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The Possibilities of Correlating architectural Management with Value

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Abstract:

In the past decade, the management of complex architectural design processes has challenged several researchers to develop theories, methods, and techniques on how to handle the design process, most effectively to reach the maximum value. This research investigates architectural management's role in creating value in the architectural design process. The acquisition of empirical data in this particular field of research is perceived to be challenging due to the intricate combination of belief systems and scientific principles. However, there has been a notable growth in the number of models about this subject matter. The findings of a literature review indicate that there is some evidence about the impact of design management on value within the architectural design process. Several studies have made attempts to capture some aspects of project management, architectural practice, and construction management. This study aims to investigate the potential for initiating a research endeavor focused on identifying a scientific measuring approach that establishes a connection between Architectural Management and value. With a hypothesis that Architectural Management affects better value creation in the architectural design process. Due to the complex and detailed nature of design, and based on quantitative research methods and evidence. This research used two types of methods: a quantitative survey that involved distributing questionnaires to 81 architects in Sulaimani city, and an extensive review of 3 projects using an Interview as a qualitative approach, with a design quality indicator tool questionnaire (DQI) as a quantitative method for these projects. This study aims to investigate the impact of Architectural Management strategies on the perceived value of these projects. The Excel program is used for analyzing these data, and., according to the statistical analysis's findings, a significant role of Architectural Management in guiding design decisions, facilitating effective communication and coordination, and driving value creation in the architectural design process is determined. The findings provide valuable insights for architectural managers and professionals to enhance their practices and guide them in achieving successful project outcomes.

Keywords: *Design, Architectural Management, Value, Quality.*

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الملخص:

في العقد الماضي، شكلت إدارة عمليات التصميم المعماري المعقدة تحديًا للعديد من الباحثين لتطوير نظريات وأساليب وتقنيات حول كيفية التعامل مع عملية التصميم، بشكل أكثر فعالية من أجل الوصول إلى أقصى قيمة. يبحث هذا البحث في دور الإدارة المعمارية في خلق القيمة في عملية التصميم المعماري. يبدو أنه من الصعب العثور على البيانات التجريبية في هذا المجال من البحث بسبب الخليط المعقد بين الاعتقاد والعلم، ولكن عدد النماذج حول هذا الموضوع يتزايد. استنادا إلى مراجعة الأدبيات، تم العثور على بعض الشواهد التي تدل على جهود إدارة التصميم فيما يتعلق بالقيمة في عملية التصميم المعماري. في إدارة المشاريع والممارسة المعمارية وإدارة الإنشاءات، حاولت بعض الدراسات بنجاح التقاط أجزاء منها. يستكشف هذا البحث إمكانية بدء مشروع بحثي لإيجاد طريقة قياس علمية تربط الإدارة المعمارية بالقيمة. مع فرضية أن الإدارة المعمارية تؤثر على خلق قيمة أفضل في عملية التصميم المعماري. المسح الكمي الذي تضمن توزيع استبيانات على 81 مهندسًا معماريًا في مدينة السليمانية، ومن خلال مراجعة موسعة لثلاثة مشاريع باستخدام المقابلة كنهج نوعي مع استبيان أداة مؤشر جودة التصميم (DQI) كطريقة لقياس القيمة في المشاريع. تهدف هذه الدراسة إلى معرفة تأثير استراتيجيات الإدارة المعمارية على القيمة المدركة لهذه المشاريع. وباستخدام برنامج Excel لتحليل هذه البيانات، وفقا لنتائج التحليل الإحصائي، تم تحديد دور مهم للإدارة المعمارية في توجيه قرارات التصميم، وتسهيل الاتصال والتنسيق الفعال، وقيادة خلق القيمة في عملية التصميم المعماري. توفر النتائج رؤى قيمة للمديرين والمهنيين المعماريين لتعزيز ممارساتهم وتوجيههم في تحقيق نتائج المشروع الناجحة.

الكلمات المفتاحية: التصميم، الإدارة المعمارية، القيمة، الجودة.

پوختە:

لە دەیەی ڕابردوودا بەڕێوەبردنی پڕۆسەی دیزاینی تەلارسازی ئاڵۆز تەحەدای چەند توێژەرێکی کردووە بۆ پەرەپێدانی تیۆری و شێواز و تەکنیک لەسەر چۆنیەتی مامەڵەکردن لەگەڵ پڕۆسەی دیزاین، بە شێوەیەکی کاریگەرترین شێوە بۆ ئەوەی بگەنە زۆرترین بەها. ئەم توێژینەوەیە لێکۆڵینەوە لە ڕۆڵی بەڕێوەبردنی تەلارسازی دەکات لە دروستکردنی بەها لە پڕۆسەی دیزاینی تەلارسازیدا. پێدەچێت داتا ئەزموونییەکان لەم بوارەی لێکۆڵینەوەدا بە سەختی بدۆزرێتەوە بەهۆی تێکەڵبوونی ئاڵۆزی بیروباوەڕ و زانست بەڵام ژمارەی مۆدێلەکان لەسەر ئەم بابەتە زیاد بووە. بە پشتبەستن بە پێداچوونەوەی ئەدەبیات هەندێک بەڵگە لەسەر هەوڵەکانی بەڕێوەبردنی دیزاین لە پەیوەندیدار بە بەها لە پڕۆسەی دیزاینی تەلارسازیدا دۆزرایەوە. لە بەڕێوەبردنی پڕۆژە و پراکتیکی تەلارسازی و بەڕێوەبردنی بیناسازیدا هەندێک لێکۆڵینەوە بە سەرکەوتوویی هەوڵیان دا بەشەکانی بگرن. ئەم توێژینەوەیە ئەگەرەکانی دەستپێکردنی پڕۆژەیەکی توێژینەوە دەگەڕێت بۆ دۆزینەوەی شێوازێکی پێوانەکردنی زانستی کە بەڕێوەبردنی تەلارسازی بە بەهاوە ببەستێتەوە. لەگەڵ گریمانەیەک کە بەڕێوەبردنی تەلارسازی کاریگەری لەسەر دروستکردنی بەهای باشتر هەیە لە پڕۆسەی دیزاینی تەلارسازیدا. بەهۆی سروشتی ناڕوون و ئاڵۆزی دیزاین و لەسەر بنەمای شێواز و بەڵگەی توێژینەوەی چەندایەتی. ئەم توێژینەوەیە دوو جۆر شێوازی بەکارهێنا: ڕاپرسییەکی چەندایەتی کە بریتی بوو لە دابەشکردنی پرسیارنامە بەسەر ٨١ تەلارساز لە شاری سلێمانی، هەروەها لە ڕێگەی پێداچوونەوەی بەرفراوان بە ٣ پڕۆژە بە بەکارهێنانی چاوپێکەوتن وەک ڕێبازی چۆنایەتی لەگەڵ پرسیارنامەی ئامرازی نیشاندەری کوالیتی دیزاین (DQI) وەک شێوازی چەندایەتی بۆ پڕۆژەکان. ئەم توێژینەوەیە ئامانجی لێکۆڵینەوەیە لە کاریگەری ستراتیژییەکانی بەڕێوەبردنی تەلارسازی لەسەر بەهای هەستپێکراوی ئەم پڕۆژانە. بەرنامەی ئێکسڵ بۆ شیکردنەوەی ئەم داتایانە بەکاردێت، بەپێی دۆزینەوەکانی شیکاری ئاماری ڕۆڵێکی بەرچاوی بەڕێوەبردنی تەلارسازی لە ڕێنماییکردنی بڕیارەکانی دیزاین، ئاسانکاری پەیوەندی و هەماهەنگی کاریگەر، و هاندانی دروستکردنی بەها لە پڕۆسەی دیزاینی تەلارسازیدا دیاریکرا. دۆزینەوەکان تێڕوانینێکی بەنرخ بۆ بەڕێوەبەرانی تەلارسازی و پیشەگەرەکان دەدەن بۆ بەرزکردنەوەی پراکتیکەکانیان و ڕێنماییکردنیان لە بەدەستهێنانی دەرئەنجامە سەرکەوتووەکانی پڕۆژەکە.

کلیلە وشە: دیزاین، بەڕێوەبردنی تەلارسازی، بەها، کوالیتی.

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1. INTRODUCTION

Sulaimani city is one of the developing cities of Iraq. Following the political instability in Iraq and Kurdistan Region and the liberation process of Iraq, the country started rebuilding by reconstructing and redesigning its infrastructure in all the sectors, and the most significant change happened in the construction industry, which is directly related to the engineering industry. Rapid growth of the construction industry in Iraq, especially Kurdistan Region, led to the need for more experts in the industry, like architects, architectural consultants civil engineers and more importantly architectural design managers, large amount of the funds have been spent in the construction industry and these projects need to be managed by the experienced professions, particularly in the architectural design industry as before the construction phase projects should be designed in a way that meets all the stakeholders needs.

The quality of the work and finished product (the design of the building) becomes important, and managing them becomes difficult as the projects are more complex than before, and more disciplines are involved. According to **Sebastian, R. and Prins, M., cited in Emmitt, S., Prins, M., & den Otter, A. (2009),** in maintaining architectural value (quality), the design outputs are often the major emphasis. In this context, design management aims to ensure that design products (the buildings) can meet cultural, aesthetic, functional, economic, and technical requirements. About aesthetic quality, design management evaluates the spatial and architectural harmony of the building and its urban environment.

