Managing Architectural Offices Using Software Programs
[Special Reference to Local Small and Mid-Size Firms]

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Abstract— This paper aims to monitor the status of management in architectural firms in developing countries with specific reference to Egypt and the Arab Gulf as case studies. It presents the common problems they face and aims to find the appropriate solutions. Most architects do not like to be involved in the management of their firms. They despise paper work and they escape rules and boundaries. They need freedom to encourage their innovations to create new concepts and ideas in their projects and to free themselves from the burden of managing, monitoring and book keeping. Several software were developed for managing engineering firms but a very few were modified to adapt to the needs and wants of the architects. The paper ends with a proposed software that is more tailored to the architect. In order to pin point most of the problems and be more accurate in identifying key aspects that facilitate the organization, management and coordination of architectural firms, a qualitative questionnaire was conducted for a variety of firm sizes. Analyzing this questionnaire several problems were identified and the shortage of management was clearly noted. As a result of this questionnaire, the paper concluded with the proposed software program to manage the Architectural firms and to solve most associated problems in an easy, safe and inexpensive way.

Keywords— Architectural Office management, Software program management, management of architectural firms, programs for management of architectural firms and offices.

I. INTRODUCTION

Architecture is an outcome of both art and engineering; it requires creativity and innovation on the one hand and a mastering of technicality on the other. Most Architects do not like documentation or managerial work, because they believe that creativity comes from freedom. Most Architects have limited office management skills and experiences, yet they do not prefer to hire a professional manager because they believe that they know and understand every detail of their work. This is not to dismiss the economic aspects that are typical to small and medium offices aiming to reduce expenses and overheads.

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While working in and with several architectural offices, and through a quick review of literature and precedents many problems could be formulated such as:

• Lack of documentation and data base.
• Difficulty in calculating or estimating project accounts
• Difficulty in linking time sheet of architects with expenses and kind of project work.
• Inaccuracy of revision and evaluation of projects and architects.

All these problems and more were found in most of architectural offices in the Middle East, especially in Egypt and the Arab Gulf.

Hypothesis

Several of the management software are not tailored to small and medium sized architectural firms and thus there is a great difficulty in using these software products. A more simple, specialized and specific program is required to cover the various aspects in managing architectural firms.

Objectives

The basic objectives of the research can be outlined in the following briefings:

- Surveying and studying the management status of architectural firms in developing countries, with special reference to case studies in Egypt and the Arab Gulf, and identifying common problems that can be resolved them by using software programs.

- Helping small and medium Architectural firms in managing their offices, with easy, safe and inexpensive ways to be able to compete with international architectural firms.

To address the above, the paper investigates procedures in architectural offices by conducting a questionnaire to identify the real problems and analyze them. A comparative study is then conducted to compare how relevant problems are dealt with at the international realm. This study reveals the need to develop administrative and control software that are suitable for architectural offices in Developing countries to fit their work conditions and different culture.

Expected Findings

The problems of management in architectural offices could be enhanced by using more realistic and specific oriented control software that as developed proves to be a simplistic tool for a better performance and control. The developed software proves to be an easier, more affordable and user-friendly tool.

Significance

Architecture is a special kind of engineering, it combines Art and Science, and requires innovation and creativity. Management is pure science, and may impede the Architects' work, but on the other hand it is very important for architects to arrange their work and achieve their success.

This means, "Management" is the (Maestro) of Architectural work, and it must be easy and inexpensive to be accessible to all architects regardless of their firm size.

As explained, the research explores the common problems in architectural firms, especially in developing countries, to help in solving them using new technology, in an easy, safe and inexpensive way. It is trying to help them in developing their offices, and push them to compete with the global and international firms.

II. LITERATURE REVIEW

Architects face many difficulties in managing their offices and firms, especially small and medium firms. They do not monitor the performance of their engineers, calculate project expenses, control time, etc. Most of them do not have office management experience. On the other hand, specialists in management do not have experience in architectural work, and architects refuse to hire non architects as managers.

On the technology level, most architects use software programs in design, drawings and presentations only, while a few of them use project management software, and a rare percentage uses office management software. Most of the use at the managerial level is oriented to create a data base for employees. Other uses are mostly developed utilizing excel sheets to manage project updates and reports.

