widespread expertise in their delivery. Only rarely do organizations go further and conduct fundamental reviews of business or operational needs in order to establish the potential for their project to add value to core business. As the UK Office of Government Commerce (OGC) expresses it: "…value is not always well managed by clients" [1].

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Yet buildings clearly do have the potential to add value both to business and to the lives of a variety of stakeholders. This may include ethical values which have received much attention in philosophy and in the behavioral sciences [2]. In the offices sector, for example, good design can improve staff recruitment and staff retention, encourage networking, promote knowledge sharing and teamwork and, at best, stimulate creativity and enhance productivity. In education buildings [3], good design can enhance educational achievement, improve learning outcomes, reduce absenteeism and vandalism. In housing, good design can encourage neighborly behavior and, at the urban level, promote civic pride, stimulate inward investment and kick-start urban renewal. These kinds of social aspects of the built environment are much harder to measure – they are intangible – but they are increasingly being recognizing as delivering economic benefits to a wide variety of stakeholders [4] [5] [6].

Drawing from an on-going doctoral study entitled, "The Valuation of Intangibles in the Built Environment: Explored through Primary Schools Using Contingent Valuation", this paper explores emerging issues about intangibles in the light of their potential as major drivers for design improvement in the built environment. The study is based on the primary schools sector. The term "intangible", "intangibles", "intangible benefits" and "intangible assets" will be used interchangeably throughout the paper as and when appropriate.

II. Intangibles: Emerging Cross- Disciplinary Issues

In the disciplines of accounting and finance, intangibles or "intangible assets" are generally referred to claims which have the potential to deliver future benefits [7]. Though these claims are without embodiment in physical and financial forms like shares, gilts or bonds, they can save costs and are capable of generating profits for companies who own them. Examples of intangibles [8] [9] include patents, brands, goodwill, customer loyalty, expertise, a unique corporate culture, and so on. When applying to the built environment, "intangibles" may be defined as benefits to clients and other stakeholders which the built environment raises in terms of its design value and quality, but are not properly captured, measured and valued by conventional property

valuation methods and/or costing techniques, as practiced by surveyors [10].

Elements of intangible benefits associated with well-designed built environment include effective delivery of learning outcomes, improved educational attainment, calm schooling environment, increased employees' motivation, occupier well being and comfort, customer's loyalty and footfall, staff retention, conducive workplace, health recovery rates, reputation, prestige, and so on. Understandably, not all of them exist in every single building. For instance, improved learning outcomes and calm schooling environment may be knowingly attached to school buildings sector [11] [12], whereas customer loyalty and increased footfall apply to retail outlets and shopping complexes. In dealing with valuing intangibles in the built environment, we need to recognize that differences in nature and origin call for varying sector-based research.

Lack of awareness and knowledge of how to value intangibles (together with lack of application in practice of the best current valuation methods) tends to hold back investment to improve the quality of the built environment. Traditional property valuation methods are primarily used for predicting the likely selling prices and appraising investment returns – capital value, rental value, investment appraisal, etc., based on certain essential market-driven pre-conditions [13] [14] [15]. They ignore the underlying values of intangibles attached to the properties. Design value worth an amount that calls for an objective and explicit valuation technique, rather than being merely left to the market forces formulated by conventional property valuation methods. The limitations of current valuation approaches are apparent as they lack the capacity to capture intangibles.

A crucial aspect of the debate on design values is that different people perceive them in different ways. Intangibles are, to some extent, a matter of value judgments and subjective, as "…they cannot be determined with certainty and precision" [16]. Despite this barrier, there is a need to seek advancement in the knowledge of valuation of design quality and value. Otherwise, even clients who may be aware of the intangible benefits they could gain, tend to hold investment in design values simply because intangibles are not being credited clearly and explicitly. As a result, the richness of intellectual knowledge, creativity and competence of architectural and engineering designers are limited to delivering apparent and tangible benefits. Reference [17] contends that: "…Advertising and architecture, the traditional mainstays of business marketing…[are] creative disciplines that can contribute to competitiveness for firms. The power of intangibles has become tangible". Essentially, we need to make an effort to explore better means of crediting and valuing intangibles from time to time. The reality is that value of architecture [18] [19] and construction [20] are indeed enormous including values attributed to future and intangible benefits.

The two questions that clients, investors and entrepreneurs might ask before allocating greater budget or investing higher amount of money for better design of built environment would be: a) Is it worthwhile to incur additional design costs in order to gain more intangible benefits? b) How could we measure the return on investment we intend to spend on design quality and value? As the concept of intangibles is still new to the built environment, only if we distinguish and scope them out can we hope to find a suitable method for valuing them. Indeed, this approach had already been carried out in the banking sector. Though key stakeholders within the built environment do acknowledge the underlying value of intangibles, there aren't exclusive methodological avenues or valuation techniques which specifically attempt to credit them. There were almost no concerted efforts made to address these problems. Should we just presume that these stakeholders are satisfied with the way their rightful intangible benefits are being valued? No, it doesn't as intangibles are being left for mere guesswork. The subject is just too new, and too little understood. Essentially, there is an emerging need for designers, as well as other key industry players to focus on gaining the intangible benefits as much as the tangibles. Only then can the intellectual assets of designers be more commercially appreciated when producing well thought-out built environment designs with intangible benefits attached to them.