The act of designing can be understood as a cognitive process, as it involves the architect engaging in problem-solving, creation, learning, exploration, and other related activities. The field of architectural design can be regarded as a social activity, since it involves the architect engaging with several design participants via various interactions. Furthermore, it is important to recognize that architectural design is both a cultural and technical phenomenon, which is intricately intertwined with its own cultural environment. Furthermore, it can be characterized as a systematic approach to managing ambiguity and creating valuable entities. The responsibility of the designer is to effectively incorporate and harmonize design limitations, as well as to devise strategies for transforming these limitations into valuable components **(Suckle, 1980, as cited in Bártolo, 2001).** Designers must strive to achieve a balance between qualitative and quantitative factors when making decisions. From an alternative viewpoint, specifically within the field of engineering, the concept of design may be seen as a systematic process that involves the conversion of client needs, or input, into tangible design objects, which serve as the output. It is a procedure in which value is created for stakeholders and participants by meeting their needs. It is also a movement of information that must be properly managed and shared in both space and time to eradicate waste or inefficiency **(Ballard, Koskela, 1998; Sebastian, 2004)**. All these processes have to be managed. Design is inherently characterized by the integration of many perspectives, since it involves the amalgamation of various viewpoints, expertise, and experiences from both designers and managers. Moreover, managers assume distinct responsibilities within the design process. **Bucciarelli, (1994)**.

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The major fundamental assumption established in this research is that the ultimate goal of architectural management is to create value, namely architectural value, from the perspective of stakeholders. The idea of architectural value is examined to investigate this assumption by addressing its importance from the perspective of Vitruvian principles. This research aims to show the impact Architectural Management Framework that can be used by architects in their professional practices in the creation of value. The research is designed to:

1. Conduct a critical review of previous research on the meaning and idea of Architectural Management in the context of the design and construction industry.
2. Determine the effect of architectural design management on the design process in terms of architectural value and finding a measurable connection between design process management and the value of the building.
3. Investigate the effect of Architectural Management in value creation in the design process and answer the question: How can architectural management enhance value creation in the process of design?
4. Find measurable connections between Architectural Management and value so that the delivery of value can be monitored and managed.

Contribution of the study

- **Advancing Knowledge:** The study contributes to the field of architecture by examining the role of Architectural Management practices in the design process. By exploring how management practices influence the creation of value, the research expands our understanding of the factors that contribute to successful architectural outcomes.
- **Improving Project Performance:** Effective Architectural Management practices can significantly impact project performance, including project timelines, budget adherence, and client satisfaction. This study's findings can provide valuable insights into the specific management strategies that lead to improved project performance and outcomes.
- **Enhancing Design Quality:** Architectural Management plays a crucial role in ensuring that design requirements are adequately specified and addressed throughout the design process. By investigating the effect of management practices on value creation, the study sheds light on how to enhance design quality and achieve architectural solutions to meet functional, aesthetic, and sustainability goals.

As a result, the language and concepts underlying architectural value are and should be diverse based on one's standpoint and stakeholder perspective. All of this is in connection to the expanding trend of measuring and managing architectural value, for this reason the researcher conducted a questionnaire targeting 81 architects by asking questions related to architectural management and value. Also, 3 projects analyzed using Design Quality Indicator tool (DQI) , The methodology used is shown in **Figure 1**.

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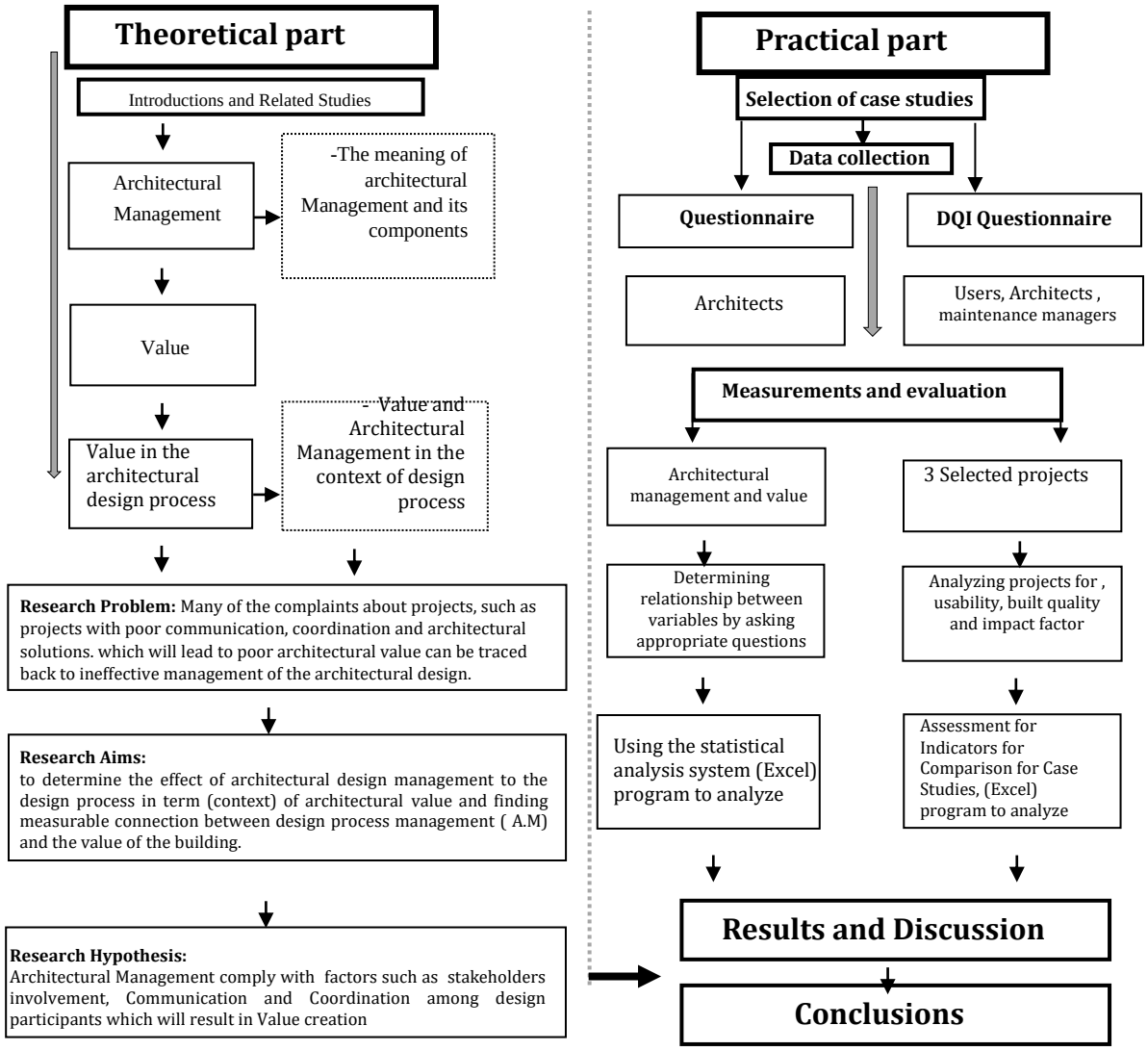

Figure -1- A flowchart for methodology steps. (**Source:** Researcher)

2. Architectural Management

The word "architectural management" was first introduced by **Brunton et al. (1964)** in their book “Management Applied to Architectural Practice”. Architectural management was described as follows during their discussion: “Architectural management is divided into two parts: office or practice management and project management. The former establishes a broad structure through which several different programs can be started, handled, and completed. Both pieces share the same goals in general, but the methods differ and only mesh at some points.” The authors contended that the office serves as the medium for project delivery, and these two components intersect at specific junctures. The scope of their work encompassed several aspects of internal office operations, ranging from the firm's organizational structure to the decision-making process about the size of drawing paper **(Emmitt & Alharbi, 2018).**

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According to a study conducted by **Boissevain & Prins (1993)** describes architectural management is described by creating a paradigm that encompasses all of the fields that could be used in the "sense of architectural management." To classify the position of each feature within the context, they differentiated two environments (internal and external) in their model **(Nicholson, 1995)**. According to their model, handling architectural awareness, design process, and processes (internal functions-office activities) while taking into account the project description and intended usage (external functions-project tasks) contributes to the development of concrete design plans, which are encompassed by architectural management. Then, Architectural Management was used as a way to keep track of and monitor the project's production and success. The criticism of this model is that the model made no mention of the profession's economic side (aspect) or industry rivalry, which is an architectural viewpoint on the process. The model can also be seen as a call for architects to re-engage in project management across the life cycle of the building design. Also, **Bax and Trum, (1993)** took a similar approach, designing a model to divide the position of "architectural artefacts" into three levels: the urban environment of the structure, the building, and the building data. According to **Nicholson, (1995)** each of these stages, they said, constituted a degree of specialization and therefore an area of expertise or "domain". Several (more than one) functions with specified similarities can be classified under each domain during the analysis process of these three domains and considering the qualitative existence of the domain theory. However, once a third domain is included, it is difficult to determine which domain will include all management and commercial facets of the practice.

While a study conducted by **Banks, (1993)**, suggests a simplified description of architectural management as follows: “Architectural Management covers the more philosophical approach to management of the architectural systems, covering management production philosophies and principles with specific relationships to the broader building industry.” This description encourages the application of management principles and philosophies to the building industry, as well as the use of their possible benefits. This description may be argued to be too broad and philosophic, which can be debatable, as it does not define what architectural management entails specifically. **Cooper and press, (1995)** conclude that Design management is concerned with establishing managerial strategies that improve the design process and thereby create opportunities to produce new products of high quality using appropriate processes. While management excellence is not seen as a substitution for high imagination and ingenuity, it can make a difference in multi-dimensional and complicated project environments between performance and failure. Here, **Cooper and press, (1995)** pay attention to the outcome quality of the products, which can also be described as the added value of the architectural management to the process of design.