Several architectural small and medium offices use different software programs that can manage some of their office needs, such as: [1] [1]Intuit QuickBase, Vorex Project Management Suite, Web Resource, VisionFlow, Traction TeamPage, BuildTools, Binfire.com, and more as mentioned in the website. These software help in some aspects of management but are more geared to project management rather than management of office performance.

On the other hand, there are two other software programs that were created by architects. One of these two programs created by BQE Company; its name is [2] [2]BQE ArchiOffice® that created in 2008. This company created other products that as well including BQE BillQuick® created in 1996, and BQE EngineerOffice®. These software programs designed by Architect Steven Burns. He and his partners created these series of software to simplify the way firms enter and use information for time tracking, billing, project management and accounting.

BQE ArchiOffice introduced as a project management solution for architects. It is a networkable, multi-user software. It takes all the pieces of information in the architect's office and organizes them to offer solutions such as contract management, document management, task and project management, time and expense tracking, billing and reporting. It requires an Oracle data base software to be installed before installing the ArchiOffice program. It takes many steps to be installed. It is very sophisticated but it is suitable for international firms, especially big firms. It gives license to the offices per user and renewal is annually. It requires many steps to inter the data base for each project, and takes several steps to calculate project expenses. The time sheets of architects are entered manually.

The second program is [3] [3]Arch-Administrator which was designed by Architect Paul Smialowiczto in 1995 to help architects in managing their firms. Arch-Administrator has been specifically designed to meet the needs of the architectural community and will help to organize and track a wide variety of data generated by the practice. Arch-Administrator is a series of integrated database templates developed using Lotus Database for Windows. These templates utilize various forms, worksheets, summaries, reports, crosstabs, charts, macros, and more. It has harnessed the power of the multi-layered relational database to create proposals, contract agreements, correspondence letters, memos, fax cover pages, transmittals, travel logs and expense reports, field reports, time sheet logs, employee records and promotion histories, accounting records, billing invoices, reproduction logs, project tracking reports, project schedules and more. It is a very complicated program; it has several templates that have a lot of details for a wide variety of paper work requirements. It requires serious training for personnel to be able to use it. The program is expensive and not user-friendly. This limits its use and practicality into the architectural offices.

From the above, there are many software programs for managing projects, but only a few for architectural offices but they mostly work for big scale offices and on the International level. At the regional and local level for small and medium size offices and operations, most architects do not use software programs to manage their offices.

In developing countries especially in Egypt and the Arab world, the culture of practice is that most architects tend to be dominant in managing their offices. They want to gain total control of data input and monitoring and accordingly they aim to simple means and techniques to monitor and track the activities in their offices. They don't have time or lend the effort to concentrate on all these details. They want to find the information they need in short and easy steps. Further, it is not easy for them to accept new programs especially if they are expensive. That means all the above mentioned software do not fit their needs.

Despite the fact that small offices may need simple management systems using excel sheets to monitor their ongoing activities, most of them faced difficulty in expanding their work. This further emphasized that in order to reach the international standards, they need special easy, simple, secure,

[1] http://www.capterra.com/project-management-software

[2] http://www.bqe.com/company.asp?prodId=AO&link_src=header

[3] http://archadministrator.com/About_Us/about_us.html

and inexpensive software that help them organize all their paper works and manage employees and projects in easy and short steps.

This paper is trying to face all these problems; by developing a questionnaire to identify the real problems that face Egyptian & Arabian Architects. The aim is to create a simple responsive software that is developed to help and solve these management problems. The paper tests this software by interviewing the architectural firm owners who utilized a sample of it. A questionnaire verify the utilization of the new developed software to the architects needs was developed..

III. METHOD

This research used a qualitative method to know the real management problems that faced the architectural firms in Egypt and few of Arabic countries. It used a questionnaire that consist of 26 main questions with sub questions targeting several sizes of architectural firms [12 offices in Egypt and 4 in Arabian Gulf]. And used another questionnaire for verifying the software.

1. Objective of Questionnaire

This questionnaire aims to monitor the actual situation of architectural office administrative settings; to know the real office size by knowing the number of employees and projects, and how the workflow is processed. It also aims to determine the role of the administration by knowing the weaknesses and strengths in its management and monitoring process in an effort to determine the administration level of the architectural office in the chosen case studies. The results are then analyzed to develop suitable proposed solutions for each office size and within the available economic parameters.

