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- 2nd : Intelligent Architecture , identifying the types of Intelligent buildings and their generations, evolution, properties and characteristics, and then discusses the classification of related smart systems in buildings, the integration between these different systems, the advantages of such integration in buildings, and the constraints of the integration between **smart** systems. Afterwards, the study of some IT systems is discussed along with the method of their integration (lighting control system technology - IT temperature control system (HVAC) - and the role of information technology in intelligent architecture to support the system of safety and security).

- Chapter III: includes the most predominant results and effects of information technology usage in Architecture, which is reflected on the materials used in construction, such as iron, steel, concrete , glass, and also developed and smart materials), as well as digital technologies in the systems and construction building elements and also the role of digital technologies while using the construction of automated building equipments in the future.

The chapter also includes the output return of digital technology on design that is represented in:

- Cyberspaces
 - maximizing the potential analytical and formative benefits of information technology in spaces.
 - digital components for architectural installations.
 - Freedom from some of the spatial determinants in Executive process.
 - trending to digital formats that are dependant on computers.
 - the extensive use of digital information technology - simulation and virtual reality.
 - appearance and disappearance of functional vocabulary on architectural and urban level.
 - digital Site format.
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chapter illustrates the information technology tools that serve the process of architectural design to support decision-making achieving quality (Visualization, Simulation, Optimization, Generation of elements, solutions and alternatives, Virtual Reality (VR)). After that, we can conclude the possibilities of using Virtual Reality environment in the designing process and Artificial Intelligence (AI), Expert Systems and then identify intelligence and artificial intelligence, as well as the properties of artificial intelligence, the motivations behind using it, how it assists in decision-making and its applications which includes Expert Systems. Then, the concept of expert systems and their characteristics can be identified as well as merging expert system with decision support system.

Consequently, we reach the structure of capabilities and potential of information technology tools and artificial intelligence systems (expert systems) with an illustration of the advantages of each system in strengthening the design and evaluation processes to take decisions.

- Chapter II includes: several important notions of Architectural Technology, Intelligent Architecture, Informatics Architecture and now discuss:
 - 1st: High technological architecture or what is known as high-tech encountering with the goals of this method and its properties which were expressed at the beginning by the Architecture of Centre Georges Pompidou Building for Arts (1971-1977) and the development path of such a method giving examples of its development by time - the European Court of Human Rights - France (1989-1995) - the Parliament Building - Germany (renovation 1995) - a multi storey residential building at the city of Malmo, Sweden (1999-2005), "Santiago Calatrava as well as the most important and most famous pioneers of this method identifying the global models for this method.
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management and total quality management. Then, the chapter explores the relationship between quality and architecture since the first phase of the quality of a building is the careful and deep studies of the building users' needs that are expressed in the design. Therefore, it can be considered that quality starts by graphic designs. Then, the chapter reaches the special nature of projects, and its relationship to design and quality, either through a direct relation (i.e. through earth, climate, environment, roads, etc) or indirect (through design methods, formation, elements, etc ...) till concluding to aspects of quality in projects, and the derived and fundamental principles to total quality management of projects.

- **Chapter V : Includes**

- 1st : planning for quality, its definition, and information affecting supporting decision making for quality.
- 2nd : quality information system, its objectives, functions, and components that are represented in the input (Operations, registration, tabbing, order, calculation, summarization, report-making, analysis, communicate), and the output. Then it discusses the advantages of using computers in enhancing the performance of quality functions.

Part II: The Role of Information Technology on Architectural Level for Supporting Decision-Making.

In this part, the role of information technology is being addressed on several levels, including the role of information technology for decision-making, first: when the project has no physical presence yet and second: the project that has a tangible physical presence .

Chapter I: Includes, types of problems that are better solved by using the computer, the role of computers in the designing process, the characteristics as well as capabilities of using the computer as an assistant in the designing process, and the potentials of specialized software in the fields of graphic and architectural design. Then, the

Part I: Determinants of Information Technology and Decision Making

Heading to Quality.

This Part includes the concept of information technology and decision-making process for reaching quality according to clear steps, that are illustrated further-through five chapters.

- **Chapter I :** discusses the concept of technology and science, as well as information and data along with the related characteristics and also knowledge, then identifying Informatics which is automated processing of information, also identifying Informatics industry that is directly dependent on information which has a range of technical and societal features; so that our today's age is called after the Information Age, and have many criterion and properties, then we can finally draw out the most important features of information revolution era.
 - **Chapter II :** Includes information technology with its definition & its main components , capabilities and potential, in addition to its types, and its multiple systems illustrating the basic pillars of information systems, its characteristics, functions and classification, while at the same time focusing on information systems of decision support (DDS), exploring the related characteristics and advantages till reaching the role of information and knowledge in the design process, also demonstrating the impact of the technological tools on performance in the design process, which is manifested in efficiency, productivity and speed.
 - **Chapter III:** Includes the definition of a decision, patterns of taking decisions, the difficulties facing the decision-making process, and methodology of taking a designing decision whether such methodologies are spontaneous, rational or systematized.
 - **Chapter IV:** Handles the importance of quality (concept and definition), and a group of important definitions including quality
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Abstract

The research discusses the important role played by information technology tools with all its capabilities to support the decision-making process in a project as linked to the project's details and elements aspiring for the desired quality of the project as a whole. Such a role is being discussed through two main parts:

The first one revolves around identifying several important concepts, which are addressed through five chapters - the 1st discusses the concept of technology, the 2nd discusses the concept of information technology and related systems, as the 3rd discusses the process and methods of Architecture decision-making, then the 4th and 5th chapters discuss quality management, planning and quality information systems.

The second part on the other hand illustrates the role of information technology at architecture level, through four chapters; The 1st one establishes an analytical study for the role of information technology in design phase whether it is two-or three-dimensional, and the possibilities offered in that area, followed by a study to demonstrate the ability of each tool of information technology and the distinctive or common features as compared to the other tools, the 2nd chapter discusses the role of information technology in buildings through architectural styles, and technological systems being operated.

Then, the 3rd chapter discusses the results and effects of the usage of information technology in architecture through the development of building material and design, as well as the impact of such development on architecture applying all of that on models in Egypt. Finally, the 4th chapter determines the attributes of evaluating buildings in light of the effects of using information technology, and then applying that on some global and local models.

The above is detailed as follows:



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" The Central Role Of Information Technology In Decision Making for Achieving Quality In Projects "

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