Freling, (1995) proposed a basic conceptual concept of architectural management, which describe it as a continuous evaluating method to assess the role of architects in the building industry and the resources they needed for their work. This term portrayed Architectural Management as a means of assisting architects in reclaiming their "lost place" and regaining reputation in the building industry. **Akin and Eberhard, (1996)** described architectural management as the combined management functions involved in the planning, development, and operation of building design. In his description **Freling, (1995)** sees architectural management as a measurement tool to assess the role of architects in this summary, like **Nicholson, (1995)** mentions the importance of considering all roles during the

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project's whole life cycle, but it went even deeper, emphasizing the importance of integrating the administrative functions under one instrument, architectural management. While according to **Emmitt, (1999)** Architectural management is used to cover all management roles associated with a dynamic technical service business. Architectural management encompasses project management, architecture management, building management, and facilities management, both of which are specialized fields of interest that are interdependent on quality management and human resource management, and are at the core of a company's culture." The definitions of competition and firm culture were listed for the first time in **(Emmitt, 1999)'s** meaning.

To begin with, architectural management was interpreted as a category that encompassed all of the management resources and functions. The definitions of competition and firm culture were listed for the first time in (Emmitt's, 1999a) meaning. To begin, architectural management was described as a set of managerial tools and functions that would improve a company's competitiveness in the marketplace. The two components of architectural management were then detailed and extended by **(Emmitt, 1999)**.

As highlighted by **Brunton et al. (1964)**. Further, **Sebastian, (2005)** classifies design management by practice or office part and task management (individual job management). However, it is important to note that there might potentially be a deceptive distinction between the two interconnects, namely the management of the workforce and the social features of employees. These interconnects play a crucial role in shaping the internal business culture, which subsequently influences the management of individual projects **(Emitt, 2007)**. It is important for professional office managers to achieve unity between the design practice and the individual projects as **Brunton et al., (1964) and Emmitt, (1999)** mentioned, Although the management of the Office and the management of the mission are continuously intertwined, the two interdependent fields which are discussed separately in the literature are still common. **Emmitt, (2007)** states that "The design process has been examined from two distinct perspectives from the perspective of particular works or project management. "The first objective is to make the essence of design activities more comprehensible" **(Emmitt, 2007)**.

In conclusion for the overall definitions mentioned Architectural Management is a holistic and integrated approach to architectural project development, encompassing stakeholder engagement, strategic planning, innovative design and construction practices, quality enhancement, life cycle considerations, sustainability, and continuous monitoring through communication and coordination. It places a strong emphasis on generating value at every phase of the project, ensuring alignment with stakeholders' needs, design excellence, and economic efficiency. By fostering collaboration and coordination between design and project management, Architectural Management seeks to optimize resources, reduce waste, and enhance the long-term sustainability, functionality, and aesthetics of architectural assets. This comprehensive process not only delivers aesthetically pleasing and functional buildings but also addresses environmental and economic aspects, ensuring that architectural projects contribute positively to the built environment and the satisfaction of all stakeholders. Architectural management also bridges design originality with project execution. Modern architects must integrate management ideas and practices to compete and produce high-quality design solutions as products grow more complicated and demanding.

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2.1.Architectural Management Focusing on Design Process

According to the analysis of the literature, much of the current research on design management in architecture have an emphasis on the design processes. These researches are divided into two categories: Design methodological approaches and engineering instrumental approaches. To facilitate design activities, the design methodological approach depends on scientific reasoning rooted in empirical or logical understanding. It sees diverse design processes as a synthesis of numerous methodologies. It contains norms, techniques, and a transparent and systematically structured library of scholarly methods that are supposed to support an individual architect in accessing and highlighting methodological components throughout his design research or study **(Jong et al, 2002)**.

Individual designers who typically control and optimize their own design processes are particularly targeted by the design methodical approach. This technique seeks to accumulate explicit design information that may be turned into process methods in the context of managing collaborative design (Sebastian, 2007). There are several points of view on the design process approach. **Lawson, (1994)** declares an example of a well-known design process approach. He states the process of design is usually thought to consist of stating a problem, then analyzing it; synthesizing and evaluating a solution, and communicating the results. The Royal Institute of British Architects (RIBA) supports this concept of design as a series of assimilation, analysis, synthesis, assessment, and communication in its stage model of design practice. Other authors contend that the entire design process is repeated at increasing degrees of detail as the designer is expected to progress from the broad to the specific.

The engineering instrumental method is another technique concentrating on design processes that is founded on construction engineering concepts. The engineering instrumental approach sees design as a rational problem-solving method first and foremost. This method consists of methodologies, tools, and approaches for coordinating design activities and information. It is divided into three sections: Programming facilities, building difficulties, and inter-agency collaboration **(Gray et al, 2001)**. A design process is viewed as a technical complex system with interdependent subsystems in the engineering instrumental approach. The management primarily attempts to deconstruct the design process into regular activities, with the end result being a documented and reproducible step-by-step description. The engineering instrumental method leverages **Simon's, (1960)** system thinking to isolate the pieces that can be properly specified and tackle them independently. A design process is also related to the transformation of input to output, value creation, and information flow in this method **(Koskela et al, 2002; Ballard et al, 1998 cited in Sebastian 2007, p15)**. Design is the process of translating client needs (inputs) into design objects (outputs). It is a process in which values for the clients are generated by meeting their needs. Design is also a stream of data that must be efficiently handled and dispersed in time and place to reduce wastes or inefficiencies. When nobody is able to foresee the outcome ahead of time, the design process is said to be open-ended.

Generally, this approach implies that a process could only be successfully managed if the outputs are compatible with the aims and features established in advance. Because the final result of the design process is hazy at first, design management must work on clarifying the results step by step. Furthermore, because it is unknown how the process will be structured, design management must focus on putting it up and changing it **(Loon, 1998 as cited in Sebastian 2007, p15)**. Design

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management develops models and infrastructure for the process of design to determine who must undertake which tasks and when. Gray et al, (2001) propose a design management process map. The process map illustrates a flow chart that methodically expresses and ties the primary players' roles, behaviors, and outcomes to requirement development, design process, and management of design in each **step of a building project, from financial model to completion.**

Prins et al. (2001) emphasize the cyclical aspect of the design process and highlight how architectural design management operates in a continuous cycle, moving between setting the strategy, developing the layout of the process, and leading the process. Several authors, including **Allinson, (1997)** and **Tunstall, (2000),** have tried modifying project management tools for use by architects. They provide management tools for the design process, including planning, monitoring, and control. Network planning tools like the Gantt (Bar) Chart, Fishbone Planning Diagram, (WBS) work break down structure, (CPM) critical path method, Project Evaluation and Review Technique (PERT), and Transformed Relationships Evolved from Network Data are intended to aid architects in organizing and scheduling their design activities. (TREND).

Allinson and Tunstall break down the fundamentals of many monitoring tools, including the Time Sheet and Earned Value Analysis, as well as the ways of regulating costs, risks, and timeliness, including Activity-Based Costing (ABC), Value Engineering, Benchmarking, and Fee Scale. Specific tools for managing designs are created in addition to adapting those used in project management. For successful task, information, and quality requirement coordination, the Last Planner Concept was created by **Ballard et al. (1998)** and **Koskela et al. (2000)**. Workflow management, concurrent engineering, and lean construction are all terms they're referencing. To counteract the drawback of traditional management techniques, which fail to account for the impact of variations and delays within the iterative design process, **Austin et al. (2000)** developed a multi-stage strategy to comprehend the interdependencies between the design activities. This is where the Adept relies on a DSM analysis or Dependency.

Heintz, (1999) is one of the recent researchers to suggest using an effective communication mechanism between participants in the design process as the basis for a design coordination tool. He defines design coordination as the process of overseeing the interdependencies and information flows across the many organizations, businesses, and other entities that make up a design. Architectural Management (AM) is a solution supporter of the design management approach that focuses on the design products. The most important mission of design management is to assure that design can realize buildings that are able to meet the aesthetic, functional, economical, and technical requirements while in use and during production. The value, performance and quality approach hold design management responsible for the definition of the values to be met, the translation of them into a design brief, and the guidance of the designers so they are able to understand them **(Sebastian, 2007). Prins et al, (2001)** and **Chang et al, (1998)** describe this as creating and steering the values and as the key performance indicators.

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Design management is supposed to facilitate the creation and realization of the architectural values to meet the stakeholders' expectations. In relation to economic value, the design management approach that focuses on the design of products refers to real estate and property

management, particularly in accommodating market considerations of building function and location into a design program. In regards to construction technology, design management aims to produce high-quality and efficient quality buildings, as well as buildability and efficiency throughout future use **(Emmitt, 1996).** By evaluating building efficiency, the value, performance, and quality approach encourages thinking and functioning in terms of outcomes rather than methods **(CIB W060, 2002)**. Before a building permit is obtained, design management assesses aesthetic value, the spatial and architectural unity of a project and its urban context **(Boer, 2001; Graaf, 2001; Winsemius, 2001; Talstra, 2003 cited in Sebastian, 2007). Egan, (1998)** emphasized the significance of five dimensions of improvement: dedicated leadership, customer focus, interconnected processes and teams, a quality-driven agenda, and people commitment. These elements may be compared to the benefits of Architectural Management, which have been taken from the literature and summarized in **Table 1**.