2. Questionnaire design

The questionnaire is divided into five parts:

Part one aims to identify the office goals and culture of the owner, managers and architects. It also aims to recognize the administrative level of the office by identifying the numbers and categories of the architects and departments in the firm.

Part two is designed to know the work size, how it is arranged and if the administrative expenses commensurate with the volume of work or not by identifying numbers, sizes and kinds of projects. It also pin points contract requirements between the office and the clients. Furthermore, data is gathered to determine wages for employees and systems of bonuses and penalties.

Part three is designed to identify data regarding projects to work as a data base for architects, consultants, clients, or contractors. It also gathers information regarding time schedule and follow-up.

Part four is designed to know how the design work proceeds, who is the designer, the decision maker, the quality controller, the coordinator, and how do sequence of work until archival.

Part five aims to determine the extent of using technology in architectural design, drawings, construction, electro-mechanics, etc., and the acceptability of architects for using technology in management.

3. Size of Architectural firms

Due to time limitations and problems in data gathering, there was a difficulty in choosing a wider sampling and with a variety of sizes of architectural firms. The pilot samples were limited to eight offices and a similar number was chosen to conduct the final questionnaire. The firms were classified based on the number of architects working in the architectural department as follows:

• Number of architects in small offices is [less than 25].
• Number of architects in medium offices is [25 - 100].
• Number of architects in Firms is [more than 100].

4. Pilot questionnaire

In the pilot questionnaire we tried to choose the architectural offices that we already know and have contact with their owners so as to develop trust in answering the questionnaire.

4.1. Criteria of pilot questionnaire

The samples of the pilot questionnaire consist of four architectural offices in Egypt and four in the Arabian Gulf and Saudi Arabia.

In Egypt three architectural offices [fewer than 25 architects] and one firm [more than 100 architects]

In the Arab countries three architectural offices [fewer than 25 architects] [2 in Qatar and 1 Saudi Arabia] and one firm in Qatar [more than 100 architects].

There were no major editing required after the pilot questionnaire. Minor editing aimed to clarify the intent of some questions.

5. Final questionnaire

In the final questionnaire we tried to choose all kinds and sizes of architectural offices especially in Egypt, to focus on the real status of office management.

5.1. Criteria of final questionnaire

The final samples consisted of eight architectural offices in Egypt as follows:

3 of them are firms of more than 100 architects, they are international architectural offices, and they have branches in several countries. One of them is just the architectural department of the firm, and one has over 1000 architects.

4 of them are medium architectural offices; they have [25 – 100] architects.

One is a small architectural office; it has less than 25 architects.

5.2. Analysis of the final questionnaire

After collecting data and answering the questionnaire, the following comparative table includes the results from the pilot questionnaire and the final questionnaire. Due to the numerical limitations of the sample, the results presented are considered indicators (not enough statistical values to consider concrete results), yet they provide enough material to proceed with the experimental software.

