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Master thesis

Innovation in CRM in Architectural Practice

Analyzing the Customer Relationship Management
in Architectural practice

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Abstract

Architecture is the art or science of building and has existed since the earliest days of human cultural history. Historical civilizations are often identified with their surviving architectural achievements (Pace, Anthony 2004), which have developed over time and in conjunction with the presence of science and technology.

At the beginning of the twentieth century, Architectural offices that were often based on individuals flourished with the emergence of architects such as Walter Gropius, Le Corbusier, and Ludwig Mies van der Rohe. These influential figures have had a considerable impact on the evolution of architecture and are still inspiring today.

In recent decades, Architecture has been influenced by numerous factors, with small, medium, and large projects all undergoing changes in their architectural production processes. In order to ensure the success of companies in today's competitive market, it is important to have a proper understanding and definition of Customer Relationship Management (CRM) in Architectural practice. This paper aims to discuss how to create evolution and innovation in the Architectural production journey, as well as suggestions for a successful CRM in Architectural practice.

The paper will begin by researching the definition of architectural practice and CRM and examining the importance of CRM in the Architectural production process. The paper will then discuss the techniques used in the process of CRM, in order to create a successful customer experience.

Finally, the paper will explore how the implementation of CRM in the production process can help to create an effective and efficient system of working that ensures customer satisfaction. By understanding and applying innovation in CRM in Architectural practice, companies can gain a competitive edge in the ever-changing world of Architecture.

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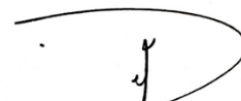| 45199366	Innovation in CRM in Architectural Practice
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Acronyms

CPO	Chief Product Officer
CRM	Customer Relationship Management
MVP	Most Valuable Player
IDM	Innovation Design Management
HOAI	Honorarordnung für Architekten und Ingenieure (German)
Q1	January 1 – March 31.
Q2	April 1 – June 3.
Q3	July 1 – September 30.
Q4	October 1 – December 31.
ROI	Return on investment
IT	Information Technology
HR	Human Resources

1. Introduction

1.1. Overview of Customer Relationship Management

Customer Relationship Management (CRM) is a system or approach to managing customer interactions, building customer relationships, and improving customer satisfaction. It uses technology, processes, and people to collect, store, analyze and share customer data. It is a customer-centric approach to identifying, understanding, and meeting customer needs, building strong customer relationships, and improving customer experience. CRM also helps businesses track customer interactions, analyze customer behavior and measure customer satisfaction. This information can be used to make informed decisions about marketing, product development, customer service, and other areas related to customer experience.

1.2. Motivation for studying innovation in CRM in Architectural practice

I have been an architect for over a decade and have worked in various stages of construction in my home country. Since every architectural project has its own challenges and I am familiar with them, in this paper, I want to focus more on the problem statement of the process of production of architectural documents and the special challenges of CRM in architectural practice.

I am fully aware of how much a successful project in the architectural office in the stage of producing documents can save time and money. These results are achieved when there is an on-time and effective relationship between all the people involved in the project, especially with customers. Often it will be very challenging to communicate in a timely and effective manner due to the busy work of the parties as well as the difference in working time or even the regional time difference. Especially with traditional methods and planning for the coordination meetings and exchanging information and documents. As a result, at the critical points of the project, it will impose time and cost.

I combined my studies in Innovation Design Management and experiences in order to build my current knowledge and open up more doors in terms of customer relationship management, which is essential in every architectural practice as the main aim is to deliver a perfect project that satisfies the customer and provides a sustainable and safe working environment for the architects (Figure1).

To determine the best way of achieving this, I conducted research: interviewing architectural offices and software companies, collecting data and analyzing it. By doing this, I am seeking an effective approach to the Evolution of CRM in Architectural Practice.

Innovation Design Management

| Innovation | in | Customer Relationship | Management | in | Architectural Practice |
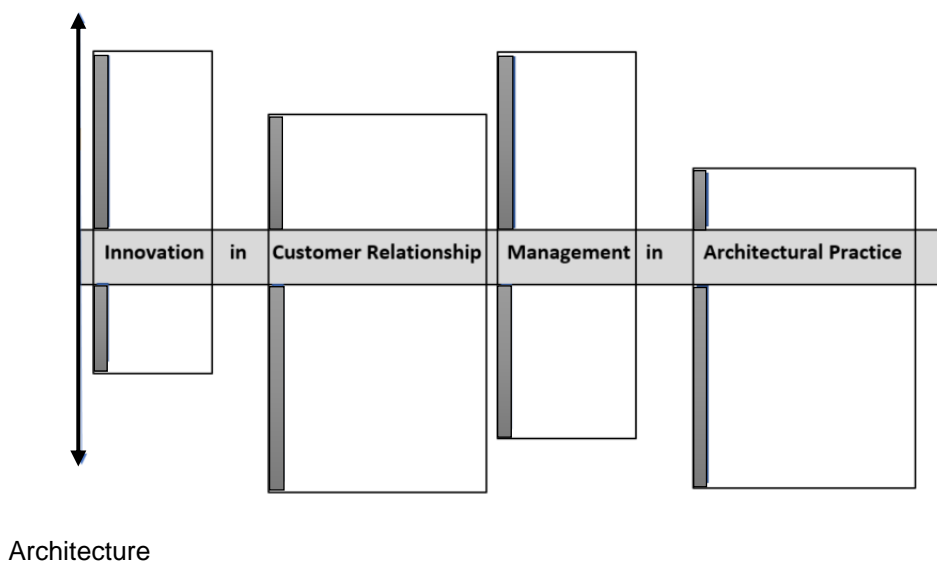
Architecture

Figure 1:Relationship of IDM and Architectural work experience with Innovation in CRM in Architectural Practice

2. Literature Review

2.1. Definition of Architecture

Architecture is the Art and the Technique of designing and building, as distinguished from the skills associated with construction. The practice of architecture emphasizes spatial relationships, orientation, the support of activities to be carried out within a designed environment, and the arrangement and visual rhythm of structural elements, as opposed to the design of structural systems themselves. Appropriateness, uniqueness, a sensitive and innovative response to functional requirements, and a sense of place within its surrounding physical and social context distinguish a built environment as representative of a culture's architecture. (Gowans, 2022)

There are at least as many definitions of architecture as there are architects or people who comment on the practice of it. While some embrace it as art, others defend architecture's seminal social responsibility as its most definitive attribute. To begin a sentence with "Architecture is":

- Oscar Niemeyer in Newsweek: "Architecture is invention."
- Zaha Hadid in The Guardian: "Architecture is unnecessarily difficult. It's very tough."
- Renzo Piano in Time: "Architecture is a very dangerous job. If a writer makes a bad book, eh, people do not read it. But if you make bad architecture, you impose ugliness on a place for a hundred years."
- Ludwig Mies van der Rohe in ID Merger Speech: "Architecture is the real battleground of the spirit."
- Rem Koolhaas in Co. Design: "Architecture is a very complex effort everywhere. It's very rare that all the forces that need to coincide to actually make a project proceed are happening at the same time."
- Diébédo Francis Kéré in Washington Post: "Architecture is not just about building. It's a means of improving people's quality of life." (Quintal, 2019)

2.2. Architecture practice

Architects' services are a term used to describe the professional activities of an Architect. It is generally considered to encompass the entire process of designing and constructing a building or other structure, from conceptualization to completion. Architecture practice includes a range of activities that involve the development of physical structures, such as buildings, landscapes, and urban spaces. This practice includes working with clients and other professionals to develop designs, create plans and drawings, and obtain permits.

Architects' professional services are typically divided into two categories, Design services (as an architectural practice in this paper), and construction services:

- Architectural practice or Architectural design services typically involve a number of steps. The first step is to meet with the client in order to understand the project's scope and objectives. The architect will then develop a design concept, considering the client's needs and desires. This includes developing a plan for the structure, such as its size, shape, and internal layout. The architect will then develop a drawing or model of the design, which will be used to create a detailed plan for the building's construction. The next step in the design process is to create the implementing drawings. This involves producing detailed drawings of all the elements of the structure, such as walls, windows, doors, and other fixtures and fittings. These drawings will help to inform the construction team of the structure's intended design and provide them with a blueprint for the building's construction. Also, Architects typically provide a range of interior design services, including space planning, furniture, and fixture selection, finishes selection, lighting design, color selection, and design of custom furnishings. Architects may also provide additional services such as flooring and window treatment selection, wall treatments, and acoustical treatments.
- Architectural Construction services typically include the preparation of design and construction documents, site visits, construction administration, and contract administration. These services may include developing a design concept, obtaining permits, preparing drawings and specifications, bidding, and coordinating the construction processes with contractors and other professionals.

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The Architect may also review shop drawings and conduct periodic site visits to ensure that work is performed in accordance with the design documents.

Architecture practice has evolved significantly over time, as advances in technology and architecture theory have increased the complexity and scope of architectural projects. In the past, architecture practice was primarily focused on the physical design of a building, but today it also includes a range of activities that support the project's success. These activities include, but are not limited to, researching building codes, and attention to sustainability and environmental effects and regulations, and preparing cost estimates.

2.3. Work phases for Architects According to HOAI

The HOAI is a set of regulations in Germany that govern the fees charged by architects. The individual performance profiles of the fee schedule for architects and engineers (HOAI) are subdivided into performance phases, with the performance profiles regularly having 9 performance phases.

LP1: Basic determination.

LP2: Preliminary planning.

LP3: Design planning.

LP4: Approval planning.

LP5: Implementation planning.

LP6: Contract to award preparations.

LP7: Cooperation at the time of contract awarding.

LP8: Object supervision - construction supervision and documentation.

LP9: Object management. (HOAI, 2021)

Typically, the process of architectural practice involves five performance phases, from LP1 to LP5. Knowing the work phases for Architects According to HOAI is important because it provides clarity and structure to the architect's work and helps to ensure that all aspects of the project are covered. It also helps the architect to plan and budget their time and resources more effectively. Additionally, the HOAI phases help to ensure that the client receives value for money and that the architect meets their legal obligations and responsibilities.

2.4. The scale of different Architectural offices

The scale of different architectural offices in Germany can vary widely. Some offices may employ only a few people, while others may employ hundreds. The type of work and the volume of work frequently determine the size of an architectural office. An architectural office specializing in residential design, for example, may be smaller than one specializing in commercial design.

As illustrated in Table 1, there are a number of large architecture firms in terms of their year of establishment and the number of members in their offices.

Architectural office	established	members	offices
Kadawittfeld Architektur	1999	160	4
JSWD Architekten	2000	200	2
HPP Architects	1950	480	13
ingenhoven Architects	1985	100	4
RKW Architektur	1950	400	5
Gmp Gerkan, Marg, Partner	1965	500	8
Nickl & Partner	1979	180	8

Figure 2: List of some Big Architectural offices

This table and its information were collected for samples in November 2022 from the websites of these architectural offices, so the numbers may change over time.

2.5. The scale of different projects

The scale of various architectural projects can differ greatly. A small residential project, such as a single-family home, may be considered small, whereas a large-scale commercial project, such as an office building, shopping mall, or airport, may be considered much larger. Larger projects, in general, necessitate more complex planning, design, and construction, as well as a greater number of stakeholders and participants.

Small-scale projects may only have a few stakeholders and may not necessitate extensive planning and design. These projects typically last a few months and involve fewer than 50 people. Home renovations, small commercial buildings, and small-scale residential projects are examples of small-scale projects.

Medium-sized projects typically have more stakeholders and can take anywhere from a few months to a year to complete. These projects may require a more complex design and planning process and may involve up to 100 people. Mid-sized commercial buildings, large residential projects, and educational and healthcare facilities are examples of medium-scale projects.

Large-scale projects with hundreds or thousands of stakeholders can take years to complete. These projects necessitate extensive planning, design, and construction and can cost millions of dollars. Major infrastructure projects, large commercial developments, and large residential developments are examples of large-scale projects. Such as:

- The Burj Khalifa in Dubai (828 meters high).
- The One World Trade Center in New York City (541 meters high).
- The Palace of the Parliament in Bucharest, Romania (365,000 m^2).
- The Great Mosque of Mecca in Saudi Arabia (90,000 m^2).

In addition, the five largest construction projects were initiated in Germany in Q3 2021:

- The Digital Park Fechenheim ($1,179m) is a 10.7ha area with a gross floor area of 100,000 m^2 in Frankfurt-Fechenheim, Hesse. Construction is expected to be completed in Q4 2028 and the project aims to develop a digital park and expand the existing Neckermann campus.