Table 1 Summarizes the benefits of adopting Architectural Management (Source: Alharbi, 2013)

Benefits	**Author(s)**
Enhancing organizational management	(Brunton et al., 1964; Emmitt, 1999a; Emmitt, 2007; Emmitt, 2009a& b)
Managing mutual value design and delivery	(Christoffersen and Emmitt, 2009a; Jørgensen, 2009; Prins, 2009b)
Managing quality	(Beim & Jensen, 2005; Salgado, 2005)
Communication and collaboration	(Otter, 2009; Sebastian and Prins, 2009)
Stakeholder management	(Moum, 2005; Olie, 2005; Salaj et al., 2005; Storgaard, 2005; Yu & Chan, 2010)
Managing sustainability	(Emmitt, 1999a; Tzeng et al., 2009)
Increasing professional competiveness	(Emmitt, 1999a; Emmitt, 1999b; Emmitt, 2007; Emmitt, 2009a & b, Alharbi, 2013)
Practicing ethically	(Nicholson, 1995a; Emmitt, 2007)

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3. Value

The major fundamental assumption established in this study is that the ultimate goal of Architectural Management is to create value in the process of design . Value studied in the perspective of stakeholders input to the process of design, economic and values related to time is not included. Stakeholders are all directely and indirectely involved parties in the design process. The idea of architectural value is examined in order to investigate this assumption by addressing its complexities and its relation to design process. As a result, the language and concepts underlying architectural value are and should be diverse based on one's standpoint and stakeholder perspective.

With the developing of technology in construction and other field related to engineering and involving other disciplines like specialist designers and other engineers to the architectural engineering and design process the expectation of people and clients increased and the projects become more complex than before, using old methods in design now is insufficient and architectural value (quality) is important than before. Despite the fact that the concept of value may be traced back to Aristotle's Nicomachean Ethics, it appears that a universally accepted definition has yet to be discovered **(Thyssen *et al.*, 2010)**. monetary is frequently connected with value, indicating the economic notion of market exchange value. However, value may also be seen from a philosophical standpoint, which further confuses the idea of worth.

Abdullah and Ali, (2021) shed light to the importance of tangible and intangible values in architectural design process. A quick examination of value theory is offered in this research as a foundation for operationalizing the notion in a management setting; whether value is subjective or objective, intrinsic or time and context dependent, and if it is measurable at all is explored**.** By evaluating building efficiency, the value, performance, and quality approach encourages thinking and functioning in terms of outcomes rather than methods **(CIB W060, 2002)**. Before a building permit is obtained, design management assesses aesthetic value, the spatial and architectural unity of a project and its urban context **(Sebastian, 2007).**

According to **Arup, (1972)** "Excellence (E) equals Commodity as defined by (C) plus Commodity in excess of that required (EC) plus Delight or artistic quality (D), divided by Price (P) plus the Social Price (SP): E = (C + EC +D) / (P + SP)". After stating that EC, D, and SP cannot be quantified, Arup concludes, "... experts and designers should be brought in as consultants to decide why we construct and what to construct." This is a far more complex and contentious subject than "how to construct". This point of view of Arup can be described in a way that if we want to measure value in the design process, we have to evaluate the product of the process. Attention in the existing international discussion on revaluing building, one we can see a widespread push for cost effectiveness, greater integration, and process innovation in construction, with practically all efforts focusing on 'how to build,' whereas Arup's inquiries centered on what to build? and why we build? The importance of overall design is still widely ignored **(Emmitt, Prins and den Otter, 2009)**.

Further, **Emmitt, Prins and den Otter, (2009)** state that there appears to be an international push for 'revaluing' project construction, questions on how this value can be measured and described, and who is providing what value appear to be overshadowed by national programs to reorganize conventional methods and enhance time and cost efficiency. Still, Arup was correct when he stated,

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"The goodness of a total design must be the same as the goodness of the finished structure", because the overall design totally defines the latter quality. So, in the end, quality, or value, as it appears to be the most commonly used phrase currently, remains a concern of architectural design" **(Arup, 1972).**

Architectural Management seeks to facilitate value generation via process design, strategic management and management of collaborative interdisciplinary building design. Given the various object worlds of the parties involved, architectural design can be viewed as primarily a social process as stated before **Sebastian et al. (2003, 2007)** with the goal of creating a better understanding of the design problem in order to create and improve values in architecture **(Emmitt, 2007).**

To create a design that fulfills the project's restrictions and objectives as well as the needs of all directly and indirectly involved stakeholders, architects collaborate with other process actors like experts, engineers, clients, and users. These stakeholders all contribute to the project with varied values, objectives, approaches, and languages. Within the design process, there may be areas of disagreement, dissatisfaction, and inefficiency related to setting objectives, exchanging and developing values, coordinating design activities, allocating risk, exchanging information, and resolving disagreements. The result of architectural design is a structure that exists and expresses itself in public space while also meeting the demands of the customer.

Architectural design must consider a wide variety of values, from organizational, functional, technical, and economic considerations to cultural, ethical, artistic, philosophical, and sociological considerations (which mostly manifest themselves in the public and professional sphere). These considerations are primarily impacted by the clients, users, and project partners involved **(Emmitt et al., 2009)**.

Nevertheless, if value is inherent to the totality of things or even metaphysical in nature, how can we assess the worth of items that have been broken down into components according to a pretty systematic model? Can value be defined as the total of its components? How do we deal with the altering value views of multiple stakeholders? Which stakeholder judgments must be taken into account before accurate comments regarding real-world value may be made? Putting aside these questions, it has become particularly crucial for all participants of the architectural design and practice to illustrate value to clients and society. Correspondingly, it is essential to model and attempt to quantify value, despite the fact that models may not capture the full complexity of the design process.

Examining efforts to model architectural value reveals a diversity of methodologies. Often, these endeavors share the traditional Vitruvian triangle of 'Firmitas' (firmness, durability), 'Utilitas' (utility, commodity), and 'Venustas' (beauty, delight). In actuality, the conversation on value was nearly exclusively object-focused. In modern models of architectural value, the process and process values are often included **(Emmitt et al., 2009, p11)**. The fact that value is delivered and perceived in a constantly changing manner is seldom considered **(Emmitt et al., 2009)**. While **Usmani and Winch (1993) as cited in Leentje Volker and Matthijs Prins, (2007)** provide a systematic method to evaluation by defining aesthetic quality under the themes of unity, expressiveness, size, function, and consistency.

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Moreover **Bertelsen and Emmitt, (2005)** states that client is often assumed to have been a clearly defined entity with certain very obvious and well-articulated and defined value parameters that can be communicated in plain and clear words at the beginning of the design process by the majority of construction organizations. In reality, the client is a pretty complicated phenomenon. While the client's representative may be one or two persons, they are only people who have been given a task to do.

They are rarely the actual investors, owners, or tenants of the building. Due to this, it is particularly challenging to identify and convey "client value" in practice.Examining the client's nature more closely reveals an organization that, while the project is being executed, must represent the interests of three different client groups: the owners, the users, and society. At various points in the building's lifespan, these three interest groups place varying values on various factors. When the building is finished and put to use, the emphasis is primarily on that time, and the traditional Vitruvian perspectives of firmitas (durability), utilitas (usefulness), and venustas (beauty, aesthetic) may be used to express the main viewpoint of each of the three groups. Yet there is also the viewpoint of the building's value in the future or for its intended users in the future, as well as the value while the building has been designed and constructed sometimes different values connected with the construction stage. This set of value parameters is shown in **Table 2** along with some instances of the different value types **(Bertelsen & Emmitt, 2005, .3)**.

Table 2 Examples of Value Perspective (Bertelsen & Emmitt, 2005, p.3)

	Owner	**User**	**Society**
Primary Vitruvian Perspective	Firmitas (durability)	Utilitas (usefulness)	Venustas (beauty)
During Construction	Respect for cost and time Errors and	User involvement Schedule	Noise Dust Traffic hindrance
When finished	Capital value Cost of operation and maintenance	Flexibility for initial use Indoor climate, lighting Looks,	Architecture Compliance with surroundings
In the Future	Long time investment	Flexibility for future use	Landmark Aging in beauty

In architectural design, it is often argued that the process and the final result cannot be separated. There is no scientific proof that would confirm or disprove the idea that a good process results in a good product or, at the very least, that a good process helps the generation of object-bound value. Sometimes it is even said that process-level conflict is a need for architectural quality. However, a well-managed process is just as much the duty of the design manager as a high-quality result. Process values in the preceding meaning are used to define organizational and personal values, such as openness and honesty, to be specified and implemented inside projects for effective cooperation **(Emmitt et al., 2009)**.

According to the architects' responses in **Bártolo, (2001)**'s study, quality design is characterized by "creativity, good form, composition, and proportion," as well as "attention to detail, simple and

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elegant use of space, integration of services, and fulfillment of users' needs within a stimulating environment.

While **Erzaij and Aljanabei, (2016)** pays attention to the importance of time cost and quality triad. Also according to **Thomson et al. (2003)** through continuous interaction amongst stakeholders, a satisfactory design solution may be reached via the interpretation of project values as attributes of the product. The temporal implications are twofold. To begin, the value conversation must be continued throughout the construction process for any changes in project values to trickle down into the aims and qualities. Second, everyone involved needs enough time to do their part in the sensemaking process". It is also important to analyze the role of contractors as one of the influential stakeholders in design management.

According to **Thomson et al. (2003)** stakeholders roles in determining project values impact product quality expectations as well as designers' expectations of reaching these goals. Finally, these define the functional, physical, and symbolic product features required for consumer expectations (satisfaction).

The focus of his study is on value delivery management in design is being used to investigate prospects for implementing (DQI) indicator of design quality assessments into a project management system that assures the delivery of stakeholder value during the design stage. Vitruvius's Utilitas (Commodity), Firmitas (Firmness), and Venustas (Delight) are the basis of the DQI's concept of design quality. The building's impact "wow" factor which id its design, color, form and social and urban integration, its potential to establish a sense of place and positively affect the local community and environment, its "build quality or Durability" which refers to its construction and performance which is also indicated by **Shaheen , B. R. ., Al-Ethari, A. M. ., & Abdul-Mun'emt, (2023)** and in terms of access, space, and usage, and its functionality or Usability; The performance, engineering, and construction of a building all contribute to its overall quality, while the urban and social integration, interior atmosphere,

form and materials, and character and innovation of a building all have an effect on its quality of life **(Kamara, 2013)**.