5.3. Comparisons between all architectural offices categories:

no.	statement	Less than 25 Architects	Between 25 - 100 Architects	More than 100 Architects
1	Number of Offices	7	4	5
2	What are the office goals?	50% want to increase their work in Egypt & Arab world. 50% want to join work with international offices	50% want to increase their work in Egypt. 50% want to join work with international offices	All of them want to increase their work in Egypt. 50% want to increase in Arab world, & 50% join international offices
3	Who is the manager?	55% professors	All of them free architects	25% professors
4	Is there an administrative and an organizational structure declared?	All have an arch. Dep. 25% - 40% have working drawings dep. & construction & administrative dep.	All have arch. Dep. 75% have construction and admin. dep., Implementation, BOQ., & IT dep. 50% have International design dep. & Urban dep. 25% have R&D dep.	All have arch., working, const., & admin. Dep. 60% have R&D, Printing, Implementation, BOQ., IT, & International design dep. 40% have Urban & Human resource dep.
5	Kinds of architects	All have full time arch. 85% have part time. 28% use free lancer	All have full time arch. 25% have part time. 25% use free lancer	All have full time arch. 20% have part time. 40% use free lancer
6	Kinds of Projects	40% design all projects except restoration, 15% designed small projects or special projects such as hospitals or Resorts & Planning, or restoration, conservation & resorts	40% design all projects except restoration, 20% designed small projects or designed Resorts & Planning, Landscape, and implement all kind of work except restoration, conservation & prisons	All offices design all projects except restoration
7	Contracts	85% sign a contract with clients in all projects & take their fees after each phase & 55% join consultants	75% sign a contract with clients in all projects & take their fees after each phase & 25% join consultants	All sign a contract with clients in all projects & take their fees after each phase & 25% join consultants
8	Salaries system	85% has salaries systems, 30% gives bonus only, 40% gives penalties &bonus. The expenses is disproportionate with work size	All has salaries system, 50% gives bonus only & 25% gives bonus & penalties. 50% are proportionate with work size & it doesn't depend on bonus or penalty	All has salaries system, 60% gives bonus only & 40% gives penalties. 40% are proportionate with work size &60% are disproportionate with work size
9	Dose the architect design many projects at the same time?	40% of them give [2-3] projects for each architect & department	75% of them give 3 projects for each architect & department	80% give more project for each architect & all give the department, 60% give 3 projects per architect & department
10	Is there a declared way to manage work at the office	All have task lists of dep., projects, & 85% have full data base	75% have data base of employees & consultants & task list for dep. & projects. 50% have data base of clients & contractors	All have task list for all, & have full data base
11	Time schedule	70% have time schedule for each project & phase & architect task list & update it & follow up it. 15% gives penalties when schedule is not followed	75% have time schedule for each project & phase & architect task list & update it & follow up on it. No one gives penalties when schedule is not followed	80% have time schedule for each project & 60% for each phase & architect task list. all update it & follow up it.80% gives penalties when schedule is not followed
12	Is there a routine for each project?	All has a routine	All has a routine	All has a routine
13	Is the work divided into phases?	All said yes and have one manager to each project & revise the projects with the client. 30% have manager for design & other for implementation	All said yes and have one manager to each project & revise the projects with the client. & have manager for design & other for implementation	All said yes and have one manager to each project & revise the projects with the client. & have manager for design & other for implementation
14	Who is the designer?	60% office manager or owner & department manager participate in the initiation of the design. 40% project manager revising from department manager create the design	70% office manager or owner & department manager participate in initiation of the design. 30% project manager revising from department manager create the design	80% office manager & all offices department manager & project manager participate in the initiation of the design.

15	Who is the decision maker?	60% the manager vote the alternatives, 40% architects sharing in design decision. All take it manually	50% the manager vote the alternatives, 25% architects sharing in design decision. All take it manually	90% the manager vote the alternatives, 60% architects sharing in design decision. All take it manually
16	Are there any design determinants?	Yes all	Yes all except 1 doesn't put forms of determinants	Yes all
17	Who is the Project Reviser?	70% department manager participates in revision. 40% project managers participate. 15% specialist reviser	All project managers participate in revision, 50% project manager participate, 25% revision specialist	All has revision specialist revise the projects, 40% department manger revise, 20% project manager or another project manager revise
18	How are the drawings revised?	75% reviewed drawings by comparison with project terms. 30% reviewed manually, 40% reviewed computerized	75% reviewed drawings by comparison with project terms. 75% reviewed manually, or computerized	All reviewed drawings by comparison with project terms. 90% reviewed manually, or computerized
19	The Coordination	75% has a manager of coordination 30% coordinate manually, 40% computerized	75% has a manager of coordination 75% reviewed manually, or computerized	All has a manager of coordination all reviewed manually, or computerized
20	Is there a specific way for archiving?	All save files soft & printed	All save files soft & printed	All save files soft & printed
21	Do architects use software programs?	All use Auto Cad, 3DMax, Photoshop, 30% use Revit, 15% use Archi-Cad & sketchUp& other programs	All use Auto Cad, 3DMax, Photoshop, 50% use Revit & Archi Cad & 25% use sketchUp & other programs	All use Auto Cad, 3DMax, Photoshop, 60% use Revit, 40% use Archi Cad & sketchUp, 40% use atlantas, 20% ecotec & other programs
22	Is there a software program in Management?	30% use excel	20% use Oracle	80% use programs, 20% of them use Oracle
23	Do you want to use software in managing your architectural office?	90% want easy, privacy, security, non-penetrating & affordable program	50% want easy, privacy, security, non-penetrating & affordable program	80% want easy, privacy, security, non-penetrating & affordable program. including whom has program
24	Do you want to know the research result?	All said yes	All said yes	All said yes

TABLE I

Comparison between offices organization related to their sizes

IV. FINDINGS

• Lack of documentation and data base.

