

STUDY OF CONTEMPORARY ARCHITECTURAL PRACTICES IN INDIA

A THESIS

*Submitted in partial fulfilment of the
requirements for the award of the degree*

of
DOCTOR OF PHILOSOPHY
in
ARCHITECTURE

by
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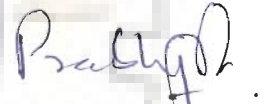


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CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the thesis entitled **A STUDY OF CONTEMPORARY ARCHITECTURAL PRACTICES IN INDIA** in partial fulfillment of the requirement for the award of degree of Doctor of Philosophy and submitted in the Department of Architecture and Planning of the Indian Institute of Technology Roorkee, Roorkee, is an authentic record of my own work carried out during the period from July 2005 to August 2008 under the supervision of Dr. Pushplata, Associate Professor.

The matter embodied in this thesis has not been submitted by me for the award of any other degree of this or any other Institute.


(Prabhjot Kaur)

This is to certify that the above statement made by the candidate is correct to the best of my knowledge.


(Dr. Pushplata)

Date: 29.8.08

The PhD viva-voce examination of Prabhjot Kaur, Research Scholar, has been held on 22nd Jan 2009



Signature of Supervisor


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ABSTRACT

Introduction

Though the practice/profession of architecture is as old as the beginning of human civilization, the profession has undergone extensive growth and changes since then. As architecture is linked with people and places, which by themselves are dynamic, the profession has been adjusting itself to the changing needs of the society through ages. However the world is in the middle of the most intense and substantial state of flux, never witnessed in the history of mankind. Revolutionary transformations triggered primarily by dramatic economic growth and the free flow of social, cultural and creative ideas across borders are sweeping across the world and more so in developing countries like India and China, which are the fastest growing economies of the world. This has been made possible by globalization and revolutions in the Information Technology. However, the new dynamism introduced by globalization in the businesses worldwide and the zeal displayed by the Indian industry in search of new markets (as also the economic benefits) is yet to find its reflection in architecture profession in spite of the tremendous growth in construction and real estate sectors in India.

The liberal economic policies of the government have put India on fast track of development and growth with its gross domestic product (GDP) touching two digits, with India allowing foreign direct investment (FDI) up to 100% in many sectors including construction and real estate and permission to raise realty mutual funds, real estate and construction sectors have become two of the most preferred destinations for FDI as well as domestic investments, which pegged at \$16 billion in 2006-07 is estimated to reach \$60 billion by 2010. The phenomenal

growth of construction industry with almost 10% increase in annual production of cement, (a prime constituent of construction) is clear indicator of the development activities going on in the country. All this has created a huge demand of skilled professionals in the country. However this boom has not benefited all architects.

Not only Indian architectural firms by and large are yet to become multinational companies working in international markets (particularly in the developed world) with the exception of few projects by renowned architects; most of the architectural firms (specially the small and medium sized firms and those practicing in small and medium towns) are finding it difficult to get sufficient number/size of projects and/or provide the services required of them in view of the competition faced from the multinational architectural firms that have started working in India, which have wide experience of handling large projects and knowledge of advanced technology.

Globalization has brought with it international competition in trade and services (including architecture) giving rise to unprecedented challenges as well as opportunities for architects. Outsourcing professional services (including architectural services) is another emerging trend, which has the potential of redefining the profession in the coming years. Multinational architectural consultancy firms coming to India have given rise to new challenges, which demand international quality and highest level of efficiency. Entirely new construction technologies and range of new materials, which were hitherto unknown to Indians, have entered the Indian markets. Besides, due to revolution in information technology, information has become universally available and the knowledge of what is happening in any part of the world can reach other parts within seconds. Whereas better knowledge of emerging trends of architecture

styles is an advantage, it throws up new challenges as plagiarism has also become rampant.

Thus, every professional in post globalize era is challenged to provide best of design/service, prove its uniqueness/worth using cutting edge technologies in very short time with nominal fee. A target that is very difficult to achieve without the help of state of art technology, managerial skills, flexibility in approach and a totally committed team work, all of which need to be incorporated in the training of professionals.

Whereas on one hand a larger scale/size of real estate development/projects are being handled by foreign architects at exorbitant fees; many Indian architects are finding it difficult to get projects and/or sufficient fees, specially in small towns and cities. This bipolar situation requires a proper understanding of the current scenario of the type of services required from architect and the competence required of architecture professionals to deliver them, and consequently the appropriateness of the architectural education being imparted in the country for the survival and the growth of the profession, Which at present is rooted in age old model introduced by Britishers in early 20th century³².