Finally the researcher came to a conclusion that there are relation between architectural management and value and these relation described in **Table 3.**

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Table 3 highlights the common points that connect Architectural Management and Architectural Value, demonstrating the interrelationship between these two concepts (Source: Researcher)

Common Points	Architectural Management	Architectural Value
Optimization of Resources	Seeks to optimize resources, reduce waste, and enhance sustainability.	Aligns with the goal of achieving value for the client by ensuring cost-effectiveness.
Long-Term Sustainability	Emphasizes the importance of long-term sustainability in construction practices and material choices.	Considers the environmental impact of the building, addressing environmental aspects of value.
Functionality	Focuses on effective project planning and execution to ensure that the architectural asset serves its intended purpose.	Demands that design and construction result in a building that functions well, highlighting the link between both concepts.
Aesthetics and Creativity	While focused on efficient execution, it ensures that the final product aligns with design intent.	Creativity and aesthetics are fundamental components of architectural value, emphasizing the aesthetic quality of the design and execution.
User Needs	Effective project management includes consideration of user requirements and expectations.	Architectural value is characterized by a focus on user needs, recognizing the importance of delivering buildings that cater to stakeholder satisfaction.
Communication and coordination with Stakeholder Engagement	Communication and coordination among stakeholders is essential for effective project execution.	Emphasizes ongoing dialogue and communication among stakeholders to refine project values.
Durability	The choice of materials and construction techniques impacts the durability of the architectural asset.	Durability is one of the characteristics of architectural value, highlighting the importance of the building's long-term functionality and quality.

As a result, the problem is that many complaints about projects, such as projects with poor communication, coordination, and architectural solutions, which will lead to poor architectural value, can be traced back to ineffective management of the architectural design. The objective of this study is to determine the effect of architectural design management on the design process in terms of architectural value and to find a measurable connection between design process management (A.M.) and the value of the building.

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Architectural value recognizes that the design process and the final product are intrinsically linked, with a well-managed process being as vital as the ultimate architectural outcome. Achieving architectural value involves ongoing dialogue (communication) among stakeholders to define and refine project values, which then guide the design and construction process. Architectural value is characterized by creativity, functionality, form, durability, and a focus on user needs. Architectural Management plays a significant role in value delivery by managing the design process, ensuring the realization of stakeholder expectations, and maintaining quality, durability, and community impact. Architectural value ultimately hinges on the ability to satisfy communal interests, creating a sense of place and positively affecting both the local environment and the community. This procedural definition underscores the multifaceted nature of architectural value, highlighting its intersection with both the design process and theultimate architectural product, guided by the evolving interests and expectations of stakeholders.

To address the complexities of architectural value, the Design Quality Indicator (DQI) has been proposed as a tool to assess design quality and deliver value. It includes various factors such as the building's impact factor, build quality, functionality, and impact on the community and environment. The DQI can be periodically applied during design and construction stages, providing valuable feedback for improvement. **Whyte and Gann, (2003)** indicate design quality indicator as "a tool to assess the design quality and value of buildings". It was created by the UK Building Industries Council (CIC) in the latter part of the 1990s and released in 2002 as a response to the widespread use of Key Performance Indicators (KPIs) that omitted the quality of building design. DQI was inspired by the realization that excellent design improves people's lives, and that individuals who are directly impacted by designs should have a hand in defining and evaluating quality **(CABE, 2006)**. Throughout the building phase, the DQI "engages the whole stakeholder population in identifying and assessing design priorities". It falls between the judgment-based and the rational (measurement) methods to quality evaluation due to its combination of objectivity and subjectivity. Based on their knowledge and experiments , the respondents are asked to mention and explain usability, built quality and impact factors of the building to assess architectural value of the projects .here are several reasons why researcher used Design Quality Indicators (DQIs) in as a measurement tool.

Architectural managent also bridges design originality and execution, at the same time most of the scholars like **Arup, (1972) and Emmit, (2009)** indicates that value can be determined by the totality and inorder to measure the process we have to measure the product**,** by taking into consideration the common points mentioned in the **table 3.**

In conclusion, architectural value is a multifaceted, process, and stakeholder interests. Architectural value is often discussed in terms of the traditional Vitruvian triangle of 'Firmitas' (firmness, durability), 'Utilitas' (utility, commodity), and 'Venustas' (beauty, delight). However, the conversation on value has evolved to include the process and process values as well. The notion of stakeholders in architectural design and practice is critical as they represent different interest groups, such as owners, users, and society. Each stakeholder may have varying value perspectives at different stages of the building's lifespan, and their input is crucial in shaping the overall value of the project.

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4. METHODS

4.1.Data collection and measurement of variables

The method adopted in this research is a mix approach, which is based on the hypothesis of adopting architectural management increases value in the design process. The main concept and focus is finding measurable connection between Architectural Management's influence on value creation in architecture design process. In order to find this connection, the research is divided into two main parts: The first part entails the distribution and analysis of a structured questionnaire aimed at gaining insights into the perceptions and preferences of architectural professionals regarding management practices, and the value they attribute. The questionnaire serves as a valuable tool to gather quantitative data that will inform the subsequent analysis. Based on the previous studies, survey questions were created to ensure the reliability of questions. The questionnaire's questions were modified to be clear, uncomplicated, and familiar to respondents. There were three primary sections to the questionnaire: **The first set of questions** was aimed at collecting information about socio-demographic characteristics. Socio-demographic characteristics of the respondents. Factors like age, gender, and specialty. **The second set of questions** was about the architectural management and sub-indicators of architectural management that are important in the creation of value. **The third set of questions'** purpose was to collect information about the relationship between architectural management and value.

In the second part of the study, a careful selection of relevant case studies was made to provide empirical evidence and insights into the effect of Architectural Management on the creation of value in the architectural design process. The researcher selected projects that adopted Architectural Management. The projects selected were a house project, a commercial building a residential complex. Further description of the samples can be found in **Tables 6,7,8.** The researcher tried to analyze projects in different sizes to have comprehensive data at different levels. The data in this section of the study are mainly based on the opinions of the project participants (stakeholders), supported by the project facts.

The case selection process involved considering various factors such as **project scale**, **complexity**, **diversity of Architectural Management practices**, and their potential **impact on design outcomes**. The aim was to include a diverse range of case studies that represent different architectural projects and management approaches. The projects were analyzed by conducting an interview and using the DQI (Design Quality Indicator tool). A DQI questionnaire or survey instrument that focused on architectural management practices gathered quantitative data from multiple participants involved in the samples selected. The questionnaire was designed to measure various dimensions of architectural management and its effect on built quality, usability, and the impact of the projects. Participants rated the effectiveness of specific indicators the researcher analyzed the data using the Excel program. The questionnaire was distributed and collected by arranging by hand for providing further explanation about the questions that were unclear to the participants. Distribution and collection of the forms lasts 15 days. During the distribution of the questionnaire forms, the researcher explained the purpose of the study clearly. The questionnaire covered three aspects and was asked of the project stakeholders, like **users**, **maintenance managers**, **clients,** and **architects**. The researcher asked the indicators of functionality to the users of the buildings, the indicators related to Durability were asked to the

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maintenance managers or users based on the project, and the impact of building indicators, which determines the form, material, and urban integration of the buildings asked to the architects.

4.2. Interview

The researcher conducted structured interviews with key stakeholders (Architectural Managers) involved in the Architectural Management process of the selected projects and with persons who can provide valuable insights into the practices employed. The interviews were designed to cover specific aspects of Architectural Management, such as decision-making processes, communication and collaboration strategies, project planning and control mechanisms, and stakeholder engagement approaches. Structured interviews ensured consistency in the data collection process and allowed for systematic comparison across case studies. The interviews aimed to gain a comprehensive understanding of how these practices influence the creation of value in the architectural design process. The analysis will delve into various aspects of Architectural Management to explore their impact on the design outcomes, like management approaches, collaboration and communications, and stakeholder engagement, and also to determine that if architectural management is applied or not in these projects. The researcher initiated contact with the three interview candidates using email communication, requesting their participation in an interview about the research issue. Each candidate was given the autonomy to determine the appropriate time and location for their interviews, taking into consideration their work commitments. The duration of each interview ranged from 30 to 75 minutes. The interview details are presented in **Table 4**.

Table 4: The Interviewees' Details (Researcher)

	Nationality	**Current Post**	**Time/place of Interview**	**Duration**
Interviewee 1	Iraqi	CO-Founder and CEO – (Zakka architecture)	Wed 4 January 2023 – Sul.	11.05-12.10 am
Interviewee 2	Iraqi	Project manager – (Sulaymaniyah-Heights)	Mon 16 January 2023 – Sul	3.15-.4.25 pm
Interviewee 3	Iraqi	Founder – Arch. Manager (Engineering Group)	Sun 29 January 2023 – Sul	10.00-10.30 am

The participants in the interview were requested to articulate their expert perspectives and evaluations. Regarding these two inquiries:

- Can you provide an overview of the Architectural Management practices employed in your design and construction project?
- How do you ensure effective value creation, communication, and coordination between architects and other project stakeholders?

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- **Samples Selected**

The samples were selected according to the following criteria**:**

Project Scale and Complexity: The researcher selected case studies that represent a range of project scales, from small residential projects to large-scale commercial or institutional buildings. Consideration will also be given to the complexity of the design requirements and project constraints. **Design Outcome Variation:** The researcher selected case studies with diverse design outcomes in terms of functionality, aesthetics, built quality, and user satisfaction. This will enable a comparison of the influence of architectural management on the creation of value across different design contexts. Details about the samples can be found in **Tables 5,6,7,8**.