• They faced problems when they calculate projects expenses.

• Linking architect's time sheet with project expenses and kind of work does not exist.

• There is a lack of revision and evaluation for projects and architects, which caused repeating mistakes and raising the expenses and the overheads.

• There is no perfect follow-up of architects work or time schedule.

• There is a rareness of quality control and quality management on projects and managing administrative work.

• Most of the architectural offices use software programs in drawings and presentations only. Some of them use software programs in project management, but they didn't use management software to facilitate their management work. Some of them used data base programs and try to use it, but it doesn't fit with all their needs, and others don't know anything about Management software programs, especially small and medium offices in Egypt. Even if they knew about these programs, they were not affordable.

The following table is comparing between questionnaire results and the outcome of the two model software analysis that revealed in the literature review; to outline the deficiencies in these programs and the need to solve the outlined problems resulting from the questionnaire to develop a more realistic software.

Questionnaire result	ArchiOffice	Arch-Administrator
They want to install the program directly	It needs to install Oracle program before installing.	It needs to install Lotus program before installing.
They want to install in no time and short steps	It takes many steps to install	It takes many steps to install
They need inexpensive program & pay one time	It gives license per user and too expensive	It gives license per user and too expensive
They need short steps to enter data	Project accounts procedures is too	It focuses on clients' and projects'

	long and have too much details. Working hours entered manually	accounts details and linking them to banks accounts and checks, and how to pay money & fesses.
They need separate data base for each	It has one data base of all architectural parties	It has one data base of all architectural parties
They want to link architects & projects [timesheet, kind of work, expenses] in short steps	It links between architects & projects expenses only	It links between architects & projects expenses only
They need simple program, doesn't need training	It needs training to understand it	It needs training to understand it
Printed copy is similar to entered data screen as it possible	Screens that entered data is deferent from printed screens	Screens that entered data is deferent from printed screens
Provides Security, safety & privacy	Provides Security, safety & privacy	Provides Security, safety & privacy
Useful for any size of architectural offices	Useful for architectural big firms & big projects only	Useful for architectural big firms & big projects only

TABLE II
Comparison between software management offices

V. RESUTS

Upon identifying the real status of Egyptian and Arab architects, the paper moves to create a new software program specially formulated for developing countries, harmonized with Egyptian and Arab architects culture and to achieve their needs [easy, simple, secure and inexpensive].

Egypt Arch Management is a new Egyptian software program that aims to achieve most of architects demands and suitable for their culture.

Egypt Arch management program
Target of the program

This program is designed to manage architectural practice in all firms' sizes in an easy and a simple way especially for managers, to help them access information in short and easy steps. It helps architects to input and retrieve information in a clear way.

Framework of the program

Through analyzing the questionnaire, the research tries to arrange the several complicated relations between the architectural parties, to connect them all in the right and easy way to input a full data base with full details of all architectural parties and processes. [Architects – time sheet] [Architects – projects] [Architects – expenses] [Architects – tasks – time schedule] [Time sheet – architects – tasks – kind of work – expenses – projects].
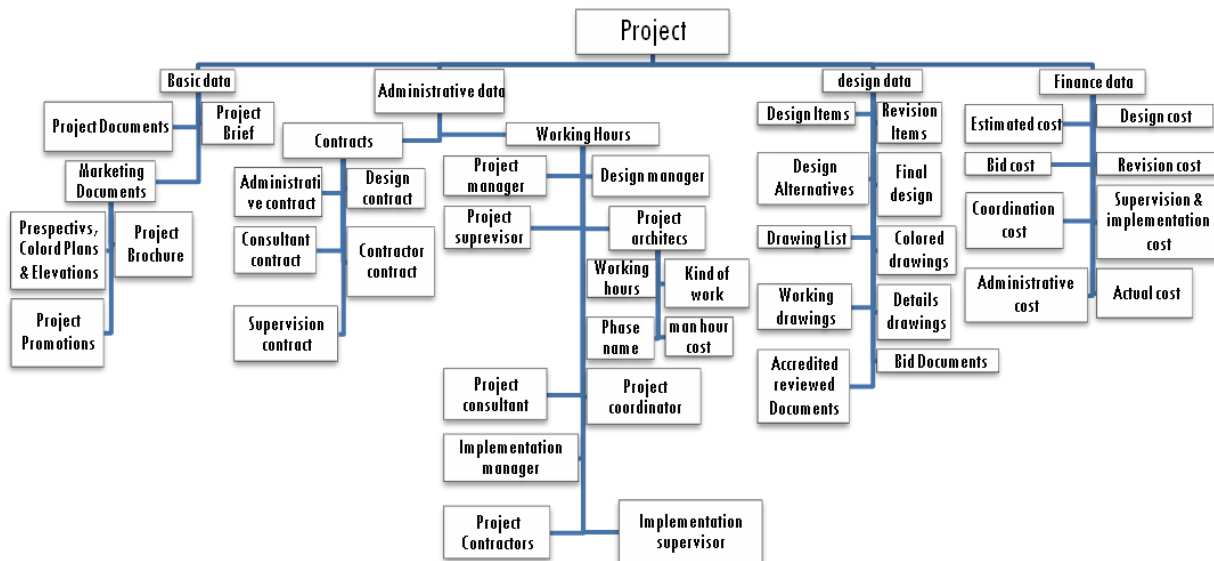