- Berlin Data Center Campus (BER1) ($500m))is a 5ha area with a gross floor area of 24,000 m^2 in Brandenburg Park, near Berlin. Construction is expected to be completed in Q4 2025 and the project aims to provide an attractive range of industry-leading data center space.

- Lörrach Central Hospital campus Development ($418m) is a 47,000 m^2 area in Lörrach, Baden-Wuerttemberg, and construction is forecast to be completed in Q4 2025.

- Kieler Förde Shipbuilding Facility Development ($295m) is a 15,390 m^2 area in Kieler Förde, Schleswig-Holstein, and is expected to be completed in Q2 2023, aiming to increase its production capacity for submarine construction from mid-2023.

- Markisches Zentrum Redevelopment ($234m) is the redevelopment of the Märkische Zentrum complex in Berlin, Germany, and is expected to be completed in Q4 2023. It was built in the 1960s and has been modernized and extended several times over the past decades. (Carmen, 2021)

This part provides insight into the importance of CRM in large projects. The estimated dimensions, costs, and timeline of the projects, as well as the number of people involved in them, all demonstrate the importance of managing relationships in order to successfully complete the projects. By managing relationships, project teams can better coordinate their efforts, resolve conflicts, and ensure that the project is completed according to the desired specifications.

2.6. Definition of CRM

The expression, Customer Relationship Management (CRM), has been in use since the early 1990s. Since then, been many attempts to define the domain of CRM, a number of which appear here:

- CRM is an information industry term for methodologies, software, and usually Internet capabilities that help an enterprise manage customer relationships in an organized way.

- CRM is the process of managing all aspects of interaction a company has with its customers, including prospecting, sales, and service. CRM applications attempt to provide insight into and improve the company's customer relationship by combining all these views of customer interaction into one picture.

- CRM is an integrated approach to identifying, acquiring, and retaining customers. By enabling organizations to manage and coordinate customer interactions across multiple channels, departments, lines of business, and geographies, CRM helps organizations maximize the value of every customer interaction and drive superior corporate performance.

- CRM is an integrated information system that is used to plan, schedule, and control the pre-sales and post-sales activities in an organization. CRM embraces all aspects of dealing with prospects and customers, including the call center, sales force, marketing, technical support, and field service. The primary goal of CRM is to improve long-term growth and profitability through a better understanding of customer behavior. CRM aims to provide more effective feedback and improved integration to better gauge the return on investment (ROI) in these areas.

- CRM is a business strategy that maximizes profitability, revenue, and customer satisfaction by organizing around customer segments, fostering behavior that satisfies customers, and implementing customer-centric processes.

CRM is a discipline hotly contested by various information technology (IT) vendors, consultants, and academics, but a clear consensus has not yet emerged. Even the meaning of the three-letter acronym CRM is contested. For example, although most people would understand that CRM means Customer Relationship Management, others have used the acronym to mean Customer Relationship Marketing.

Information technology companies have tended to use the term CRM to describe the software applications that are used to support the marketing, selling, and service functions of businesses. This equates CRM with technology. Although the market for CRM software is now populated with many players, its commercialization was greatly boosted in 1993 when Tom Siebel founded Siebel Systems Inc. (now part of Oracle). The use of the term CRM can be traced back to that period. Gartner Inc., the information technology research, and advisory firm estimated that annual spending on CRM technology was $ 14 billion in 2013 and predicted that it would top $ 18.4 billion in 2016. (Buttle,2015)

According to Fortune Business Insights, the global CRM Market size is projected to reach USD 145.79 billion in 2029. (Fortune, 2022)

Others, with a managerial rather than technological emphasis, claim that CRM is a disciplined approach to developing and maintaining profitable customer relationships, and that technology may or may not have a role. That said, it is hard to conceive of a large organization dealing with millions of customers across multiple channels that can implement a customer strategy cost-effectively without the use of Information Systems technology and carefully designed business processes. (Buttle,2015)
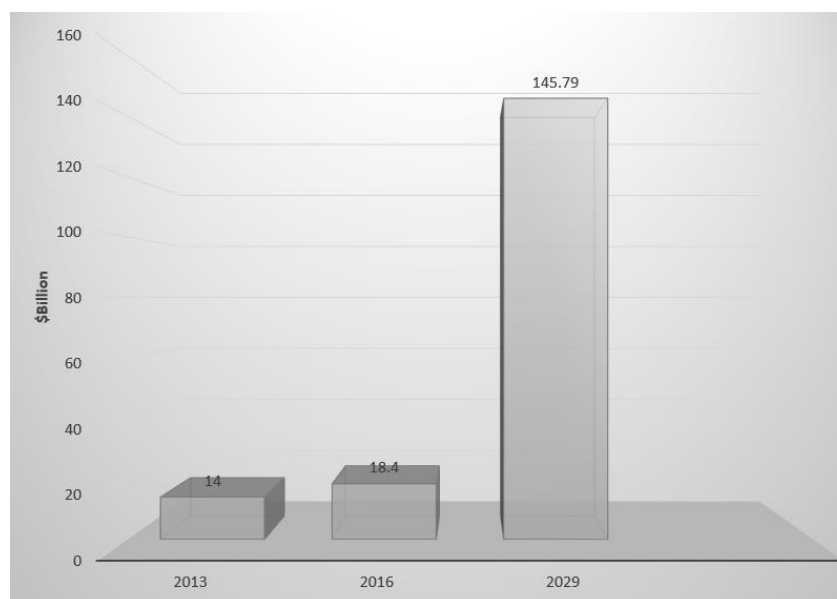
Figure 3:Figure 3: The global CRM Market size, According to Fortune Business Insights based on $Billion.

2.7. CRM in Architecture Practice

CRM is fundamental to any successful company. It is the process of cultivating customer relationships in order to foster loyalty and repeat business. CRM is essential in architectural practice for building relationships with clients, understanding their needs, and ensuring the architect's ability to deliver a successful project.

Often CRM in an architectural office would involve manually tracking customer interactions and relationships. This could include keeping detailed notes on customer interactions and sending out regular emails or phone calls to maintain customer relationships. It would also involve manually tracking customer feedback or requests, and manually creating customer profiles to keep track of customer preferences and contact information. This can be broken down into the following major steps:

- Establishing the relationship: The first step in the customer relationship in an architecture project is establishing a good rapport between the architect and the client. This should involve active listening, clear communication, and an understanding of the client's goals and needs.

- Developing a plan: The architect should then develop a plan that meets the client's needs and goals. This should include a timeline, budget, and any other relevant information.

- Designing the project: Once the plan is agreed upon, the architect can begin designing the project. This may include sketching out the project, developing a 3D model, and producing drawings or renderings of the proposed design.

Architectural practice has always been a challenging profession. Architects are expected to keep track of their client's needs, stay up to date on the latest industry trends, and stay organized to ensure that projects run smoothly.

2.8. A brief history of CRM in Architecture Practice

CRM in architecture projects of the past was much different than it is today. In the past, it was largely based on the relationship between the customer and the architect. The customer would often come to the architect with a vision of the project and the architect would interpret the vision and create a design that would meet the customer's needs. The customer would then have the opportunity to review the design and make any changes that they wanted. The customer and the architect would then have frequent meetings throughout the project to ensure that the vision was being met. Customer relationship management in architecture projects of the past relied heavily on face-to-face communication. This was necessary to ensure that all parties understood the project and had a chance to voice their opinions. The customer and the architect would often have long meetings to discuss the project and to ensure that the vision was being met. During these meetings, the customer would be able to provide feedback and ask questions. The architect would then incorporate any changes that the customer wanted as well as provide education on different aspects of the project. Customer relationship management in architecture projects of the past also involved a lot of documentation. This was necessary to ensure that everything was documented correctly.

CRM in architecture projects of the late 19th century was a very different process than it is today. At the time, a large part of the relationship between the architect and their client was based on a more personal connection. This was due to the fact that there were fewer architects, and the client was often expected to be familiar with the architect's work. Communication was done mostly through face-to-face meetings and the client was expected to have a good understanding of the architect's design process. The architect was responsible for managing the client's expectations and providing them with reassurance throughout the project. In order to do this, the architect had to have a good understanding of their client's tastes and preferences. They would often spend time discussing the project with the client, exploring ideas, and understanding their vision. Once an agreement was reached, the architect would create a plan outlining the project's scope, timeline, and budget. The architect was responsible for managing the entire process from start to finish,

including working with subcontractors and ensuring that the project was completed on time and within budget. In order to do this, the architect had to be organized and had a good understanding of the differences.

Sometimes, customer relationships in architecture projects were generally hierarchical. The architect was seen as the leader and the customer was expected to follow their guidance. The architect was responsible for providing advice, guidance, and direction, while the customer provided feedback, input, and financial support. This type of relationship was often characterized by a lack of collaboration and communication, as the architect was typically seen as the expert and the customer as the layperson.

In the early 2000s, the customer-architect relationship began to shift, with the customer becoming more involved in the design process. Customers began to take a more active role in the planning and design of the project, and the architect was expected to provide input and feedback on the customer's vision. This shift in the customer-architect relationship was driven in part by the increasing complexity of projects, as well as by the emergence of new technologies and materials. The customer-architect relationship has continued to evolve over the past two decades. Today, the relationship is much more collaborative, and the customer and the architect are seen as equal partners in the design process.

2.9. CRM Software for Construction and Architects

CRM software represents a new way for the construction industry to manage getting work and tracking customers. The benefits of standardizing an organization's sales process and gaining insight into all aspects of the bidding process can provide a real and immediate return on investment. Companies looking to increase their success in bidding and winning more work should seriously review CRM software as a strategic element of a company's overall Information Technology Strategy. There are some examples of this software in the market such as Really Simple Systems, Maximizer CRM, Capsule CRM (Smallbizcrm). Most of this software is designed for construction management and customer communication in this field, and still less attention has been paid to design process management in architecture offices.

2.10. Innovation in practice

In order to innovate in CRM in Architectural practice, we should know that innovation in practice is the application of creative thinking and new ideas to existing products, processes, or services in order to create something novel, improved, or more efficient. It can involve generating creative ideas, testing prototypes, developing new products or services, improving existing processes, or introducing new technology. It can also involve finding new ways of doing things, or new ways of utilizing existing resources.

Innovation is an essential act of progress, and it calls for intentional change - moving from existing situations to preferred ones. The disciplined practice of Human - Centered Design involves planning and there are methods for practicing Human - Centered Design - the discipline of developing solutions in the service of people by way of three key design skills: Looking, Understanding, and Making, to work with others to bring new and lasting value to the world:

- Looking:

Innovation begins and ends with people. It calls for keen and caring observation. The disciplined practice of Human - Centered Design involves careful investigation. It requires curiosity, objectivity, and empathy. You need to engage all of your senses (looking, listening, and so forth) in pursuit of meaningful findings.

- Understanding:

Innovation is not a lightbulb moment of genius. It calls for deep understanding and rigorous discernment. The disciplined practice of Human - Centered Design involves thoughtful analysis. It requires critical thinking and problem-framing. You need to identify patterns, determine priorities, and translate your research into actionable insights.

- Making:

Innovation puts great ideas into action. It calls for making things happen in a resourceful and resonant manner. The disciplined practice of Human-Centered Design involves imaginative, visual expression. It requires a commitment to successive improvement through frequent iteration. You need to think with your hands to bring new ideas to life. (LUMA, 2012)

2.11. Innovation management

Innovation is an essential means by which organizations survive and thrive. As a result, innovation must be managed, but before it can be managed it needs to be understood and addresses the wide range of management processes and structures supporting innovation, which is concerned with understanding the nature and dynamics of innovation and the contextual influences affecting innovation choices: historical, social, economic, cultural, legal, and technological. These shape the strategies and practices decision-makers use to improve organizational benefits from innovation. Its income passes the choices managers make regarding what innovations to pursue, and how they develop, introduce, and gain value from their endeavors.

Innovation management is an important area of study because the differing abilities of organizations to obtain benefits from innovation depend upon how well it is managed Innovation contributes centrally to economic performance, corporate competitiveness, environmental sustainability, levels, and nature of employment, and, in the final analysis, overall quality of life. There are widespread social and economic benefits from innovation, but the organizational returns from it are skewed towards those better at managing its risks and complexities. The immense contributions innovation has made to economic welfare and social well-being have depended on innovation managers successfully overcoming its many challenges. (Dodgson, 2014)

3. Data Collection and Primary Research

After gathering qualitative information and conducting primary research, four architectural companies were interviewed about their CRM system, and a case study of a software firm was conducted to investigate how Innovation in CRM systems could be beneficial and implemented for architectural practices.