Table -5- Details about the selected projects for evaluation by the DQI tool
(Source: Researcher)

	Bakrajo House	**Sulaymaniyah-Heights-Zone2**	**Engineering Group Building**
Location	**Sul. Bakrajo**	**Sulaymaniyah-Dabashan**	**Sulaymaniyah Amna-Suraka**
Project Type	House	Residential city complex	Mixed use Building
Period	2021-2022	2017-2022	2019-2020
Clients	Private Owner	Qaiwan Group	Private Owner
Architect	2	15	4

Table -6-Bakrajo House (Source: Researcher)			
The type of project	**The name of Function**	**Site**	**Office**
House	Bakrajo-House	Bakrajo	Zakka architecture
Description			
This case study focuses on a successful architectural management project in a small-scale construction project, where effective planning, specifying, collaboration, and communication played a key role in the project's success. The researcher analyzed the house using DQI, and also interviewed the architects of the house to have a clear understanding of the project. The project have several challenges. One of the most important challenges was to ensure collaboration and communication between stakeholders from designing until the end of the project. The complex form and shape of the house needed detailed architectural specification in order to avoid deficiencies. At last finishing the project on time to avoid additional cost			
Details			

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1	**Photos**	(Zakka Architecture)	

Table -7- Sulaymaniyah-Heights Zone 2 (Source: Researcher)

The type of project	**Function**	**Site**	**Office**
Residential Complex	Housing	Dabashan	Al-Bayaty Architects
Description			
Sample 2 examines an architectural project that encountered significant challenges and setbacks primarily due to inadequate management practices. The project, referred to as Project Sulaymaniyah-heights Zone 2, involved the construction of a residential complex. The case study explores the negative consequences of poor project planning, poor communication and collaboration, inadequate resource allocation, and ineffective decision-			
Details			
			

Table-8- Engineering Group Building (Source: Researcher)

The type of project	**Function**	**Site**	**Office**
Commercial Building	Mixed use	Amna-	Engineering
Description			
This case study explores notable points in architectural management and specification that have enhanced efficiency, collaboration, and quality in a construction project. The project is design and implementation of a mixed-use commercial building in the Aqary district. The architectural design team designed and specified the building according to the needs of the client for innovative approaches to address project complexities and improve overall project performance. the project also managed using management strategies the researcher			

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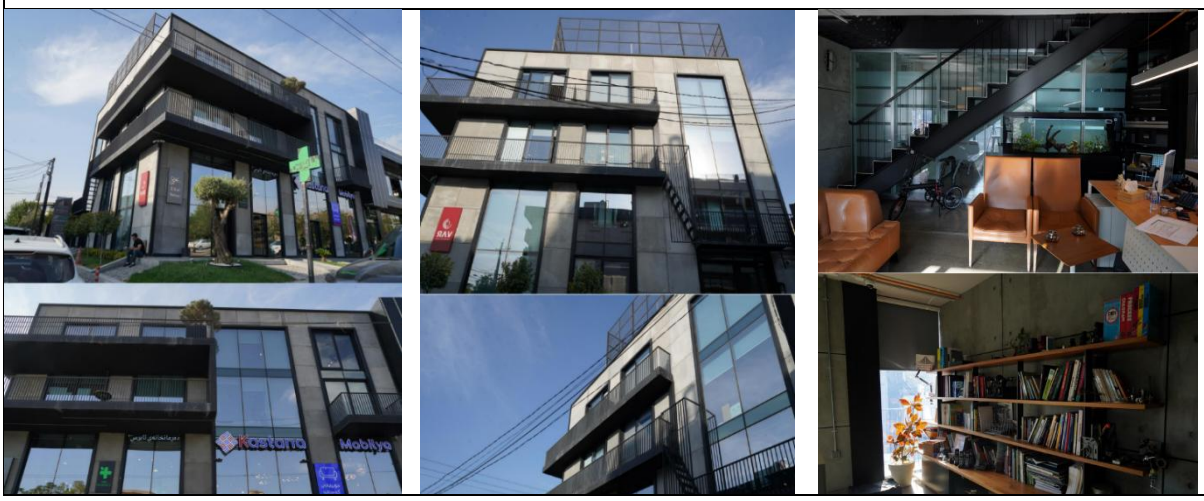
Details of the project


4.3.Illustration of the questionnaire forms

The researcher used various forms to determine the effect of architectural management on the value creation as shown in **Table-9-**, and to determine usability , built quality and impact factor the researcher used different questionnaire forms as shown in **Table 10,11,12.**

4.4.1. Illustration of the first questionnaire form

Table-9- used to find correlation between sub indicators of architectural management and value asked as follows: According to your opinion managing architectural design processes affects (Researcher)

	Strongly (60%-100%)	Agree (20%-60%) 4	Slightly (0%-20%) 3	Disagr (0%) 2	Can't 1
Increase architectural					
Client satisfaction					
User satisfaction					
Coordination					
Communication					

4.4.2. Illustration of the DQI questionnaire forms

In this section the researcher illustrates **Tables 10,11,12**, the forms used for evaluation of usability, impact factor, and built quality of the selected projects .

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Table-10- Used for evaluations of Impact factor of the selected projects (Source: Researcher)

Indicators	Descriptions	Strongly Agree 5	Agree 4	Slightly agree 3	Not agree 2	Strongly Disagree 1
Design	The design of building gives the Building a distinctive character.					
Color	Building color is suitable for the building.					
Form & Material	The building has the shape and materials in accordance with the functions.					
Internal Comfort	Buildings provide comfort to the user. Atmosphere in building, relation					
environment	Between light and space and working climate at workplaces provide comfort.					
External environment	External environment is conducive for mobility and outdoor activities.					
Character & innovation	The impact of buildings on the character, thinking and human appearance.					
Urban & social integration	Interaction with private and public areas and the impact of buildings on the area and community.					
Location	The building is well located in the neighborhood.					

Table-11- Used for evaluations of Built quality of the selected projects (Source: Researcher)

Indicators	Descriptions	Strongly Agree 5	Agree 4	Slightly agree 3	Not agree 2	Strongly Disagree 1
Engineering system	Mechanical and electrical systems in building functioning properly.					
Security system	Security system of the building is function properly.					
Energy	The building is efficient in its use of energy.					
Green energy	Building using green energy sources					
Finishes	Building's finishes are suitable and Durable					
Structure	The building's structure is efficient.					
Building stability	Building is stable from natural elements (e.g., wind, rain) and natural disaster like floods and earthquakes					
Landscape	Landscape around the building provides pleasant view and atmosphere					
Building maintenance	Building is easy to be maintained properly.					

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Table-12- Used for evaluations of Usability of the selected projects (Source: Researcher)

Aspects	Descriptions	Strongly Agree 5	Agree 4	Slightly agree 3	Not agree 2	Strongly Disagree 1
Use	The building easily accommodates the users' needs					
Layout	The building layout is easily understood by its users to find their way round the building					
Access	The building provides good and safe access for everyone (users and visitors including those with disabilities)					
Space	The spaces in building are the right size for their functions					
Lighting	The lighting is efficient and allows for different user requirements					
Open space	Open spaces around the building appropriately allow sunlight, breeze and space for outdoor activities.					
Pedestrian walkway	Building walkway and other walking infrastructure are suitable and pedestrian-friendly.					
Service	The building provides essential services to the user					
Natural lighting	Position of windows and doors are suitable for natural lighting					
Natural ventilation	Position of windows and doors are suitable for natural ventilation					

5. Results

5.1. Results of Questionnaire Form

In the first step the researcher checked all the forms and data. Statistical method were used by the researcher for analyzing answers of the participants using (EXCEL program) by multiplying frequency of each category by its score. Further the total of the multiplications devided by the frequency as shown below: -

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Table 13 shows the results of the questionnaire (Source: Researcher)

Value Creation	Scores	Frequency	Percentage	Multiply	Average Score
	Strongly agree	61	75%	305	4.46
	Agree 4	14	17%	56	
	Slightly agree	6	7%	18	
	Disagree	0	0%	0	
	Can't decide	0	0%	0	
	Total	81	100%	361	
Client satisfaction	Score	Frequency	percentage	Multiply	Average Score
	Strongly agree	54	67%	270	4.17
	Agree 4	17	21%	68	
	Slightly agree	9	11%	27	
	Disagree	1	1%	2	
	Can't decide	0	0%	0	
	Total	81	100%	338	
User satisfaction	Score	Frequency	percentage	Multiply	Average Score
	Strongly agree	52	64%	260	4.05
	Agree 4	17	21%	68	
	Slightly agree	11	14%	33	
	Disagree	1	1%	2	
	Can't decide	0	0%	0	
	Total	81	100%	328	
Communication	Score	Frequency	percentage	Multiply	Average Score
	Strongly agree	38	47%	190	3.58
	Agree 4	25	31%	100	
	Slightly agree	14	17%	42	
	Disagree	4	5%	8	
	Can't decide	0	0%	0	
	Total	81	100%	290	
Coordination	Score	Frequency	percentage	Multiply	Average Score
	Strongly agree	54	67%	270	3.98
	Agree 4	13	16%	52	
	Slightly agree	10	12%	30	
	Disagree	4	5%	8	
	Can't decide	0	0%	0	
	Total	81	100%	322	

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5.2.Correlation between sub-indicators of independent variable (architectural management) and dependent variable (Value).