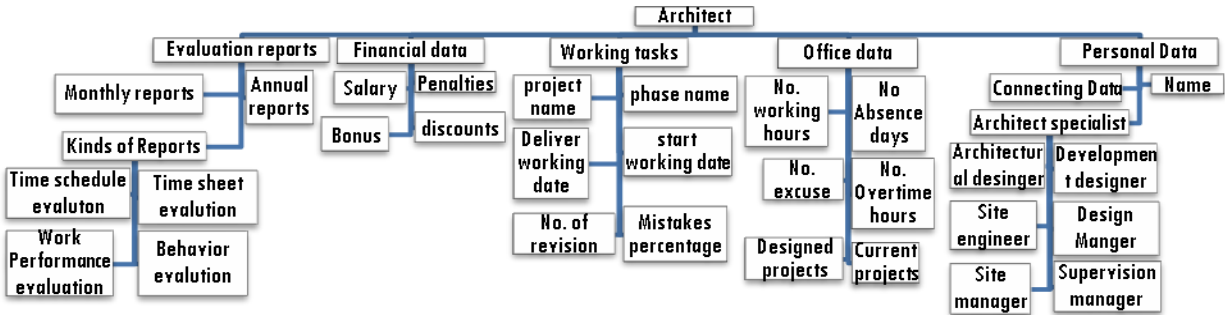Fig. 1 Project and its party's relation analysis
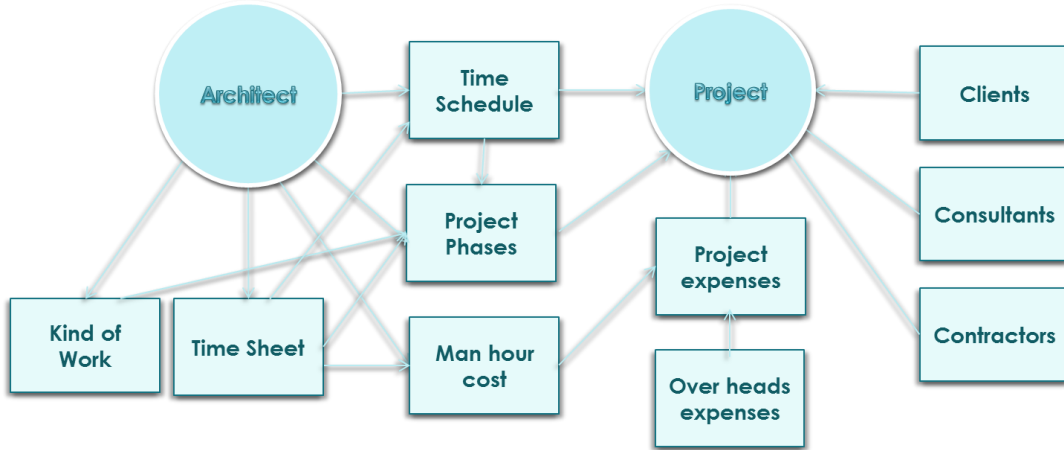
Fig. 2 Architect and its party's relation analysis

Fig. 3 Project and Architects relation analysis

VI. CONTENTS OF THE PROGRAM

This program is designed to help architects office managers to manage their firms to be easier, and follow up architects work and projects work proceeding.