In the field of accounting and finance, numerous studies have been carried out linking intangible assets to company performance and profit margin. Several empirical examples demonstrate that improvement in key intangible drivers translates into increased market value of commercial entities [21] [22]. These findings also suggested that intangible assets in organizations have both direct and indirect influences over a company's value. For instance, customer loyalty affects other factors of business operational functions like brands, marketing, services, communications, and so on. Through identification of critical success factors, intangibles can also be used to drive and enhance organizational business performance. In short, intangible assets are gaining widespread recognition as key value drivers of business performance.

The meaning and perception of value depend very much on whose perspective is being taken. Many perspectives exist in the built environment [23], such as those of owner-occupiers, users, architects, engineers, surveyors, customers, employees, the public-at-large, and so on. Since intangibles are inevitably to some extent value judgments and subjective, certainly direct financial measures alone cannot determine their entire value. A recent study on owner-occupier sector [24] found that owners recognized the intangible benefits bespoke office buildings brought to their organizations. However, these owners did not really intend to use design investment as a way of obtaining higher market value for their buildings. A more recent evidence in the healthcare facilities sector [25] suggests that environmental factors attributed to a well-designed hospital assist the sickness healing process i.e., "mental patients vacate their beds 2.6 days earlier if

they occupy sunny rooms", "post-operation patients go home earlier if they can look out at natural scenery" and "patients in a modern ward consumed fewer analgesic painkillers than those in an old ward". These findings underline industry's call for more attention on intangibles.

1) *What are intangibles?*: To understand the value of intangibles we must first know the meaning of intangibles. When asked about the attributes of intangibles, Alfred P. Sloan replied: "Take my assets – but leave me my organization and in five years I'll have it all back…Intangibles are 96% of the value of the world's most successful company – Microsoft. The rest is book value" [26]. Hence, what really are intangibles? Baruch Lev defines intangible assets as "…claims to future benefits (e.g., cost savings, increased revenues) that do not have a physical (e.g., factory) or financial (e.g., a stock or a bond) embodiment" [27]. In accounting, intangibles refer to many elements of business assets or creators or value that are not included on a company's balance sheet, but they are all capable of driving economic performance of businesses [28]. Though these intangibles are manageable, measuring and valuing them properly has been an unresolved management issue until comparatively recently. Intangible business assets [29] [30] refer to strategic ability, expert knowledge, technical know-how, research and development (R&D), copyrights, customer loyalty, brands, staff retention, employee talent, innovations, specialized management systems and proprietary work processes. Though the dictionary defines intangibles as, "… something which cannot be touched or grasped or measured" [31], it may still be possible to put an objective numerical value upon them. Generally, intangibles bear three main characteristics [32]: non–physical, capable of producing future economic benefits, and protected legally.

2) *Nature and scope of intangibles*: Value can have different forms (e.g., aesthetic value, symbolic value, emotional value, social value, etc.). In property valuation, we are generally dealing with the economics principle of monetary value, either money itself or worth that can be exchanged for money. This is generally determined by the market forces of supply and demand, and is what property valuers mean when they discuss what something is worth. However, when dealing with the value of intangibles, things become much more complicated. In intangibles we should treat the worth of benefits in an entirely different way. Here, we are thinking of them as having the potential to create benefits. This is a fundamental economic feature because most intangibles cannot themselves be exchanged for money. To further explore this issue, perhaps we need to compare intangibles with tangibles.

First, in most circumstances "tangibles can be traded whereas intangibles can't" [33]. There is a property market for land, buildings, equipment and inventory. Receivables can also be realized. It is not really difficult to establish a market value for them because most tangibles are already in the form of money or its equivalent. In business dealings, there are possibilities to give a market value for certain kinds of intangible benefits [34] like brands, copyrights, patents, system data bases and proprietary work processes. These intangibles could be sold. Some may argue that even less tangible benefit like scholarly achievement in educational establishments could also be measured and valued. However, there are other extreme intangibles which cannot be clearly measured and valued e.g., corporate identity, reputation, workplace culture, customer loyalty, health recovery rates; even if measured, these could not be traded because they are more difficult to ascribe a value to. As a result, they "either have minimal value or do not even have a market value" [35].