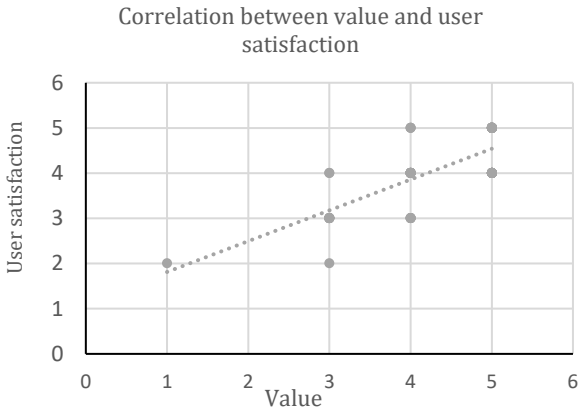

Figure -5- correlation between user and value (Researcher).

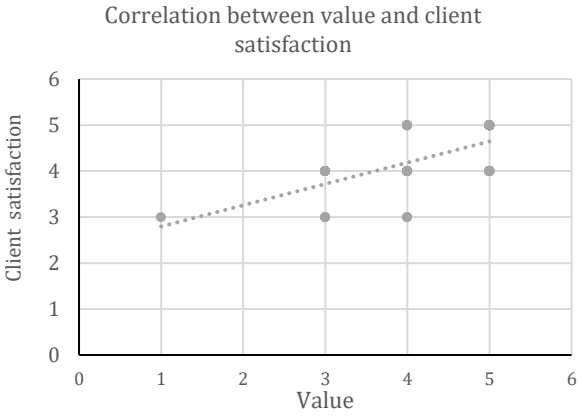

Figure -6- shows correlation between satisfaction client satisfaction and value (Researcher).

According to the participants answers the researcher found correlation of coefficient between value and user satisfaction. A positive correlation between the user satisfaction and value was found with (r = 0.86) as shown in Figure -5-, this correlation statistically considered to be highly significant with p value of (P< 0.01). According to the participants answers correlation of coefficient between value and client satisfaction was done. A positive correlation between the client satisfaction and value was found with (r = 0.88), this correlation statistically considered to be highly significant with o value (P< 0.01).

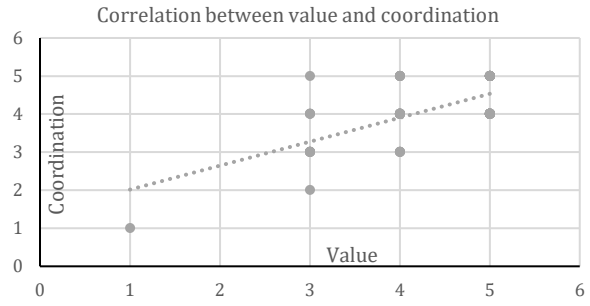

Figure-7-shows Correlation between and value (Researcher).

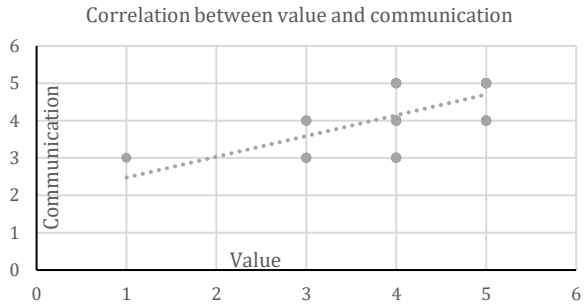

Figure-8- shows correlation between and coordination communication and value (Researcher).

According to the participants answers correlation of coefficient between value and coordination was done. A positive correlation between coordination and value was found with (r = 0.91), this correlation statistically considered to be highly significant as (P< 0.01) as shown in **Figure-7-**. According to the participants answers correlation of coefficient between value and communication was done. A positive correlation between the communication and value was found with (r = 0.85), this correlation statistically considered to be significant (P< 0.01), as shown in **Figure-8-**.

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Results of the Interviews

5.3.1. Results of Bakrajo house

Table 14 Results and Discussion of Bakrajo-House Project Interview (Researcher)

The type of Function	*Place*	*Year*
House	**Sulaymaniyah**	**2021**
Answer of Q1,2 -Management approach and value creation		
Approach used in the design process: According to interview 1 to address the challenges, the design team adopted a comprehensive approach with collaboration and communication among stakeholders. Utilized project management tools and techniques used. The approach included: • Plan and coordinate the project. • Regular meetings to see projects progression • The design team created comprehensive architectural specifications that laid out every facet of the project, helped keep things on track, and cut down on mistakes. • Efficient Use of Available Resources. • **Design Excellence (Value):** The Architectural Management team's emphasis on quality control and attention to detail resulted in a design that exceeded expectations. The project's aesthetic appeal, functionality, and innovative features contributed to its marketability and long-term value. The project also nominated for various architectural prizes internationally.		

5.3.2. Results of Sulaimani Heights Project

Table 15: Results and discussion of the Sulaimani Heights Project (Researcher)

The type of Function	*Place*	*Year*
Residential Complex	**Sulaymaniyah**	**2021**
Answer of Q1,2 -Management approach and Value		
Management Approach used in the design process: As a result of interview 2 indicated that : Barzayakany Sulaimani Zone 2 aimed to create a modern residential complex catering to various demographics. The project involved multiple buildings, amenities (facilities), and infrastructure development. Qaiwan Group implemented zone 2 through contractor despite zone 1 zone 2 sold to the contractor and Qaiwan group did not supervise the design and construction of the residential units, However, due to inadequate management practices, the project faced numerous difficulties and failed to meet the desired objectives. **Value:** The architectural product suffered from, specification issues, and compromised quality, highlighting the negative impact of inadequate management practices. Which caused		

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5.3.3.Results of the Engineering Group Mixed-commercial building

Table 16 Results of Engineering Group Building (Researcher)

The f Function	*Place*	*Year*
Engineering Group Mixed-commercial building	**Sulaymaniyah**	**2021**
Answers of Q1,2 -Management approach and Value		
Management Approach used in the design process: Integrated approach this project is design and implementation of a mixed-use commercial building in the Aqary district . The architectural design team designed and specified the building according to the needs of the client for innovative approaches to address project complexities and improve overall project performance. The project also managed using holistic management strategies. **Value**: The project designed and implemented by the same group of architect and engineers. This integrated strategy enabled the design group to have control over the project and obtain quality assurance and value creation. Holistic approach covering design and construction phases. Emphasized project scheduling, resource allocation, and risk management.		

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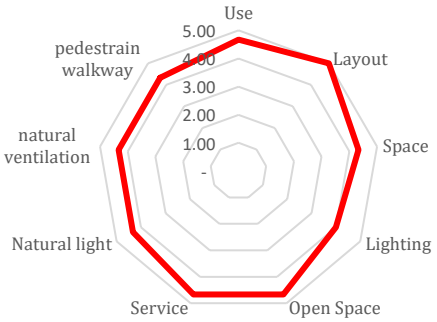
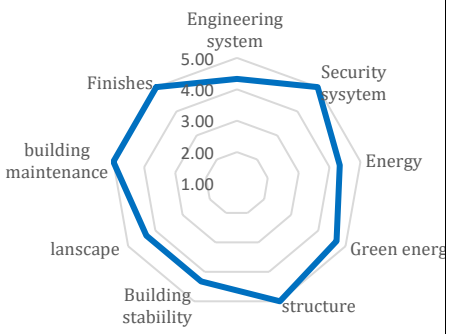
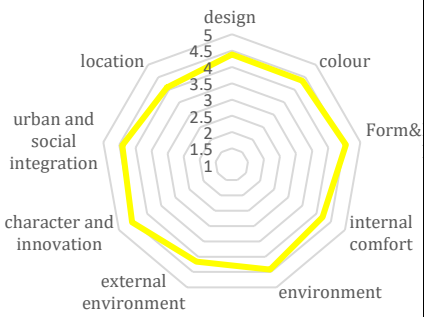
5.4. Results of the DQI questionnaire

5.4.1.Results of Bakrajo house

Table-17-shows the DQI questionnaire results of the Bakrajo-House
(Source: Researcher)

No	Main indicator	Sub-Indicators	Score	DQI results	Average Score
1	**Functionality**	Use	4.67		**4.37**
		Layout	5.00		
		Space	4.33		
		Lighting	4.00		
		Open Space	4.67		
		Service	3.67		
		Natural light	4.33		
		Natural ventilation	4.33		
		Pedestrian walkway	4.33		
2	**Durability**	Engineering system	4.33		**4.59**
		Security system	5.00		
		Energy	4.33		
		Green energy	4		
		structure	5.00		
		Building stability	4.33		
		Landscape	4.33		
		Building	5.00		
		Finishes	5.00		
3	**Impact**	Design	4.38		**4.35**
		Color	4.36		
		Form & Material	4.55		
		Internal Comfort	4.21		
		Environment	4.42		
		External	4.16		
		Character &	4.53		
		Urban &Socia	4.41		
		Location	4.09		