3.1. Interviews

These interviews are with representatives from Architectural offices. The representatives explain how the CRM in Architectural practice works, focusing on the challenging aspects. Additionally, they discuss the impact that technological developments have had on customer relations in the past decade, as well as the potential sector and impact of digitalization on customer relations. Finally, they discuss the potential of digitalization to save time and money. This interview provides insight into how CRM works in architectural practices, and how digitalization can help to optimize customer relations.

3.1.1. MFN GROUP

This is how the MFN Group website introduces this company: "MFN Group is a German company that was founded in 2018 and specializes in future-oriented, climate-friendly and resource-saving real estate development. They focus on digital planning and building to create affordable, individual, and high-quality architecture. MFN Group has earned a reputation for being a reliable and fair partner and has adopted these values into their company's philosophy. They strive to reduce CO_2 emissions in all aspects of their project planning and have been awarded the ISO14001 certificate by TÜV."

Basel Hamad was interviewed for this part. He is an M.Sc. Arch. Planner & CPO of MFN Group, whose team specializes in company management for the design of private houses and restaurants, interiors, as well as the renovation of buildings, across Berlin and Brandenburg. After introducing himself and the

company, he went over the processes of their work, as well as how to interact with their customers. These items included: after acquiring the project and negotiating a contract with the customer, the design process is initiated. A presentation is created to explain the concept to the customer in a language they could understand, which may include physical models, 3D models, visualizations, and animation. The concept design is then sent via email or presented to the customer for approval, which often needs to be edited several times. The architecture documents are produced and then sent to the building official for permission to build in a print format. This process can take 3-6 months or longer and sometimes needs to be edited several times. The interior design process is then started and documents such as renders or visualizations are sent via email or presented in a face-to-face meeting. This may involve multiple editing and revisions before the design is finalized. He hopes to digitize everything, but for the time being, they are focusing on building a server that connects all of the people and teams so that they can share documents. However, in their office, they want to start the same communication with customers and other offices, but they haven't found the best solution yet. He believes that digitalization is critical not only in architecture but in all aspects of life. To save time, they should have a platform to connect customers with offices, as well as the building office, all the design groups, together with the customers for the architecture part. Finally, he emphasized how digitalization can help them save time and thus money.

3.1.2. Van Geisten.marfels Architekten GbR

This is how Van Geisten.marfels website introduces this company: "Since 1996, our office has provided classic architectural services for 'object planning for buildings', including brainstorming, conception, building application, implementation planning, tendering of construction work and construction supervision. We have also acted as general planners since 2006, offering an extended range of services in collaboration with experienced specialist planners. We serve both private builders and public building authorities, with a focus on renovating and modernizing listed buildings and on constructing new buildings in listed settings. We also specialize in developing

concepts for the use and development of conversion areas, such as former barracks or industrial facilities."

Kim Philip, Architect and Office Manager of Van Geisten.Marfels, was interviewed for this part. He has been with the company for 11 and a half years now. He explained that the two partners, Van Geisten and Marfelson, started their company about 26 years ago and have been in business for over 25 years. Initially, they focused on heritage-protected buildings, but now they work on a variety of projects, such as refurbishment and reconstruction.

Generally, there is an internal project structure, and the team is made up of a few people, with one person acting as the project lead. This person is typically the main contact for the clients and is responsible for day-to-day communication. In the event of complaints or discrepancies, the bosses (Eric or Georg) will intervene at the next level of management.

He explained that there is no exact set of rules for communication. Generally, he will receive an email or a formal letter from the client, depending on the situation. He will then reply either via email, letter or by meeting them in person. The way they interact with customers is not predetermined; it depends on the special features of the project, the situation, and the size of the project or customer. In his opinion, most projects are manageable enough that no strict protocols need to be in place. He stated that there hasn't been much of a change over the last ten years, but the type of communication and the way people communicate has changed, especially through the whole pandemic. Video conferencing has become a more natural way to communicate in lieu of personal meetings, and digital formats are an additional way to communicate.

He continued that Digitalization and technology can lead to a shift in customer relations from a more personal approach to a more automated one. This can involve automated processes. While this can be beneficial in managing a business on a large scale, it can lead to less personal experience for customers. The positive impact of technology on customer relationships could be the ability to resolve any issues or misunderstandings quickly. Technology eliminates the potential for miscommunication and reduces the chances of a situation escalating before it is resolved, resulting in a much faster resolution of any issues that may arise.

In his opinion, digitalization can help to some extent in saving time and money; however, there are associated costs with setting up digital systems and the various

software applications and communication methods. In some cases, the complexity of digital systems can actually create inefficiencies, rather than saving time and money.

He explained that they typically have regular meetings with other consultants and the clients involved in the project to plan and discuss the different design phases. Nowadays, digital meetings are the best way to present these plans, as the client can see the changes almost immediately. They also make sure to document every decision made in a text document, so that if any changes are made, the client is aware that it will cost more; this helps them manage their time efficiently.

He does not prefer to utilize a program to enhance customer relationship management, because he thinks that, with so many applications, programs, and other systems available, it has become overwhelming and is actually making the situation worse. It is difficult to manage all the systems, such as AutoCAD, cost management software, Word, Excel, emails, video conferences, etc. As a result, adding another system to the mix will likely make the situation more complex. He is very skeptical about new apps and software because a lot of times, they try to do too much and can't execute all the features well. As a result, they often have to resort to other means. But he wanted to make sure I knew that their primary goal is to reduce the amount of software they use!

3.1.3. Platena+Jagusch.Architectin

This interview was conducted simultaneously with Jürgen Platena, the founder of Platena Architekten, and his wife, Andrea Platena, an architect in Hilmer Sattler Architekten. I met the couple in Jürgen's office and talked about their experiences with CRM in architecture.

This is how Platena Architekten website introduces this company: "Architecture should be natural, beautiful, and meaningful pleasing both the eye and the heart. This is the motto of Jürgen Platena and Christian Jagusch and their ten strong team members, who design and renovate a variety of buildings, from listed buildings to new residential, office, retail and administrative spaces. Architecture affects our lives and our environment, which is why it must be considered in terms of aesthetics, function and economic value, regardless of if it's a new build or a renovation."

Jürgen Platena-Dipl.-Ing., the architect, was interviewed for this part and introduced himself and the company. They are Platena Architekten, an architectural firm with eight to ten staff based in Sophienstraße, Berlin. They have been in business for two decades and are thrilled to be celebrating their twentieth anniversary next year. The company has not grown significantly in the last few years, but they have managed to maintain its current office structure. They have been able to successfully respond to their client's needs, as well as handle projects of a size familiar to them. They specialize in office buildings from the 1810s up to the 1980s, as well as in renovations for existing buildings, which is becoming increasingly important in terms of sustainability. They also provide interior design services for companies looking to move into an office space and make necessary renovations or rebuilds for office spaces, which is their main focus.

He explained about relationship management in big projects such as projects with budgets of ten to fifteen million euros is no easy feat. It is necessary to organize a large number of people, typically fifty to seventy, to work together to achieve the desired outcome. This includes the client, planners, and architects. The task of the architect is to oversee all aspects of the process. This process is referred to as HOAI, which is a good framework to follow. To ensure the project is properly managed, a project manager has been hired. This individual is independent of the client, architect, and planners and is responsible for keeping the system running. This includes keeping track of time schedules, cost estimates, and other documents. The project manager is instrumental in keeping the project on track; he will remind those involved of deadlines and ensure they have the information they need. This structure is beneficial to the architect, as it eliminates the need to deal with a private client. Having a private client can be time-consuming and costly, due to the need for coffee meetings and other discussions. Overall, a well-structured project of this size requires a project manager and a platform for communication and documentation. This structure is beneficial to the architects, as it creates a system that is efficient and cost-effective. It also eliminates the need for dealing with a private client and the time and costs associated with it.

When I explained that I was considering creating an app to address the problem of customers having access to a large amount of information that is difficult to manage, he emphasized that this app has the potential to greatly help with the project

management process. Sixteen years ago, customers had limited access to the internet and images, making it easier for us to manage; however, now, customers come to us with a lot of images.

He emphasized before starting the project, it is important to define the project and clarify the content that the client wants to get from the project. This includes the project aims, claims, and a list of other requirements. The app can help in managing the content and ensuring that the project is completed on time, within budget, and to the required quality. Without this clarification, the project may be subject to various changes and alterations along the way, leading to potentially costly and time-consuming problems.

He continued that the most challenging part of any construction project is the starting point. This initial phase, known as Phase Zero, involves finding out what the client would like in terms of design, budget, and materials. This information is necessary to create a design plan and submit the necessary paperwork to the relevant authorities before moving on to the next phase, according to the HOAI. The design phase should include all information regarding the project, including the client's wishes and cost estimation. It is important to clarify the budget from the beginning, as if this is not done, then the project could end up being more expensive than expected. It is like buying a car; if you only have a limited budget, you cannot go and buy a Ferrari. If any changes are made to the project during the construction phase, it can lead to additional costs and delays, which can cause stress for everyone involved. Thus, it is important to get the basic information about the project right from the start, to help ensure that the project runs smoothly and is completed within the budget. Proper communication and understanding between the client and the project team are essential for any successful project. The team needs to understand the client's wishes, and the client needs to understand why certain wishes cannot be fulfilled. It is important for the team to present their findings to the client in a transparent, clear, and concise manner, avoiding confrontation. At the same time, the client needs to be aware that the team can prepare decisions but cannot make them, ultimately leaving the decision-making power in the client's hands. Starting a project can be likened to starting a new business; it requires people who don't know each other to come together and design a product, a prototype with elements from previous projects mixed in a new way. This process

raises new questions that need to be answered. It is important that everyone involved in the project is aware of the project's definition so that there is no confusion when it comes to execution. Misunderstandings can have serious consequences, sympathy, clear communication, and understanding are key elements in any successful project. He said that Covid-19 has had a major impact on digital communication, not only for clients but for all project partners, which has had both advantages and disadvantages. For example, it has allowed for quick meetings and easy access to documents, but it has also made it difficult to have dinner with clients, which is key for discussing relationships and customer management. This face-to-face interaction is especially important for customer relationships, yet the pandemic has reduced these opportunities. Even so, digital communication should not be used as an excuse to avoid building relationships, but rather as a way to keep them alive. This company has been in business for over 30 years and has a small office with 10 people. Despite having a website, they have made the conscious decision not to be on Instagram, as there are a lot of sketches, perspectives, and colorful pictures that would be difficult to manage on the platform. Instead, they prefer to focus on building trustful relationships with their existing clients and getting referrals from them. They also have direct contact with many other clients but prefer not to use the wide range of the internet for advertising. They believe that showing new clients their previous projects is enough and that having a good relationship with their customers is the most successful path to take. They also use an old approach to their office, preferring to keep things traditional.

3.1.4. Hilmer Sattler Architekten

This is how the Hilmer Sattler Architekten website introduces this company: "Hilmer & Sattler's office was founded in Munich in 1974 and has since then grown to include a Berlin branch in 1988, Thomas Albrecht as a partner since 1993, and Rita Ahlers as a partner since 2009. In 2015, the office changed its name to Hilmer Sattler Architekten Ahlers Albrecht due to a change in management, and Peter Solhdju joined as a partner in 2017. They specialize in high-quality residential and office building construction, museum and hotel construction and urban development

projects. Their range of services includes new construction projects, replanning, and repairs, and they provide a complete range of services from phases 1-9."

Andrea Platena-Dipl.-Ing., the architect, was interviewed for this part and introduced herself and her company. The business was founded in the 70s in Munich. When the Berlin Wall fell, their two founding partners relocated to a small office in Berlin. They now undertake larger public works, including museums, and also focus primarily on housing projects for private developers. In Munich, they have a team of fifteen, and in Berlin, they have a team of twenty-five.

After confirming Jurgen's words, she added, Meetings and communication are essential for the success of any project. For many years, architects have used sketches, presentations, and other materials to help them finalize designs and create suitable brochures. This allows them to share their ideas quickly and accurately with clients, who may not be as experienced in the field. However, this process can be difficult, as clients may not be able to interpret sketches or abstract 3D images. It is important for architects to ensure that clients understand the visual content they are sharing, or else the project will suffer. To do this, architects should include additional information in the form of voice messages, short calls, and written explanations in the brochure. Those who are more experienced in the field may be able to understand designs without further explanation; however, it is important to remember that some clients may not have the same level of expertise. This means that architects should be careful when sending out brochures and sketches, making sure to provide enough explanations for the client to understand. In conclusion, meetings and communication are essential tools for architects. They rely on sketches and presentations to effectively share their ideas with clients, but they must also be conscious of their client's level of expertise. This means that architects should ensure that they provide enough information for the client to understand the project, either through additional explanations or written content.