Secondly, tangibles are commodities which are removable from the organizations owning them and usable elsewhere. Intangibles are different. Most are closely identified with, or even attached to their environment [36] e.g., workplace culture. This means that not only is it difficult to remove them, but if removed, their value completely changes. But, design provides lots of intangibles with great potential to offer benefits, in the range of built environment values "…they hold for different people at different times: aesthetic value, social value, historical value, political value and symbolic value…" [37]. From design standpoints, the intrinsic value [38] of intangibles in the built environment may worth much more than its market value. Therefore intangibles might not be valued as if they were marketable benefits (which they are not), but on the basis of their ability to offer such benefits. Valuing something on the basis of its likely ability to offer benefits means potential. Though valuing intangibles is an uncertain and subjective exercise [39], knowledge of their potential and improved valuation methods may help make them to be more explicitly valued. Such an approach has to take into account the quality of intangible benefits. Thus, it is reasonable to expect that the higher the quality, the more potential there is for value creation.

3) *Scoping intangibles*: There have been numerous attempts made to classify intangibles [40] [41], particularly in the financial-based industries. One type of classification made was based on profit making capacity of the intangible assets. Intangibles [42] [43] which have direct influence on monetary gains are known as commercial intangibles e.g., copyrights, brands, patents, franchises, product quality and value, reputation, R&D, and so on. The rest which are indeed prerequisites for developing commercial intangibles fall into the category of generative intangibles like creative employees, innovative workers, highly motivated staff, enhanced morale, etc. Alternatively, generative and commercial intangibles can be divided into individual and structural intangibles. Individual intangibles are qualities linked directly to individuals such as specialized knowledge and skills, customer loyalty and supplier loyalty. On the other hand, structural intangibles are assets that are attributed to interpersonal and inter-group relations rather than attached to individuals. The most apparent examples of these intangibles are team working, corporate culture,

unity and improved communication in organizations. Arguably, not all of the previously discussed cross-disciplinary intangibles are applicable to the built environment.

III. Exploring Knowledge of Intangibles for the Built Environment: Aims and Method

The main thrust of this academic research is to explore intangibles, testing out an economic valuation method, and making the case for their representing a major driver of improvement in the design of built environment. Partly, the research aims to conceptualize and to give a new interpretation of intangibles for the built environment. It should contribute new knowledge about intangible benefits accruing to a variety of stakeholders. Much of what is presented here is based upon reviews of literature over the past nine months and interactions with academics, researchers and professionals on the aspects of values and benefits of the built environment. The research will cover a three-year period, during which time it is anticipated that a framework for intangibles in the built environment will be formulated. Primary data will be collected from the conduct of field survey, and private interviews with representatives of the key industry and government bodies, such as Royal Institute of British Architects (RIBA), Royal Institution of Chartered Surveyors (RICS), Department for Education and Skills (DfES) and Local Education Authorities (LEA). The model proposed for this work combines both qualitative and quantitative studies.

The research is approaching a point where the secondary body of knowledge will enable the comparison between various cross-disciplinary intangible assets and intangible benefits in the built environment. The next step, that of formulating a conceptual framework for intangibles within the context of built environment, will then commence. The expected outcomes of the research are both quantitative, in terms of live industry evidence of valuing intangibles, and qualitative, in terms of the extent to which the method put to test is accepted by the built environment fraternity. In the context of design for whole-life value and sustainable environment, the study will explore the potential of intangibles for improving design value and quality, and any benefits thereby gained, for obtaining best value for money. These outcomes should be valuable to key stakeholders, investors and entrepreneurs. It would complement the other recent and ongoing studies on good design in helping to identify its benefits and the potential areas where these are most likely to be recognized. Indeed, the focus should no longer be on the cheapest cost or the lowest price, but on "best value". Knowledge of intangibles, with its proper valuation approach, appears to be ideal drivers for achieving this.

IV. Results To Date

As the work is still in its early stages, it will not be possible to pronounce meaningfully upon the outcome until the fieldwork comes to an end. However, the results to-date from pilot interviews (with a consultant architect, an in-house architect of LEA and a head teacher), show encouraging signs that key stakeholders of a newly built primary school have benefited from considerable intangibles which were derived, wholly and partly, from design value and quality. Out of nineteen purposes of school, "effective learning outcomes" was rated the most important element. Other purposes that were scored as highly important include "school's profile and image", "adaptability", "flexibility", "calmness", "healthy environment", "mental and social well-being", "users satisfaction" and "functional quality". Arguably, there are underlying values of intangible benefits within these purposes. Analysis of the results revealed shortcomings in the way intangible benefits were measured, and their values credited for. An interesting argument similarly put forward by the three interviewees was that better recognition and proper valuation method for intangibles may enhance design standards of the built environment.

V. Conclusion

It is envisaged that the study results will contribute methodical knowledge of crediting intangible benefits raised by a well-designed built environment. The resulting knowledge can, in turn, be used to recognize the benefits and worthiness of providing higher investments in design. The increasing impact of intangibles on the quality of life, wealth creation, productivity and business performance should be of major interest to clients, investors, entrepreneurs, practitioners and policy-makers. As designers improve their design – through better knowledge of intangible benefits, clients should gain better value for money. Intangibles are potential value drivers for improvement in design value and quality in the built environment.

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