First page: security and privacy page

This program is designed to protect data. It selects security level to each user. Everyone has his own ID and Password to log in the program. This depends on the user position in the firm, and protects each user data security as following:

☐ Administrators: full control to all program parts.

☐ Managers & supervisors: full control to all projects data and architects evaluation

☐ Architects: Time sheet

☐ Accountants: projects expenses, architects salaries, absence, bonus and penalties.

Main Page

After log-in in the program, managers will know the most important issues that they want to know every day:

☐ Current Projects status [projects work procedures]

☐ Architects status, start & end work time, kind of work & number of hours in each project.

☐ Calendar presents quick memo to know list of meetings and to do list every day.

☐ Left menu present all architectural parties data base and status.

Full data base: Full details of all architectural parties, personal data, connecting data, C.V. details, contracts and name of projects that are involved in the projects. Employees [Administrators, Managers, Architects, Accountants], Consultants [Civil engineers, Electro-Mechanic engineers, Landscape designer, Interior designer, Traffic and Roads engineers, HAVC engineers], Clients, Contractors [¬Full Data base of them, C.V., and their categorized [A,B,C,D]].

Project and phases:

Full data in each project [Budget fees, starting and ending date, location, kind of project, owner, design manager, consultants group, contractor and his suppliers, construction manager, site manager, site engineer ..etc.]

Full data in each phase such as; starting and ending date, architect, supervisor, details of expenses, paid, remain, all drawings delivers… etc.

In each phase there are three rulers to present the evaluation of [time schedule, expenses, paid]. There is a comparison between estimated cases and actual cases in the three items, to help be aware of the real status of each current project.

Verification of the program

After designing the program, it was presented to several sizes of architectural offices, [less than 25 employees, between 25 – 100 employees, more than 100 employees], by designing a new questionnaire to know their feedback and suggestions; if it is suitable for them, and what is the percentage of their satisfaction.

Verification Questionnaire

The verification questionnaire is designed to be no more than one page; to know; their feedback, if there are any additions, modifications, and suggestions to fit their needs to be more satisfied.

Verification Sampling Criteria

The sampling selected to simulate one of each architectural offices criteria as the following:

- Big office [more than 100 employees "120"]
- Medium office [between 25 – 100 employees "30"]
- Small office [less than 25 employees "15"]

Verification Results

The conclusion of the verification results is as following table:

Statements	Big office	Medium Office	Small office
Satisfaction %	More than 50 %	More than 75%	More than 75%
Additions	More expenses files, official letters, bank files, contracts templates	More elements in architects skills evaluation and monitoring them	More elements in architects evaluation to be more accurate
Suggestions	Some modification in the way of program navigation to be easier. More details about contractors companies and their vendors, and insurance. Add more details files in first and last deliver phases.	Link the program with starting PC, and other programs that monitoring architects on the internet. More architects in phases, more managers evaluate same architects.	Appear tasks and time schedule of each architect. Add equations to evaluate architects to be more accurate. Add more architects in the same phases

TABLE III
Comparison between all offices size feedback about program verification

VII. CONCLUDING REMARKS

The newly developed software mitigates most of the problems identified throughout this research paper for managing small and medium size offices. As the results show, medium and small offices were 75 % satisfied of the program performance based on preliminary runs. Several minor modifications may be still required to fine tune the software to make it more user friendly and to meet the international standards

VIII. FURTHER RESEARCH

The two new versions will be presented in a future research to describe the development and verification processes to mitigate minor pitfalls in the primary version. In doing so there will be a need to upgrade the system into a more developed customer-oriented model using MVC architecture (Model View Control) to deliver a faster and expandable application.

APPENDIX

Egypt Arch Management is a new Egyptian software program that aims to achieve most of architects demands and suitable for their culture. The following is full description of the program.

Programs used in program design

Programmers used [Visual studio 2010] in designing the program. They used program language [C sharp], Microsoft Expression Blend 3.5. To design the user interface of the program, they used Adobe Photoshop CS5, Expression Blend and SQL Server Management Studio.