She explained that digitalization can be a great help in tedious processes. With the right software, much can be accomplished with only a few clicks. However, it is important to understand the technology behind the software and use it in the best way for the project. It can be tempting to use as many of the software's capabilities as possible. It can take time to get familiar with the technology and how to use it for the best results. This is why it is important to have someone dedicated to keeping

up with the latest technologies and trends. In some cases, digitalization can be very beneficial. It is important to remember that while digitalization can be helpful, it is still important to have a basic understanding of the project .

3.2. Case study

This case study focuses on a company that has developed a software kit that enables professionals to build their own digital tools. Using comments from the CEO (Sascha Landowski), digitization consultant(Mira Hertle), observations, and analysis of the company's practices and products, we explore its benefits to Innovation in CRM in Architectural practice.

3.2.1. Pengueen Company

Founder Sascha Landowski had the idea for Pengueen back in 2014. His idea was to close the gap between individual and mass software. He started creating innovative non-code software 8 years ago, while non-code has been a trend for 2 years. MFG Pengueen was founded in 2018. Since then, the platform for organizing, informing, and communicating has been growing. Proven digital design approaches in combination with new technological possibilities based on design thinking quickly led to a unique ecosystem. Customers from companies, NGOs, care, craft businesses, communities, and schools are now successfully developing their digital tools with Pengueen.

This is how they introduce Pengueen on the website:

- "Pengueen's Mission: We want to offer a platform for ethical digitization. We believe that digitization should be possible for everyone without fear, but with fun and participation.
- Pengueen's Approach: Digital aids are tools for professionals. They should be able to be designed, created, and maintained by the experts themselves. Our software kit makes it possible.

- Pengueen is Convinced: The correct use of software can relieve people when it comes to information, communication, and organization.
- A positive digitization balance is important to Pengueen: This means that the benefit of tools must be greater than the effort involved in maintaining and creating them."

This will provide a unique opportunity to explore how innovative technologies can be used to enhance customer relationships and improve customer service, as well as provide insights into how companies can use digital tools to optimize customer management. Furthermore, the case study will be able to provide an evidence-based analysis of how this software kit can be used in architectural offices, which have traditionally been resistant to technological innovation.

This will be an invaluable resource for research into the use of technology in architectural practice:
- To demonstrate how this software can be used to improve customer relationship management (CRM) in an architectural practice.
- To explore how the software can be used to streamline processes and increase efficiency in the practice.
- To identify how the software can be used to provide a better service to customers and build customer loyalty.
- To examine the potential for the software to be integrated into other areas of architectural practice.
- To investigate the challenges and opportunities associated with the implementation of software in architectural firms.
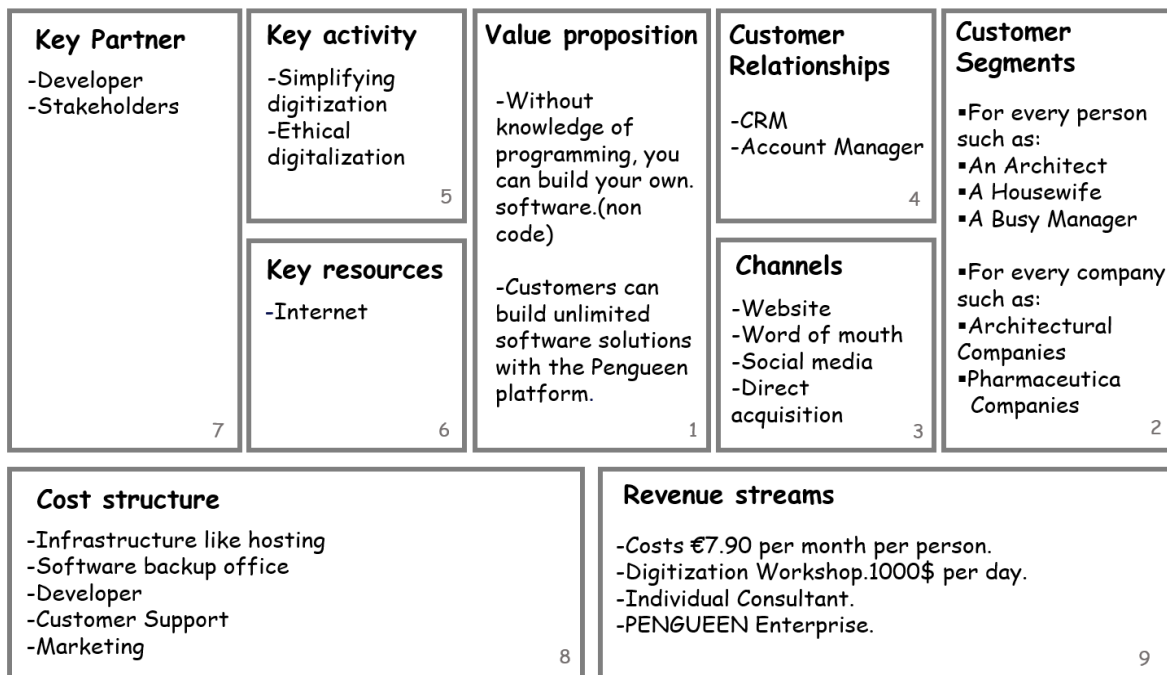
Pengueen Business Model Canvas

Key Partner	Key activity	Value proposition	Customer Relationships	Customer Segments
-Developer -Stakeholders	-Simplifying digitization -Ethical digitalization 5	-Without knowledge of programming, you can build your own. software.(non code) -Customers can build unlimited software solutions with the Pengueen platform. 1	-CRM -Account Manager 4	▪For every person such as: ▪An Architect ▪A Housewife ▪A Busy Manager ▪For every company such as: ▪Architectural Companies ▪Pharmaceutica Companies 2
	Key resources -Internet 6		**Channels** -Website -Word of mouth -Social media -Direct acquisition 3	
7				

Cost structure	Revenue streams
-Infrastructure like hosting -Software backup office -Developer -Customer Support -Marketing 8	-Costs €7.90 per month per person. -Digitization Workshop.1000$ per day. -Individual Consultant. -PENGUEEN Enterprise. 9

Figure 4:Pengueen Business Model Canvas

For this paper, a Business Model Canvas has been created as a way of introducing Pengueen company's Business Model and its product.

Pengueen is a company that provides a platform for non-programmers to build their own software without any knowledge of programming. It offers unlimited software solutions to its customers from a wide variety of sectors such as construction companies, pharmaceutical companies, housewives, busy managers and etc.

Therefore, this company has been able to eliminate the fear of complexity or limitations of other software mentioned in the architectural interviews. It creates the ability for each architecture office to make the program they need to communicate with the client and other stakeholders and to better advance the project.

Also, Pengueen takes an ethical approach to digitalization. Ethical digitization refers to ensuring that digital products and services are designed with the customer in mind, avoiding intrusive advertising, and taking serious measures to protect customer data from being sold or shared.

Finally, Pengueen's customer support team is always available to help with any questions or issues that may arise.
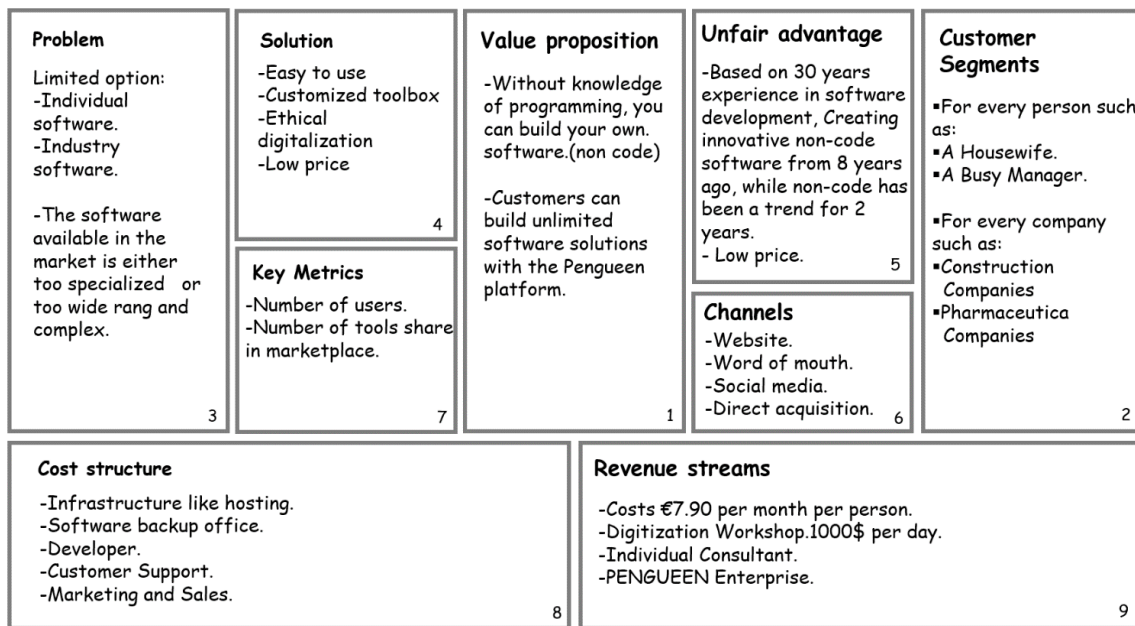
Pengueen Lean Canvas

Problem	Solution	Value proposition	Unfair advantage	Customer Segments
Limited option: -Individual software. -Industry software. -The software available in the market is either too specialized or too wide rang and complex. 3	-Easy to use -Customized toolbox -Ethical digitalization -Low price 4 **Key Metrics** -Number of users. -Number of tools share in marketplace. 7	-Without knowledge of programming, you can build your own. software.(non code) -Customers can build unlimited software solutions with the Pengueen platform. 1	-Based on 30 years experience in software development, Creating innovative non-code software from 8 years ago, while non-code has been a trend for 2 years. - Low price. 5 **Channels** -Website. -Word of mouth. -Social media. -Direct acquisition. 6	•For every person such as: •A Housewife. •A Busy Manager. •For every company such as: •Construction Companies •Pharmaceutica Companies 2

Cost structure	Revenue streams
-Infrastructure like hosting. -Software backup office. -Developer. -Customer Support. -Marketing and Sales. 8	-Costs €7.90 per month per person. -Digitization Workshop.1000$ per day. -Individual Consultant. -PENGUEEN Enterprise. 9

Figure 5:Pengueen Lean Canvas

Also, a Lean Canvas was created to deeply analyze Pengueen Company as a Startup.

So, you can see what problems exist in today's software and the market gap. In the market, there are a limited number of options. The first option is industry software. It is global in scope, making it difficult to customize for specific needs, and it often has many features that are not applicable and therefore unusable. The second option is individual software, which can be very expensive, designed only for a special purpose or function, and prone to quickly becoming out of date and lagging behind in technological advancements.

As was mentioned in the interviews, customers are looking for something that is straightforward to use, uncomplicated, and cost-effective. They don't want to invest a lot of money into something that has a steep learning curve.

Then we can see what solution Pengueen has come up with to solve these problems:

• Digital tools are accessible to everyone regardless of programming knowledge. They are easy to use, as anyone familiar with software can quickly implement

digitization ideas. Furthermore, the tools are easy to manage without the need for training; all that is required is the data.

- The cost savings associated with the tools are impressive. There is no subscription, no minimum term, no expensive updates, and no more risking money on expensive external programming.

- Customers can find the right package based on their needs at Pengueen:

    1. Private options for one person: it is free. The Pengueen Journey for this option is as simple as that:

       A. Register.

       B. Log in.

       C. Set up a profile.

       D. Enter the Marketplace.

       E. Create resource templates.

       F. Apply the tools.

    Now Pengueen supports you in individual organizing complex daily tasks digitally.

    2. The organization option: it is €7.90 per month per person. The Pengueen Journey for this option is as simple as that:

       A. Register.

       B. Log in.

       C. Set up a profile.

       D. Enter the Marketplace.

       E. Create resource templates.

       F. Apply the tools.

       G. Create the first community.

    Now Pengueen supports you, your company, or your office in relationship management and organizing your complex daily task digitally such as: Running your business, Home and family management, Holding an Event or Ceremony, and Even Hobbies.