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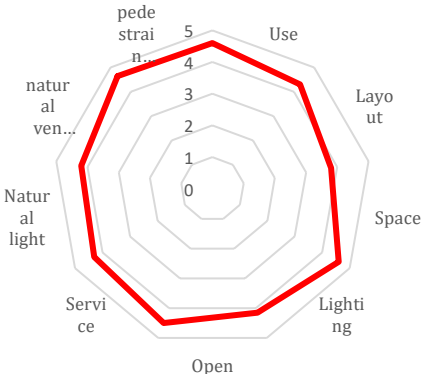
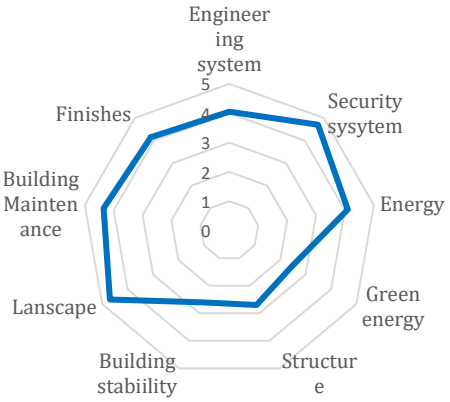
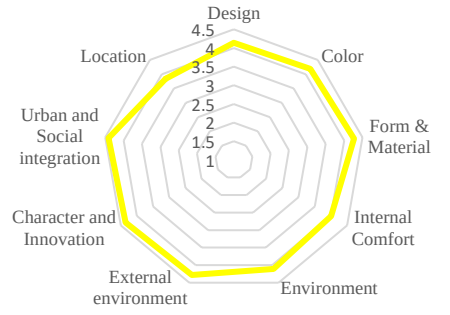
5.4.2.DQI Results of Sulaymaniyah-Heights Project Zone-2

Table-18- shows the DQI questionnaire results of Sulaymaniyah-Heights Zone-2 (Source: Researcher)

No		Indicators	Score	DQI Results	Average Score
1	**Functionality**	Use	4.6		**4.34**
		Layout	4.3		
		Space	3.8		
		Lighting	4.6		
		Open Space	4.15		
		Service	4.5		
		Natural light	4.3		
		Natural Ventilation	4.2		
		Pedestrian walkway	4.65		
2	**Durability**	Engineering system	4.05		**3.75**
		Security system	4.7		
		Energy	4.1		
		Green energy	2.45		
		Structure	2.7		
		Building stability	2.6		
		Landscape	4.7		
		Building Maintenance	4.35		
		Finishes	4.15		
3	**Impact**	Design	4.14		**4.17**
		Color	4.19		
		Form & Material	4.27		
		Internal Comfort	4.01		
		Environment	4.11		
		External Environment	4.28		
		Character	4.35		
		Urban integration	4.41		
		Location	3.84		

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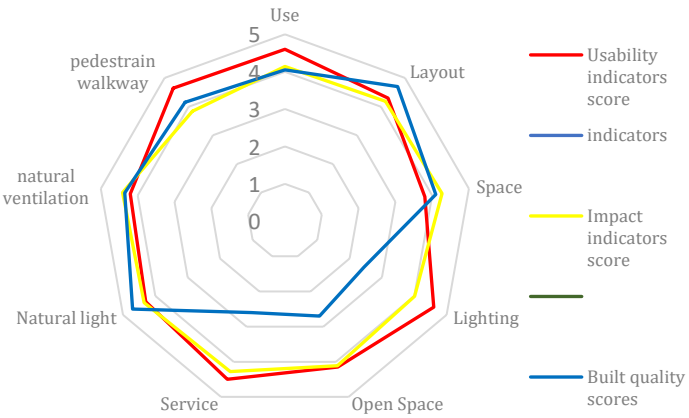
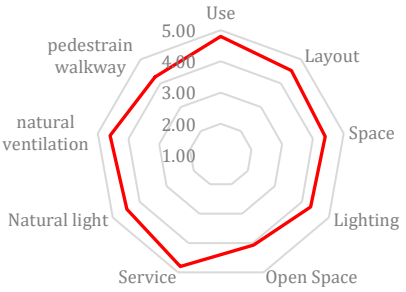


The results of the DQI score: DQI score also shows that inadequate architectural management criteria affected value creation as shown. The results shown in **Table-18- and Figure 3,** respectively which show a Distortion between durability, usability, and impact aspects of design value. The researcher analyzed the results by overlapping all the aspects to see the distortions in the values of DQI results in the Engineering Group Building.

Figure -3- diagram shows the DQI analysis of Sulaymaniyah-Heights

5.4.3.DQI Results of Engineering Group Building

Table -19- shows the DQI questionnaire results of Eng. Group Building
(Source: Researcher)

No		Indicators	Score	DQI graphical representation	Average Score
1	**Functionality**	Use	4.8		**4.47**
		Layout	4.53		
		Space	4.4		
		Lighting	4.33		
		Open Space	4.07		
		Service	4.8		
		Natural light	4.47		
		natural ventilation	4.6		
		pedestrian walkway	4.27		
2	**Durability**	Engineering system	5		**4.49**
		Security system	4.73		
		Energy	4.47		
		Green energy	3		
		Structure	4.87		
		Building stability	4.8		
		Landscape	4.6		
		Building	4.5		

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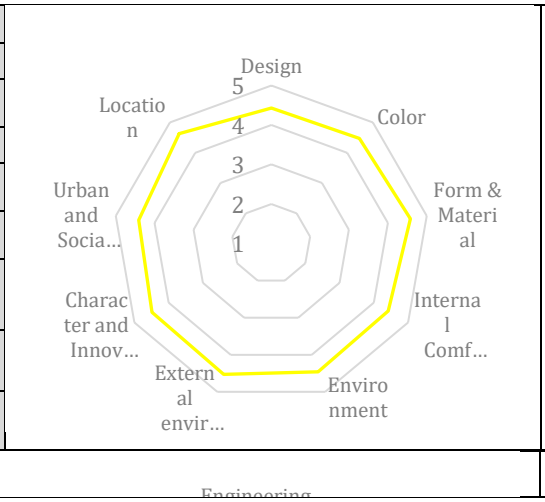
3	Impact	Design	4.43		4.5
		Color	4.47		
		Form & Material	4.58		
		Internal Comfort	4.42		
		Environment	4.46		
		External	4.53		
		Character and Innovation	4.49		
		Urban and Social integration	4.41		
		Location	4.63		
		Finishes	4.47		

The results of the DQI score: DQI score also shows that adequate architectural management criteria affected value creation as shown. The results shown in Table 19 and in Figure 4 show a harmony between durability, usability, and impact aspects of design value. The researcher analyzed the results by overlapping all the aspects to see the distortions in the green energy as using green energy materials and systems is not widely spread in the Kurdistan region, overall, the results show that architectural management enhances specification determination and value creation

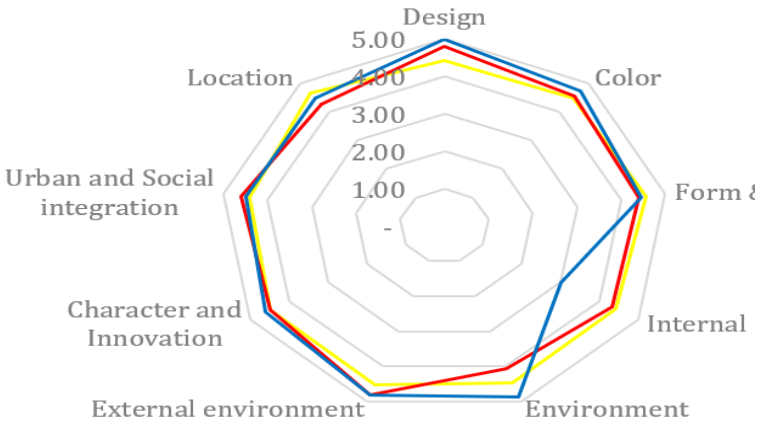


Figure -4-diagram shows the DQI analysis of E. Group Building

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6. Conclusion

Architectural management emerged as a new academic discipline, aiming to merge managerial thought with the management of architectural design and design organizations, in order to enhance the creative process of architecture rather than hinder it. The definition of architectural management has been broad and philosophic, emphasizing its role in improving competitiveness, creating high-quality buildings, and integrating various operations across the project life cycle. The results and discussions from the interviews and DQI analysis conducted for the Bakrajo-House, Sulaimani Heights, and Engineering Group Building projects highlight the significant role of Architectural Management in determining specification and value creation. In the Bakrajo-House project, effective Architectural Management practices were implemented, resulting in successful outcomes. Thorough project planning, efficient resource management, structured decision-making, collaboration, communication, and stakeholder engagement were key elements contributing to its success. The project achieved its specifications, satisfied stakeholders, and received recognition for its design excellence. On the other hand, the Sulaimani Heights project faced challenges due to inadequate Architectural Management practices. Insufficient project planning, poor communication, and weak stakeholder involvement led to specification issues, compromised quality, and stakeholder dissatisfaction. The Engineering Group Building project demonstrated the benefits of an integrated approach to Architectural Management . By aligning design with project objectives and adopting efficient resource allocation, the project achieved enhanced efficiency and quality. Collaborative communication and coordination further contributed to reduced rework and improved value creation. Finally, effective Architectural Management practices, including collaboration, communication, and coordination, play a crucial role in ensuring value creation in design projects. By employing a comprehensive approach, utilizing project management tools and techniques, and prioritizing stakeholder engagement, architects and project teams can deliver projects that meet functional requirements, exhibit durability, and have a positive impact on users and the surrounding environment. The DQI scores serve as a valuable tool for evaluating and improving architectural projects, highlighting the significance of Architectural Management in achieving high-quality design outcomes.

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7. Recommendation

To enhance architectural design processes and value creation, it is recommended that design organizations and architectural firms integrate architectural management principles into their workflows, fostering a culture that values both creative design and efficient project management. This integration can be supported through training programs aimed at equipping architects and designers with managerial skills to improve coordination, communication, and project management. Emphasizing stakeholder involvement throughout the design process by actively engaging clients, users, and relevant parties can lead to better alignment of design goals and increased user and client satisfaction. During the study and reviews of related researches and topics of the field the researcher observed that there are many other topics that need to be studied and they are:

1) The effect of management on creativity in architectural design.
2) Managing architectural design process in conceptual phase of the design process.
3) The effect of coordination on architectural engineering and design process.
4) The effect of communication on architectural engineering and design processes.

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