For designing the data base they used:
- Microsoft visual studio 2010
o Used in implementing the program logic and the programming development of the application.
o Implementing and programming is done using C sharp language.
- Microsoft Expression Blend 3.5
o Used to build the Graphic User Interface and the design of the application.
- SQL Server Management Studio
o Used in establishing the database
- Adobe Photoshop CS5
o Used to design and edit the user interface assisting Expression Blend.

In Addition, they used languages in the SW application:
- C# (Sharp) with dot net framework 4.0 : Used in creating sw functions and methods.
- SQL Language: (Structured Query Language) a language used to create & manipulate the database in order to process specific tasks.
- ADO.NET: The coordinating language between C# (functions) & SQL (database) which we can retrieve the data and perform operations on.
- WFP & XAML: Design architecture and design language to present the output application neat & slick.

Finally we are looking forward to upgrade the system into a more developed customer-oriented model using MVC architecture (Model View Control) to deliver a faster & expandable application.

Contents of the program

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☐ Calendar presents quick memo to know list of meetings and to do list every day.

☐ Left menu present all architectural parties data base and status.

Full data base:

Full details of all architectural parties, personal data, connecting data, C.V. details, contracts and name of projects that are involved in the projects.

• Employees

☐ Administrators, Managers, Architects, Accountants

• Consultants

☐ Civil engineers, Electro-Mechanic engineers, Landscape designer, Interior designer, Traffic and Roads engineers, HAVC engineers

• Clients

• Contractors:

Full Data base of them, C.V., and their categorized [A,B,C,D].

Project and phases:

Full data in each project [Budget fees, starting and ending date, location, kind of project, owner, design manager, consultants group, contractor and his suppliers, construction manager, site manager, site engineer ..etc.]

Full data in each phase such as; starting and ending date, architect, supervisor, details of expenses, paid, remain, all drawings delivers… etc.

In each phase there are three rulers to present the evaluation of [time schedule, expenses, paid]. There is a comparison between estimated cases and actual cases in the three items, to help be aware of the real status of each current project.

Fig: A1 Main page

Fig: A2 Starting Screen, write IP & Password

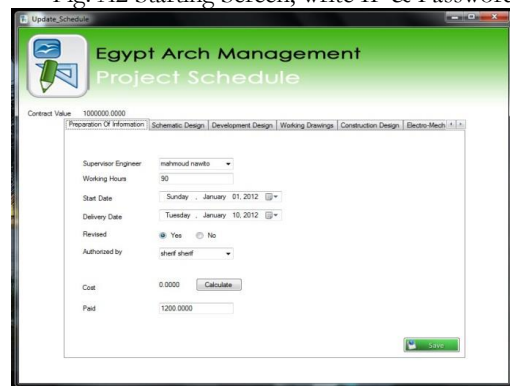Fig: A3 Sample of employee profile page

Fig: A4 Sample of project phases pages
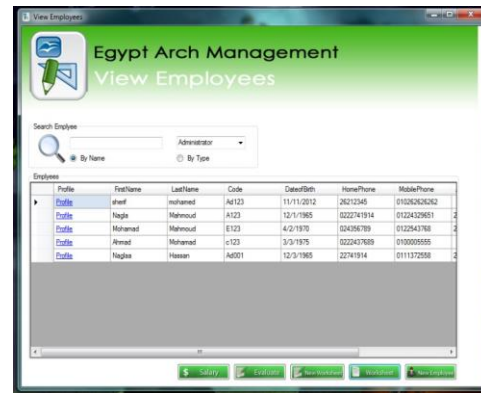
Fig: A5 Contractors profile page

Fig: A6 All architects page and their salary, worksheet and evaluation buttons

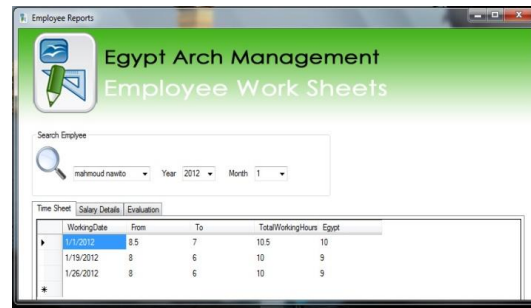Fig: A7 Architect daily worksheet, choosing project and work hours

Fig: A8 Architects total worksheet

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