3. Enterprise options: are available upon request. The followings are two successful examples of Enterprise options in Pengueen:

3.1. Society for Family and Health (GFG) :

 The GFG, which is headquartered in Angermünde, is a Society for Family and Health that offers a wide array of services to those in Brandenburg, such as inpatient and outpatient youth welfare, family support, and integration assistance for the disabled. They also provide care for sick children. Anja Pfeifer is the managing director of the GFG and is also a lecturer at the PEQ Academy for Nursing. Her almost 70 staff members are always ready to intervene when urgent action is needed, such as in crisis situations involving young people and children. The PEQ Academy has been utilizing Pengueen for training and coaching purposes in further education for a while now.

Anja Pfeifer, Managing Director GfG says about Pengueen: "Since we have already developed basic functions for many needs, we can very quickly customize our tools for each customer."

For example, the TOP 10 tools of the GfG are:

- Covid19 test appointment organization
- Inventory lists
- log functions
- Digital accident book with integrated photo function
- Event tool with invitation management and task distribution
- Digital patient file with information about insurers, payers, documents
- Phone list
- Postal list
- Room occupancy
- Appointment calendar Occupancy of a company car

3.2.Construction site documentation:

The digital construction site documentation was quickly created using the Pengueen construction kit. It consists of two parts: an ordering section and an execution section. In the ordering area, the roofing company can store, for example, sketches of dimensions, risk assessments, analysis protocols, or proof of disposal. In the execution area, each workday can be documented with text and photos, all with just a few clicks from a smartphone. Customers also get access, where they can view the construction progress in their area at any time. Who wouldn't want to sit on the sofa in the evening and check how the construction site for their new house is progressing?

Pengueen makes these steps easier:

• Easy collaboration between the office, construction site, and customer is simplified.

• Save and Exchange Legally secure documentation of the construction progress.

• No more phoning, sending e-mails, and adding photos to documentation.

• Very simple exchange of Construction site information images and files in real-time, without paper.

• Chat function.

• Informing customers about construction progress.

• Signing craftspeople and every person who is involved in the project to the construction site documentation with digital signatures.

Pengueen provides a demo version for customers of the construction site, in case they want to check it out:

https://www.pengueen.de/wp-content/uploads/2022/09/Screencast-Baustellendokumentation-mit-Pengueen.mp4

4. Analysis and Data Interpretation

After the literature review and primary research, to sum up and to gain insight into CRM in Architectural practice, here are highlights of four interviews conducted with professionals working in architectural offices, and a case study of a software company specializing in CRM solutions.

(If it is necessary to read the transcripts of the interviews, refer to the appendix section.)

Highlights from the MFN Group interview:

- The design process includes:
  - getting the project and making the contract with the customer.
  - Determining project basics with customer desire and requirement.
  - starting to design the project.
  - preparing a presentation to explain the concept to the customer such as physical model, 3D model visualization and sometimes animation.
  - Sending concept design through email or presenting in a face-to-face meeting.
  - Editing (several times).
  - Obtaining customer approval.
  - Starting to produce architectural documents.
  - preparing architecture documents to give to the building office to become permission to build in print format ,in the traditional way.
  - Editing (several times).
  - Obtaining building office approval.
  - starting to make the interior design.
  - Sending documents design(renders or this visualization)through email or presenting in face-to-face meeting.
  - Editing(5-10 times).
  - Finalizing.
- Recently, they are focusing on building a server to connect people and teams to share documents.

- There is only a traditional way to submit documents as hard copies to the building office in Germany, and sometimes this copy has been edited several times for 3-6 months or more; it takes lots of time and money, as well as consumes lots of paper.
- They are looking for a platform or modern relationship to connect customers, offices, and the building office, to save time and money.

Highlights from Van Geisten.marfels interview:

- The internal project structure and day-to-day communication are handled with one person acting as the project manager.
- Communications with customers are now, with emails or formal letters depending on the situation.
- Interaction and communication depend on the situation, and size of the project or customer.
- Digitalization has changed the way people communicate, with video conferencing becoming a more natural way, especially during the pandemic.
- Technology can lead to a shift in customer relations from a more personal approach to a more automated one.
- Technology eliminates the potential for miscommunication and reduces the chances of a situation escalating.
- Regular meetings are done digitally to present plans and document decisions.
- Utilizing a program to enhance customer relationship management is not preferred due to the complexity of managing multiple systems.
- New apps and software are looked at cautiously before making any decisions.
- Digitalization can lead to less personal experience for customers but can also lead to faster resolution of any issues that may arise.
- Digitalization can save time and money, but there are associated costs.
- Regular meetings with clients involve digital presentations and documentation of decisions.
- He is not in favor of utilizing a program to enhance customer relationship management.
- One of the primary goals is to reduce the amount of software they use.

Highlights from Platena+jagusch.architekten and Hilmer Sattler Architekten interview:

- Projects with budgets of 10 to 15 million Euros require organizing a large number of people, typically 50 to 70, to work together.
- It is important that everyone involved in the project is aware of the project's definition so that there is no confusion when it comes to execution.
- The project manager is responsible for keeping track of time schedules, cost estimates, and other documents.
- The initial phase of the project (Phase Zero) is the most challenging and involves finding out the client's wishes and requirements.
- The design phase should include the client's wishes and cost estimation. It is important to clarify the budget from the beginning.
- Changes to the project during the construction phase can lead to additional costs and delays.
- Getting basic information right from the start helps to ensure the project runs smoothly and is completed within the budget.
- Clear communication and understanding between the client and the project team are essential for any successful project.
- Covid-19 has had a major impact on digital communication and customer relations.
- Digitalization can be helpful, but it is still important to have a basic understanding of the project.
- Digitalization can be a great help in tedious processes, but it is important to understand the technology behind the software and use it in the best way for the project.
- Meetings and communication are essential tools for architects.
- Architects should be careful when sending out brochures and sketches, making sure to provide enough explanations for the client to understand. They should include additional information in the form of voice messages, short calls, and written explanations in the brochure.

Highlights from Pengueen company:

- Penguins provided digital tools that are accessible to architectural offices, needing no programming knowledge and easy to use without any complications.
- Architectural offices can choose the package that best suits their requirements, with no limitations and high costs such as individual software and no extent and complexity of industrial software. This company has been able to eliminate the fear of complexity or limitations of other software mentioned in the architectural interviews. It creates the ability for each architecture office to make the program they need to communicate with the client and other stakeholders and to better advance the project.
- Pengueen Company provides a cost-effective solution to architecture offices looking to enter into innovation in CRM. There is no subscription, no minimum term, and no expensive upfront costs. Instead, all the tools necessary for successful innovation in CRM are provided on a pay-as-you-go basis, meaning that architecture offices only pay for what they need, when they need it. This allows them to save money on their innovation in CRM projects, allowing them to focus more resources on other areas of their business.
- Pengueen's customer support team is always available to help with any questions or issues that arise, meaning that architecture offices can rest assured that their projects will be successful.
- Architectural offices can find all the programs and several tools needed for customer management in one piece of software with full integration, for Project Management, Communication in their team, file Storage, file Exchange, etc.
- Pengueen takes an ethical approach to digitalization. It refers to ensuring that digital products and services are designed with the customer in mind, avoiding intrusive advertising, and taking serious measures to protect customer data from being sold or shared.

4.1. Challenges and Potentials

With the insight that we gained from the literature section, exploring the highlights of interviews and case study, in this part, we will analyze the challenges, the positive and negative views, and the impact of office size on innovation in CRM in architectural practices. Then, we will delve into the efficient system for CRM in architecture practice. Through this analysis, we hope to gain a better understanding of the potential and challenges of innovation in CRM in architecture practices.

All following items have been organized into categories and bullet points to provide a comprehensive and integrated view of the topic:

The most significant Challenges in CRM in Architecture practice are:

- Phase Zero: This phase is critical for developing a successful relationship with the customer and making sure that the project meets their goals. During this phase, architects must identify the client's needs, preferences, and expectations. Additionally, the architect must consider the practicality of the project in terms of time, cost, and materials. The architect must also assess the availability of the resources needed to complete the project. So, there is always a risk that documents, and information will not be received on time or correctly.

- Stakeholder Relationships: Stakeholders are the individuals and organizations that have a vested interest in the project and its outcome. These stakeholders have different goals and expectations, and they may not always agree on the best course of action. This can lead to disagreements, misunderstandings, and delays in the project. To ensure successful stakeholder relationships, it is important to establish trust and open communication between all parties involved. Additionally, it is important to ensure that stakeholders are provided or received with accurate and timely information regarding the project and its progress. Finally, it is critical to develop strategies for resolving conflicts and disputes in a timely and efficient manner.

- Timeliness: Projects require the timely exchange of documents and edits in order to obtain customer and Office Building approval. As projects become more complex, the number of stakeholders involved in the process increases, resulting

in a longer timeline for document exchange and approval. Furthermore, architects must ensure that the quality of the documents is maintained throughout the process in order to satisfy customer expectations and meet the necessary legal requirements. This is particularly true when documents need to be revised or updated in response to changes.

The most significant challenges to Innovation in CRM in Architecture practice are:

- Limited Access to Resources and Data: Many architecture firms are still relying on legacy systems and processes, which makes it difficult to access and share data in real time. This limits the ability to develop insights for innovation and act on them quickly. Additionally, architecture firms tend to have limited resources, such as budget and personnel, to invest in new technologies or solutions. This can make it difficult to introduce new solutions and technologies to the firm, which can hinder innovation in the long run.

- Lack of Technology Expertise: Many architecture offices lack the necessary technical expertise to implement innovative solutions. This can prevent them from taking advantage of new technologies and trends, such as big data and artificial intelligence, that could help them improve customer relationships.

- Limited Budgets: Architecture firms often have limited budgets, which can make it difficult to invest in new technologies and solutions to help them improve customer relationships.

- Resistance to Change: Many architecture firms have been in business for decades and have relied on their existing processes and methods to achieve success. As a result, many architecture firms are resistant to change, as shifting away from what has been successful for them in the past can be seen as a risk. Additionally, introducing new technologies and processes can require a significant investment of time and money, which many firms are not willing to make. Finally, many architecture firms may lack the staff and resources to adequately implement new solutions, which can further complicate the process of introducing change.

Negative views on Innovation in CRM in Architecture practice are:

- Increased complexity: This may be due to the complexity of the software, or the need to train staff to use the software, both of which require additional time and effort.

- Adaptability: Adapting the CRM system to a variety of devices and platforms can be a challenging process as staff must learn how to use the new technology and integrate it into their existing workflow.

- Difficulty in standardization: With the introduction of new technology, there is difficulty in standardizing processes and procedures. This can lead to confusion and frustration among employees.

- Cost: Investing in CRM systems can be expensive, and the cost of implementation can quickly outweigh the potential benefits.

- Disruption of current processes: Implementing new CRM systems can be disruptive to current processes and procedures that may be functioning well.

- Technology: Sometimes it is so complicated to Integrate the latest technological innovations into the CRM system.

- Data Security: One of the potential drawbacks of incorporating innovation into CRM in architecture practice is the risk of data security. It is essential that the data is kept secure to ensure that customers' privacy is not violated, and their information is not misused.

Positive views on Innovation in CRM in Architecture practice are:

- Some architectural offices are looking for a platform or modern relationship to connect customers, offices, and the building office, to save time and money.

- Technology eliminates the potential for miscommunication and reduces the chances of a situation escalating.

- Digitalization can lead to less personal experience for customers but can also lead to faster resolution of any issues that may arise.

- Digitalization can be helpful, but it is still important to have a basic understanding of the project.

- Digitalization can save time and money if understood correctly.

Impact of the size of an office on innovation in CRM in Architectural Practice:

- Small Office: In a small office, the number of employees and resources are often limited, so it can be difficult to be innovative when it comes to CRM in architectural practice. With fewer people, it can be difficult to brainstorm and collaborate, as well as to access new technology. Furthermore, a small office may not have the resources or budget to invest in new technology or research. This can lead to a lack of creativity and innovation due to the lack of resources available.

- Large Office: On the other hand, a large office can provide more resources to be innovative when it comes to CRM in architectural practice. With more people, there is more opportunity for collaboration, brainstorming, and learning new technologies. Furthermore, a large office often has the resources and budget to invest in new technology or research that can help to develop innovative solutions. Finally, a large office may have access to more data, which can help inform decisions and lead to more creative solutions.

According to all reviews, the most efficient system for CRM in architecture practice is when an architectural office team designs it for implementation because they know better than anyone else that innovation in CRM in architecture practice should be designed to meet the specific needs of the practice based on the size of office and project. such as managing customer relationships, tracking project design progress, generating reports that provide valuable insights into the practice, and effective communication without time and place limitations by connecting the system to the smartphone. Additionally, the system should be integrated with other existing software systems, such as project management and accounting software, and another department, such as structural, electrical, and mechanical groups, to streamline processes and maximize efficiency. Figure 7, which is prepared based on data collection, primary research, and architectural practice phases according to HOAI, shows the critical parts of the customer relationships, especially in the part of transferring information and documents until getting final approval. Therefore, an effective CRM system can significantly have an impact on the timely progress of the project, as well as save time and money in these critical areas.

4.2.   Sustainability in Innovation in CRM in Architectural practice

Architecture is part of our everyday life and society, so the process and how to produce to complete the best project is very important. And it will be even more important when we realize that the Innovation in CRM in Architectural practice brings sustainability:

- Sustainable Society :By cultivating a culture of peace and order in the workplace, satisfying customers, and satisfying the residents and consumers of architectural buildings.

- Sustainable Economy :By saving time and money, preventing rework in architectural practice, and ensuring high accuracy of information and documentation, preventing rework during implementation.

- Sustainable Environment: Protecting nature with less paper consumption and saving energy by eliminating unnecessary transportation and traffic.(Figure6)
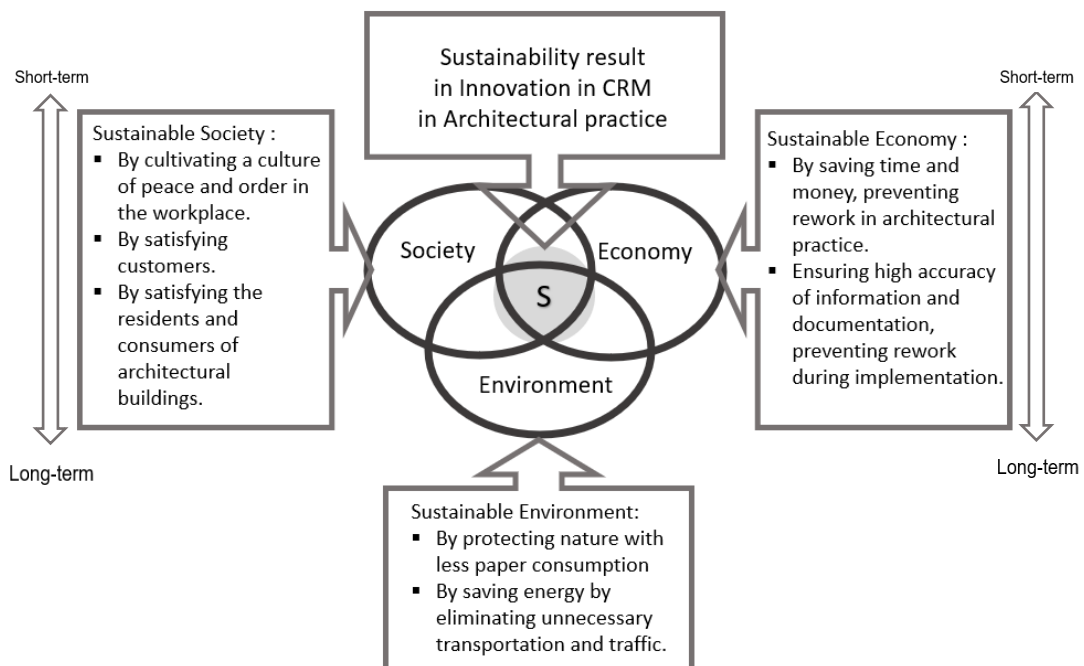

Figure 6:Sustainability in Innovation in CRM in Architectural practice

"Innovation is only innovation when it's sustainable."

Donald Clark

5. Conclusion

CRM, as an essential part of any successful company, has undergone considerable change over the last decade. Having analyzed all the data gathered in this study, I now have a good insight into CRM in architectural practice, both in the past and present. Also, based on Part 2.10 of this paper, "Innovation in Practice," with a deep look and understanding of CRM in architectural practice, I realized that harnessing the power of innovation can bring numerous benefits to CRM in architectural practices.

Despite the initial hesitation Architectural offices may have towards the adoption of new technologies, the short-term and long-term benefits of implementing this system will likely outweigh the challenges. For this reason, to minimize challenges and maximize efficiency, it is advisable to take the following steps when implementing an innovative CRM system for an architectural practice :

- Understanding the Needs of the Firm: The first step in analyzing a CRM system for architectural practice is to gain a thorough understanding of the firm's needs. Identify the types of projects the firm handles, the size of the firm, and other relevant factors.

- Evaluating the Existing System: If the firm already has a CRM system in place, it is important to evaluate how it is being used and how well it is meeting the firm's needs. This includes understanding the current processes, data storage, and reporting capabilities.

- Implementing the System: This includes setting up the system, training staff, and ensuring that all data is properly migrated.

- Monitoring and Evaluating: Once the Innovation in CRM is up and running, it is important to monitor and evaluate in order to determine if the system is meeting its goals and objectives. This helps to identify areas for improvement, ensuring that the system remains efficient, effective, and up to date. Also, this is valuable to ensure that the Innovation in CRM is a worthwhile investment and that the benefits of implementation are being fully realized.

Then there are suggestions, that how Innovation can improve CRM in architectural practice:

- Creating a simple, integrated digital system where all information, documents, images, and videos are stored with date registration, which can be accessed anytime and anywhere, even by new people entering a project.
- The possibility of daily or even emergency communications and coordination in this system without the time and place restriction, whether in written, audio, or video form, instead of coordination and time-consuming planning for traditional meetings.
- Creating a system that is easy to adapt to and simple to use, to eliminate the fear of disruption to the current system, with no need for specialist staff or additional costs.
- Smartphones are becoming increasingly important for accessing documents and maintaining easy relationships at any time and place. Thus, architects, clients, and other stakeholders can access project information and update customers while on the go.

Finally, it is essential for architectural offices to be aware of the presence of innovative software and technologies. Such solutions are simple and affordable yet powerful, providing efficient customer management with minimal complications. While the fear of system disruption and other challenges may cause hesitation, the ultimate cost of not embracing these technologies is much higher.

In this article, despite the limitations of time and resources, many questions were answered. This can be a good foundation upon which to further evolve and develop CRM in the future and to begin designing specialized software for Innovation in CRM in architectural practice.

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7. Appendix

7.1. MFN Group Interview Transcript

Behnoosh: Firstly, thank you for your time. Do you consent to this interview being recorded?

Basel Hamad: Yes, of course.

Behnoosh: I am interested in learning more about how innovation and Customer Relationship Management (CRM) are being used in the field of architecture. I'm interested in understanding how the use of CRM has affected the practice of architecture, both positively and negatively. Additionally, I would like to learn more about how innovation is being used to enhance customer relationships and overall efficiency in architectural practices. The purpose of this interview is to gain a better understanding of how CRM and innovation are being used within architecture offices and how they are impacting the profession. So, please introduce yourself and tell me what field your office provides services in.

Basel Hamad: Sure. My name is Basel Hamad and I'm from Syria. I've been in Germany for about seven years. I completed my bachelor's degree in Architecture in Syria, and I also did my master's degree at TU Berlin. I worked for three years in a German office as a Planner & CPO of MFN Group. In 2019, I decided to open my own office, and I'm also a freelancer. We do architecture design for homes, and we also do renovations, planning, and interior design. We have done a lot of projects in Berlin, decorations for restaurants, and we are currently designing two villas in Brandenburg. We also participate in competitions. Now, I work with a group in my office, Hammad Architect, and we also have a development and construction company.

Behnoosh: For question two, how does your company's CRM work, especially in architectural practice? Which part is the most challenging?

Basel Hamad: So, after we get the project and make the contract with the customer, we start to design it and make a presentation to explain the concept. Sometimes, we make a physical model and then a 3D model visualization, and sometimes an animation just to explain to the customer the idea of the concept, because not all customers understand the architectural language - I mean, the drawings - so we make the presentation, and maybe have it face-to-face in the office, or we send the presentation by mail. After that, we start to produce the architectural documents and prepare to give them to the building official for permission to build it. Here in Germany, we use the traditional way; we print and upload everything and send it by post to the building office. After three or six months, we get permission to build, or sometimes we need more than six months because we need to edit or update something and print it again, upload it again, and send it to the building office. In Germany, we don't have a digital platform for the building office to just send or upload - for example, just uploading a DWG file.

Behnoosh: OK, this part is not about the CRM; it's about the rules and final approval.

Basel Hamad: Yeah, after this part, we start to make the interior design. We don't need to approve all the designs or documents to the building office; we just need to have a meeting with the customer and do a visualization.

Behnoosh: And how long does it normally take, or do you have any interior design challenges?

Basel Hamad: Yeah, it actually takes a lot of time. We should make renders or visualizations five or ten times, make variations, come up with some ideas, send them to the customer, and get some feedback. We then have to update the model again and make render visualizations again, and that takes time.

Behnoosh: Another cycle in your relationship with your customer.

Basel Hamad: Yes.

Behnoosh: OK. The world has shifted from the physical to the digital, and these changes have been reflected in the workplace. What changes have the technological developments of this last decade brought to you in CRM?

Basel Hamad: So, yeah, we hope to make everything digital, but right now we are starting just in our office and making a server to connect all the people, all the team, together. We can transfer documents between each other, but in our office, we are

starting this. We are trying to make it work with the customers and with other offices together, but we haven't yet found the best solution.

Behnoosh: OK, in your opinion, in which sector and how can digitalization or technology have an impact on your customer relationship?

Basel Hamad: So, I think everything should be digital, and time is very important to us. We spend a lot of time on this process with the customer, so we need effective communication. Communication with the customer is very important; it should be digital. We should have software, mobile software, or a platform, yes, just to make it easier for us because, as I said, we spend a lot of time on it.

Behnoosh: In your opinion, how much can digitalization help in saving time and money?

Basel Hamad: I think digitalization is very important, not just in architecture, but also in all aspects of life. We need digitalization for everything; it is important for us. For the architecture part, we should have a platform to connect customers with offices, as well as the building office, all of the design groups, and customers, to save time. When we save time, we save a lot of money.

Behnoosh: I appreciate you taking the time in your busy day to conduct this interview.

Basel Hamad: I just hope my explanation was useful for you.

Behnoosh: Definitely so. Although the interview was short, your explanations were useful and I got my answers, so I will stop recording.

7.2. Van geisten Marfel Interview Transcript

Behnoosh: Thank you for your time. Firstly, do you consent to this interview being recorded?

Kim Philip: Yes, I do.

Behnoosh: I previously sent an email expressing my thesis and enthusiasm for your work and wanting to have an interview with you despite your busy schedule. I'm eager to hear more about you and your company, so could you kindly provide a brief introduction?

Kim Philip: My name is Kim Philip; I have been with this company for 11 and a half years now. The company has existed for just over 25 years in total. Van Geisten and Marfelson are the two partners in the company, they founded it about 26 years ago. Basically, they started out mainly working in heritage-protected buildings, but now we're doing a mixture. We're still doing a lot in heritage-protected buildings, whether it's refurbishment or rebuilding, or reconstructing.

Behnoosh: renovating?

Kim Philip: Yeah, it's not just renovating it, it's completely transforming it for example, you might have an old factory building that is being converted into residential.

Behnoosh: I saw one of your nice projects. It was originally a Reithalle, or horse stable and it was converted to residential. By chance, I saw this project, and it was so amazing to me how the function of the building could be changed in a professional way such as with the great balconies and every part it was so attractive to me. So, actually, my final thesis is about CRM. As I sent you an email, I'm an architect with more than 10 years of experience, and because I'm studying Innovation Design Management here, I've chosen my topic: 'Innovation in Customer Relationship Management in Architecture'. Then, I want to know about how your company's CRM works, especially in architectural practice, and which part is the most challenging.

Kim Philip: Yeah, so there's usually an internal project structure, and you'd have your project team with two or three people. There's usually one person who's the project lead, and most of the communication with clients goes through them. There are different levels; on a day-to-day basis, the project lead is the project lead, but if there are complaints or discrepancies, the bosses (Eric or Georg) step in and manage it.

Behnoosh: Do you have special steps for communication with the customer?

Kim Philip: Not specifically; I mean, everything is digital nowadays, obviously, so there's no set protocols or anything. It's usually we receive an email, or it might be a formal letter or something that comes from the clients, and depending on the situation, it's either answering via email or another letter, or it comes down to meeting personally.

Behnoosh: But not any specific way or specific style?

Kim Philip: No, it depends on the project, depends on the circumstance.

Behnoosh: Scale of the project or the scale of the customer?

Kim Philip: Yeah, most of the projects are manageable enough that we don't need to have quite rigorous structures in place; most things are sort of handled on a personal basis.

Behnoosh: The world has shifted from the physical to the digital, and these changes have been reflected in the workplace. What changes have the technological developments in this last decade brought to you in CRM?

Kim Philip: Yeah, mainly, I guess mainly in the last three years, there's obviously been the whole pandemic subtitled with digital communication, but before that, everything was, as I say, like many e-mail communications or whatever it is, so I don't think there has been much of a change in the last 10 years; it's just maybe the type of communication or the way that we communicate and being able to discuss things through video conference obviously, but this is sort of just a natural, just an additional way of being able to communicate. Yeah, as I said, not just sort of having personal meetings, but then the digital and the digital format.

Behnoosh: In your opinion, in which sector and how can digitalization or technology have an impact on customer relations?

Kim Philip: Maybe instead of the negative side, if things get to a certain scale and, as I say, as we project it and everything isn't held to a particular scale that it needs to have some sort of rigorous structure, but once you get over a certain scale and you need more defined structures in place, then it becomes less personal and that could influence, you know, so you might have, for example, actually we've got an IT company who manages our IT system here; that's an external person. Up to this point, it has been one person for me to just deal with him on a personal basis, we have to change now, and when it'll be in a more sort of like a ticket system: so it's just a sort of a slight barrier in the way that, through sort of digitalization and things becoming more automated, not necessarily, that's one of my personal feedback.

Behnoosh: Everything such as technology has some positive effects and some negative effects, what effects do you think technology has had on your customer relationships? Which one can you name as a keyword for the negative and which one as a positive for the customer relationship?

Kim Philip: Maybe the potential to clarify things more quickly is there, which could prevent impersonal or miscommunication. It would be positive if this potential could

be used to clarify things before, they escalate. Whatever needs to be clarified can be done much more quickly. The negative is the potential for miscommunication and impersonal communication.

Behnoosh: And, in your opinion, how much digitalization can help in saving time and money?

Kim Philip: It's tricky; there are obviously costs involved in different setups and we're actually finding there are slight inefficiencies that are coming because there are so many different options about how to structure a company digitally, the type of software we use, the type of communication methods we use, so there are benefits and things that you could actually save time and money, but there is a lot of outlay cost, and as I say, sometimes the communication channels are made more complex through digitization; we've got different systems for our e-mail and for our conferencing, and it's not always as efficient.

Behnoosh: I want to know about that because I experienced the same thing. How technology, especially social media such as Instagram and Pinterest, can confuse customers. Fifteen years ago, when I started this work, customers would come to us and say, 'I want to make a villa, apartment, or factory, and what can I do?' We would show them pictures and decide on the direction of how they could choose their style or anything else. But now, before the customers come to us, they have seen a lot of pictures on Instagram, social media, and Pinterest, and come to us with a lot of pictures. They say, 'I want a house in this style, I want an office in this style.' It is important to manage the customer with digitalization or technology. Maybe if I am working on an app, this app can control the customer at first, and have a nice effect on the end result. When the customers see that before the interview, they can bring this picture, and we can manage the style, and rethink what we can do for them. On the other hand, this app can have all the information, and the customer can see the process of the work at the end of the day. Because for me, one of my challenges is that customers are always in a hurry and don't have enough time. They don't understand that one page of the plan or design takes a lot of time. But in the end, when they see the process, maybe they'll relax, and maybe a sustainable workplace will happen for all of the architectural offices and customers. What do you think about this?

Kim Philip: Most of the time, we do have design phases and we usually have sort of maybe weekly or monthly meetings. That's sort of like planning meetings, and that's usually with the other consultants that are involved in the project. Nowadays, obviously, this is performed digitally. Nowadays, you can have the client there in the meeting as well, so they're sort of involved in the process and they can see the decisions minutes after the meeting. So, you can sort of have a checklist of what has been decided upon. Then, at the end of each stage, the design stage, we have documentation. So, it's not just the plans and drawings and everything; we have a list, we have a text document, where everything has been decided upon and is set. So, then the client, if they make changes later on, then obviously we can go back and say, "OK, we agreed on this, or this is what you agreed upon." Then, we're happy to change things, but that obviously costs more as well, so they're actually made aware that we've already signed off on this. If we make changes, that's going to cost them more, so that's also a way of managing our time. An interesting point with this is, it depends also on the type of project, the type of planning, the document, or whatever it is. We have quite made decisions about whether we send something to them per email with a list of sorts of description, or if we meet with them in the past, we will physically print out drawings, go to them with the drawings, and present the drawings. Or, if we have the meeting, we don't send them anything in advance. We have a meeting with a digital meeting and present it to them there. Most of the time, having that digital meeting is the best way, because you know you could write a ten-page description about everything that you want to explain, but the first thing they do is they're going to open up that document and they're going to flip through it. So, it's better if we guide them through it. I feel like nowadays, we're trying to reduce the number of systems we have in place. We've got so many apps, software, and everything else, and it's actually making everything worse in my opinion. You can imagine, you've got your CAD, you've got your cost management software, you've got your normal WORD, EXCEL, and everything else. You've got emails, you've got video conferences, you've got all these systems that are making it too complex. So, just to have another system makes it worse in my opinion.

Behnoosh: I'm currently developing my final thesis at the company I work for; this is a project that I'm passionate about, as it takes advantage of my experience and skills to create a tool that architecture offices require. It will allow for seamless

communication between colleagues and customers so that meetings and calls don't take up too much of our time, and nothing gets overlooked.

Kim Philip: As I say, I'm very skeptical about all new apps and things because I feel like, sometimes, they try to do everything but can't do some features well, and so we have to resort to other means. Then it's like, why do we need yet another piece of software that makes it more complicated? In the past couple of years, I've been more skeptical about these things. I can take a look at it, as I'm the office manager here and this sort of thing is obviously discussed internally with the bosses. Just putting it out there, I'm actually looking to reduce, first.

Behnoosh: I know it's almost the end of the year and you are very busy. Thank you for taking the time to help me improve my thesis.

Kim Philip : I also hope that my comments will be useful for you.

Behnoosh: Definitely so. Your explanations were very useful, so I will stop recording.

7.3. Platena Architekten and Hilmer Sattler Architekten Interview Transcript

This interview, simultaneously conducted with Jürgen Platena, the founder of Platena Architekten, and his wife Andera Platena, an architect in Hilmer Sattler Architekten. I met the couple in the office of Jürgen's company and talked about their experiences with CRM in Architecture.

Behnoosh: Thank you in advance for taking the time to answer these questions and help improve my thesis. Firstly, do you consent to this interview being recorded?

Jürgen Platena: Yes, I do.

Behnoosh: Customer Relationship Management is an essential element of modern architectural practice, and its implementation can provide firms with a competitive advantage and improved customer experience. In this interview, I'd like to hear your thoughts and experiences on the role of CRM in architectural practice. So please introduce yourself and tell me in what field your office provides services?

Jürgen Platena: We are Platen Architekten, a small architectural office. We have eight to ten employees in Berlin, and we're located in Sophienstraße. We have existed for 20 years, so next year we have our 20th anniversary and yeah, we are happy that we are still participating in this market.

Behnoosh: Congratulations!

Jürgen Platena: Thank you very much. So, we didn't grow in the last few years; I mean, the company grew rapidly in the last years, but we decided for ourselves to keep our office as we headed the last year because we tried to be of solid structure so that we can fulfill the requests of our clients as best as possible and to handle projects in the size which are familiar to us. We deal with office buildings mainly, though there have been some housing projects in the last few years. The office building is one of our main issues and also the renovation of existing buildings, which is getting more and more important in the news discussion about sustainability and saving energy. We renovated several buildings and several projects in the last years, from different existence years which started in the 1810s up to the 1980s.

Behnoosh: I know the renovation in Berlin; it's somehow mixed between art and technology, and it's so amazing for me to see the function of the work of the renovators, especially here because I saw some of them. Andera, do you want to explain about your company at the same time?

Andera Platena: Sure. Our office was founded in the 60s in Munich; the two partners then moved to a small office in Berlin at the time when the wall came down and all these new projects in Berlin started. In Munich, the office still exists, but we also have this office in Berlin, which is situated in this building. We do bigger public buildings like museums and stuff like that, but the main part we are doing is housing projects for private developers not for the city but for private developers. That's the main thing we're doing now. In the office in Munich, there are around 15 people, and in Berlin, we are 25 people.

Behnoosh: How does your company's CRM work, especially in architectural practice?

Jürgen Platena: Maybe it is interesting for you to know how we interpreted this question. We also like to work with professional developers and clients, so even if we are a small office, we are not interested in private clients and families who would like to be our clients to get their own house; this is too small for us. We did this a

few times, but it was not successful or successful enough for our setup, as we work as an office. So, I think you have asked, which is the most challenging part?

I have fifteen years of experience in architecture and have been lucky enough to work on big projects. I am now looking for ways to manage customer relationships in these large-scale projects, as it can be difficult to coordinate between all the people involved. I have been working with a company that produces a non-code app for two months and is using her experience to suggest a customer relationship management app for architects. I am also working on conducting interviews and gathering data to get the best results and am interested in the process of managing customer relationships in large-scale projects, not just small ones. Then, I want to know about the process, especially in big projects.

Jürgen Platena: If we start a big project of about 10 to 15 million euros, we have about 50 to 70 people that you have to deal with; these are the other planners, and the client, and they come together at one point. They have to be organized, and we follow our scope of work - we follow our architectural service scope, which is called HOAI. I think you've heard of it.

Behnoosh: yes.

Jürgen Platena: Working with professionals is preferable due to their structured approach to projects. In recent years, the role of the project manager has become increasingly important. This individual is independent of all other parties involved and is responsible for managing communication, information, and deadlines. As architects, we are responsible for taking on a more generalist role. The project manager is in charge of running the system, ensuring that all tasks are completed on time and that cost estimates are accurate. In order to keep everyone informed and organized, a platform has been created where documents can be uploaded and shared. This platform also serves as a way to document the project after it has been completed. Everyone involved will be given rights and duties from the beginning of the project, ensuring that everyone is aware of their individual responsibilities. Working with professionals allows for a more organized approach to projects and saves time in the long run. Working with private clients can be enjoyable, but it often leads to a disruption of cost estimations and time management.

I am considering creating an app to help solve the problem that I have been facing for the past 16 years. Nowadays, customers come to us with a lot of pictures and

want specific projects. I envision the app to help limit the amount of information presented to the customers, so they are not overwhelmed by the diversity and size of the information. The app would allow customers to see pictures and provide ideas for them, so they don't have to deal with too much unnecessary information.

This is a very good idea; we also thought about that before we started our design. Before we thoroughly start the project, we have to define it; it's a kind of definition of who wants what in the project, so the client is supposed to be the person in the first beginning because he has to define what he wants, what he expects, what his aims are, what his claims are, and there is a kind of description which we call a list. That means, before we start the architectural services, we have to clarify the project content. So, this is at the very first beginning. We didn't think about the sites, we didn't think about drawings; we think about the cost, which is very important, and we think about the time and the content that the client would like. If your app can fulfill this kind of managing this content, that would be perfect, because this is mainly a huge problem. We start and we go in the first stage and the second, and the third, and if this happens, you're confronted with lots of pictures, lots of ideas, and this has to be clarified because only then it will become a nice project and a good project, regarding quality, time, and economic issues as well.

Behnoosh: Yes, and I think this is important. Now I want to know When making documents such as HOAI, which part do you find most challenging?

Jürgen Platena: The most challenging part is the starting point, so the first, let's say, phase zero is to find out what the client would like to have. After the design planning, before submitting the permission documents to the authorities, all requirements regarding the project must be fulfilled. In phase three, regarding HOAI, the design phase has to include all information about the project, all wishes of the client, as well as all cost estimations, so the budget must be clarified. I think the budget should be established at the very beginning since if we start working on an unknown budget, it will never come together. It is similar to the idea of buying a car; if you only have €20,000, you cannot buy a Ferrari, as if you only have that amount, you don't have to consider huge factors and very expensive materials. So, the basic information of the project is the main thing that must be clarified at the very beginning, and it must be settled down in phase three. If changes are tried to be made afterward, and if the

construction site still remains, it will cost money and time, and then the stress for everyone will start.

Behnoosh: Yes, I understand.

Jürgen Platena: This is one of the most challenging tasks for us: to clearly explain our different points of view in regard to the client's wishes, and why they may not work as the client expects. It is essential to be transparent and communicative about why it is not possible, without engaging in a confrontation. It is important to provide the client with the necessary information to make the correct decision for their project, both now and in the future. Sometimes, starting a project can be compared to starting a new business. People who have never met before have to come together, and they need to have the same goal in mind in order to design the product. There will always be some parts of the project that are known from previous projects but combining them in a new way can lead to new questions that must be answered. It is crucial that everyone has a clear understanding of the project's definition.

I believe that trust is the most essential part of any project. From my experience, I can show you two projects I have done with a great team. These projects were around sixty thousand meters, and we completed them in five years. Initially, we began with the design and finished the construction part of the project after a year. The CEO of the client then told me, "We trust you. You can do this." This was the most significant moment for me. When I started a residential project, I faced a challenge with the client because they had a bad experience with someone else before me. Consequently, they wanted to know the details of everything, which we didn't have time to explain. This posed a big challenge for me. From these two experiences, I can safely say that trust is very important. and another part of the question, the world has shifted from physical to digital, and this change has been reflected in the workplace, and I want to know change how it affects your work and CRM in your company.

Jürgen Platena: COVID has been a game-changer in terms of digital communication with all of our partners on a project. This has been incredibly useful due to its time-saving capabilities since you don't need to travel anywhere to have a meeting and can access all the documents you need in your office. Additionally, we have found it beneficial to still have dinner with the client, as it is a great opportunity for

relationship management and customer relations. It is even more important to have a person to contact now that it is more difficult to meet up easily. Therefore, it is essential that we don't reduce our customer relationship efforts beyond what has been necessary for the last few years.

Behnoosh: direct meeting

Jürgen Platena: Yes, the direct relation, so, as we said, three years ago, it would have been impossible to move like this. So, it's a different story if you look at someone on your screen, or if you look at someone directly one and a half meters away, because there are little, tiny differences in how you move your face and how you look, which can be very important, as well as body language, which is also very important for understanding.

Behnoosh: But I mean about that part, I explained that maybe gathering information documents, pictures, and having a digital relationship with the client before the meeting, maybe you don't have enough time to have a meeting every day or every couple of days, but you can communicate with your customers through a digital platform every couple of days. In my experience, for a huge project, we made a visual design and worked a lot in one week, and after that, the client came and said, "No, I didn't want this." I'm sure you have experienced something similar. I'm thinking maybe there should be a platform for only sketches because when I invite the client, they expect us to have a very nice presentation. But when we have digital communication, maybe a sketch or hand sketch or the first prepared visual design can be sent, and feedback can be received. I mean, something like this for saving time, because actual time is money. I mean something like this, not the meeting. Maybe the meeting happens every two weeks or every one week, but I mean the modern customer relationships.

Andera Platena: For many years, meetings and communications have been common for us. If we don't finalize the design and make a nice brochure, we do so in a working letter. If we have some sketches of an idea, we make a nice presentation, which is easy because we have our ideas or something similar. Therefore, we get as early as possible in the process to get the information. I agree that this is very important, but I think sometimes the problem is that the client can't interpret the sketches. We have to visualize things that they can really understand, which can be different from communicating with other architects who are on the

same level, or who have the same imagination and can work with abstract sketches or the first 3D building, which is not rendered. We can see all this, but sometimes the client can't work with this abstract concept. I think it's also sometimes dangerous to show things that are not really at the presentation level, as the client can't understand what we mean. If we have a client who is professional in developing projects, we can send just a few drawings without any explanation, and they will work. However, if we have someone who is less experienced, we may need to write a few sentences to explain it; in addition, we may need to send them a voice message or have a short call, or even better, write it directly into a brochure outlining the main topics. We must be careful, though, as this is something we have experienced: just sending out a brochure sketch without an explanation can led to misunderstandings if the recipient is not as professional. It may be hard to believe that someone cannot read a floor plan, but it is a challenge we have to face.

Behnoosh: I firmly believe that technology has revolutionized the way architects and designers communicate their ideas and plans to their clients. When I was a student, architects were restricted to creating sketches or perspectives by hand not using a printer, but now there is a range of software packages, such as AutoCAD, 3D Max, and REVIT, which enable architects to create more complex presentations. In recent years, the industry has been focusing on how to communicate better with customers, however, often the technology used to create these presentations is not utilized for marketing purposes. This is an intriguing issue that I'm enthusiastic to investigate further and find out what potential solutions there are. Technology is incredibly effective in terms of creating presentations and visualizations in architecture, and I believe it should also be used to promote architectural services and products. It can be used to create marketing materials, such as videos and interactive web experiences, to attract customers and show the quality of a company's work. Additionally, there are digital tools available that can be used to build relationships with clients, such as CRM systems, which can be used to track conversations and provide superior customer service. Technology has transformed the way architecture is done, and I think it should be used to its fullest potential to promote the industry and its services to potential customers and CRM.

We have a website, but we don't have an Instagram account. We are concentrating on our work and not thinking too much about it. From my office, we decided not to

be on Instagram because we have millions of sketches, perspectives, and colorful pictures. This makes it hard to do the best work we can do. We have a small office with ten people. This is our reference for the client to have a second or third project with us. This is also a reference for other clients, as we hope they talk to each other on their level. We also have direct connections to these people, but not in this wide range of the web, where everybody can present themselves. I like the internet; it is no problem. We have a website, but we have no Facebook or Instagram accounts. Maybe it is a failure, I don't know. We have good projects and enough projects, so our acquisition and contact with clients are more important than the work we will do. Maybe this is a different point of view because we have done it for thirty years. We also have the possibility to show new clients more buildings, so that should be enough, in our opinion. We try to be friendly and to build up a trustful relationship, even if we don't work together this year, but maybe in the next year or in three years. This is what is happening at the moment. There is a big building company that called us three or four years ago and we have the last project now. This kind of interaction with our clients or our customer relationship is what we think might be the most successful way for us too.

Behnoosh: In your opinion how much digitalization can help in saving time and money?

It is a very good question. In my opinion, digitalization can help us a lot with tedious processes. By simply pressing two or three keys, you can find the square meters or cubic meters of a project and present the results in a nice schedule. Although, you have to trust and understand technology to a certain extent. I am not an expert in the field, but I still try to understand what lies behind it. Software nowadays can do almost anything, though you have to decide which is the best way for the project. So, before starting a project, I would like to emphasize the importance of using technology for the best result

Jürgen Platena: Reflecting on my colleagues and how it used to be when I was in front of the computer making drawings and having to open a few windows to change the overall thickness, now you have to open twenty of these windows just to find the right point and structure and make other dots somewhere. It took us a lot of time in the first year, a little less time in the second, and now in the third year, we can make some good effort. It took us at least three years to become familiar with this

technology, to find out what works best for our office, and to use the software when they update it. I think it's a lot of work to really use this software. In big offices, they have one or two colleagues dedicated to keeping up with the technologies and structures, but this is not possible for our office; I can't pay someone to just run around and tell them how to do it this way or that way or to do it by themselves. That's why we try to reduce it to a good level, where we can get good results out of the software, but it depends on the project itself; if you have a 3D project from the start and everyone is doing it in 3D, then you have to do it, but it is also possible in some projects that it is defined by the client to work in BIM. All in all, we can be thankful for these technologies. Have you ever drawn on a piece of paper? Have you ever done a drawing before you had a computer? Did you learn to draw without a computer? Half of our team can do this.

Behnoosh: Yes, in the last project I did most of the sketching by hand and passed it to my colleague to change it to BIM. I know about Revit and AutoCAD, but I prefer working in both styles; it works for me. However, I believe that we must go with technology because we must think about the future. For example, I started with AutoCAD 10, without a mouse; I don't know if you remember, but in AutoCAD 10, you had to type everything and there weren't any icons. But I improved myself with every AutoCAD version and now I'm a professional with the latest version, even though its compression may be. If I hadn't used older versions of AutoCAD, it would have been a disaster for me to do AutoCAD just now, but because I had that experience, now it's good. I believe that, yes, it's always better to do everything by hand, as it's so valuable. But because we want to go to the future, we must also think about digitalization.

Jürgen Platena: Yes, I agree to some extent.

Behnoosh: I greatly appreciate you, Mr., and Mrs. Platena, for the time you spent with me and for responding to all my queries with patience. Now I will stop recording.
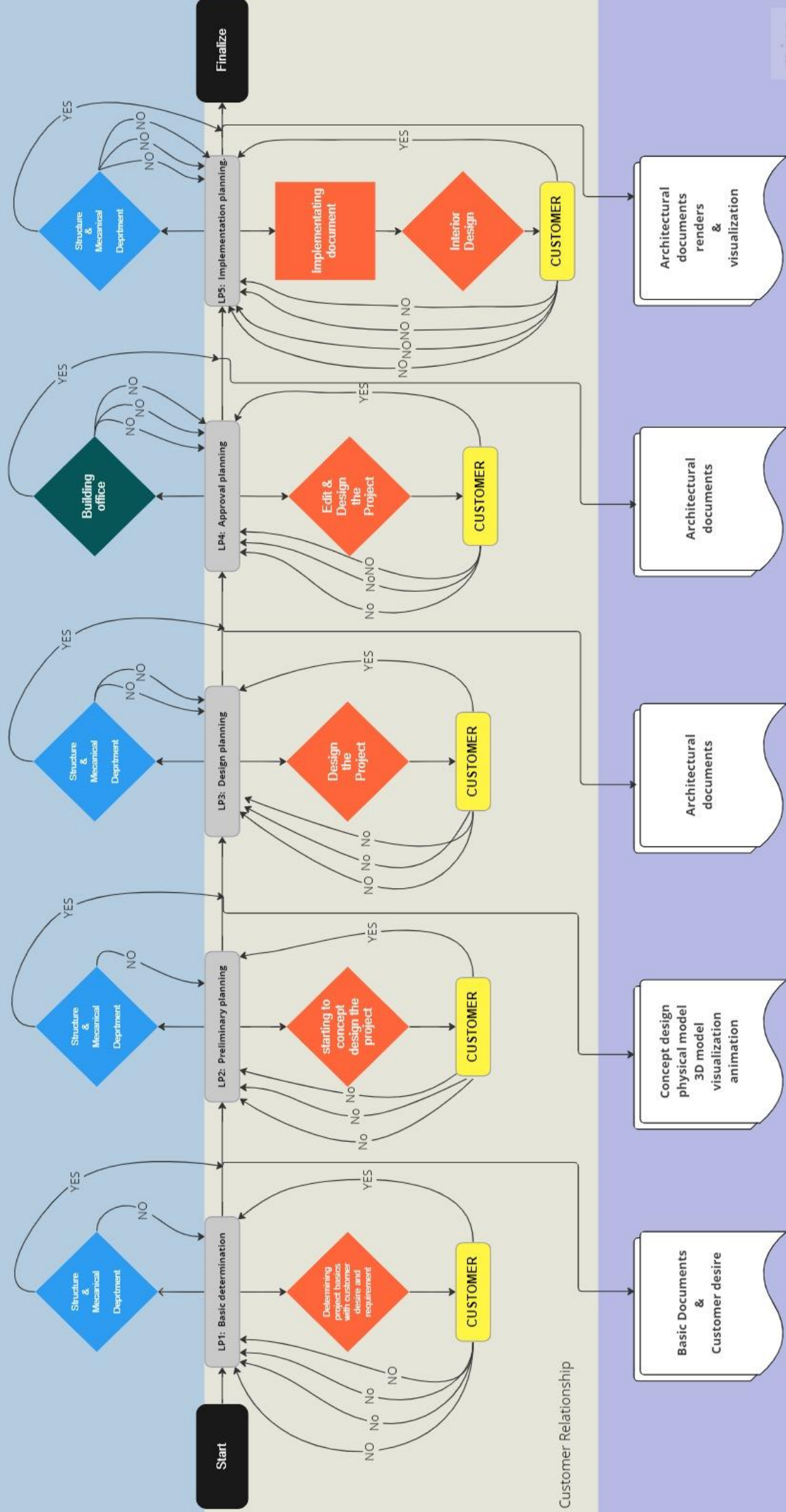
Figure 7: Relationships in Architecture practice based on HOAI Phases