Changing Role of Architect in Society

The role of architect has changed drastically from being a master builder of tombs and temples during ancient periods to designer of churches , plazas and palaces in renaissance period to designer of housing after world wars as 'a servant of society', designer of industrialized buildings using latest innovations and technology in post- industrial revolution period, to designer of 'High-tech' buildings for the new princes of corporation and financial institutions and merchant princes, to playing significant role in energy conservation (after 1970

energy crisis) and environmental protection and to a well defined professional delivering a diverse range of services during the post modern period ⁹⁶.

Radical changes consequent upon globalization and IT revolution have dramatically changed the role of architects in the contemporary society. Not only have the types and size of buildings to be designed/built and clients have changed, there has been a significant change in the services to be provided by the architects. Architects are required to work in team and to collaborate with other specialists especially for larger projects. Collaborations among the many parties involved in the design and construction of built environment has become imperative not only at regional or national level but also for extending their limits overseas to avail opportunities provided by globalization.

In addition, architects like other service providers in a market driven economy have to be good businessmen and managers for successful practice. Architects are also likely to play a bigger social role in dealing with the concerns of the society such as climate change and improvement in social infrastructure particularly in developing countries like India. Therefore, the architect in future is likely to act as collaborator, facilitator and as specialist in a teamwork rather than a solo artist or a team leader. Whereas, the architects coming out of the schools at present are considered ill-equipped to handle such varied roles, necessitating a review and reorientation of architectural education in the country.

Need of Study

There can be no substantiate overhaul of architectural education unless we understand the profession of architecture itself. The major challenge is in

providing a curriculum that prepares students for professional practice in most challenging international pressures.

It is vital for all concerned to understand the roles architects are playing in the society; the services they are extending; the way they are managing their business, the problems they are facing in extending these services etc.

Thus, a study is warranted which look into the present status of architectural profession so that architectural education can be modify to serve the profession better. Keeping all this in mind, a study of contemporary architectural practices in India has been undertaken for doctoral research with the following hypothesis.

Hypothesis

There exist a yawning gap between the Contemporary architectural practices & its education in the country, so the knowledge structure, skills & abilities required to face the challenges posed by globalization are not adequately addressed / taught in its formal education.

Thus...`Existing architecture education system in India needs to be reoriented, if required replaced by an appropriate model as early as possible

Significance of the Study

No such study has been conducted so far in the country. However, similar studies have been conducted in other parts of the world to aid the healthy development of the profession in general and its education in particular in view of globalization. A study of this kind is most warranted in the present circumstances to understand the intricacies of the profession and to reorient its education for its present and futuristic needs.

Benefits of the Study

The proposed research will benefit the following:

- The **professional institutes** like COA, IIA & AICTE. The findings will help them take appropriate decisions for laying down norms for architecture education and for the healthy development of architecture profession.
- The **academic institutes** – to reorient their course content to address current and future needs of profession and society.
- The **fresh graduates** who are struggling for respectable living within the profession and the **students** – who are preparing themselves for this profession.

Aims and Objectives

The Aim: This present endeavor aims at investigating the current scenario of architecture practices and the critical issues confronting the profession.

Objectives: In order to achieve the above stated aims, the following objectives have been framed:

1. To understand the current scenario of architectural practices.
2. To seek practitioners feedback on critical issues confronting architecture professionals consequent upon globalization, economic liberalization and technological advancements.
3. To explore the appropriateness of the knowledge structure being taught by the architectural schools, values and skills critically required for practice, from the practicing architects, in India.

Methodology

Exploratory and descriptive research method using quantitative techniques has been implied in this study. Interviews as well as survey techniques have

been used to seek the information from practicing architects on the targeted issues.

Survey Tools and Techniques: A self-constructed questionnaire has been used to seek the opinion of practitioners on 5-point scale formulated¹⁰⁸ on the basis of study of available literature and interviews of practicing architects. A pilot survey was conducted in and around Chandigarh, a land mark architectural city, to check the reliability and validity of the questionnaire. The sample for the pilot study was collected from more than forty registered practicing architects. On the basis of its analysis and the suggestions made by the respondents suitable amendments/ suggestions were incorporated before collecting the data at national level

Sampling Techniques: Stratified random sampling techniques have been employed for this investigation. The questionnaire was send through post or emailed to registered practicing architects in five zones of India (North, East, South West, and Central) to collect the sample. In every zone 4 to 5 main cities (with maximum number of Registered Practicing Architects) constitute the sample.

Statistical Analysis: Non-parametric statistical procedures have been adopted. Percentage, weighted means and chi-square test have been applied to analyze the data. Software tool SPSS (Statistical package for the social sciences) has been employed for this investigation.

Salient findings

The study revealed the changing ground realities of contemporary architectural practices. As shown in the table below it was reported in this study that majority architects are not getting fees as per Council of Architecture norms;

i.e. their design ability are not suitably rewarded. It is also pointed out that the firms focusing on 'Only design service' will find it difficult to survive; they need to provide more than just design. Providing turnkey services has emerged as an important clients demand.

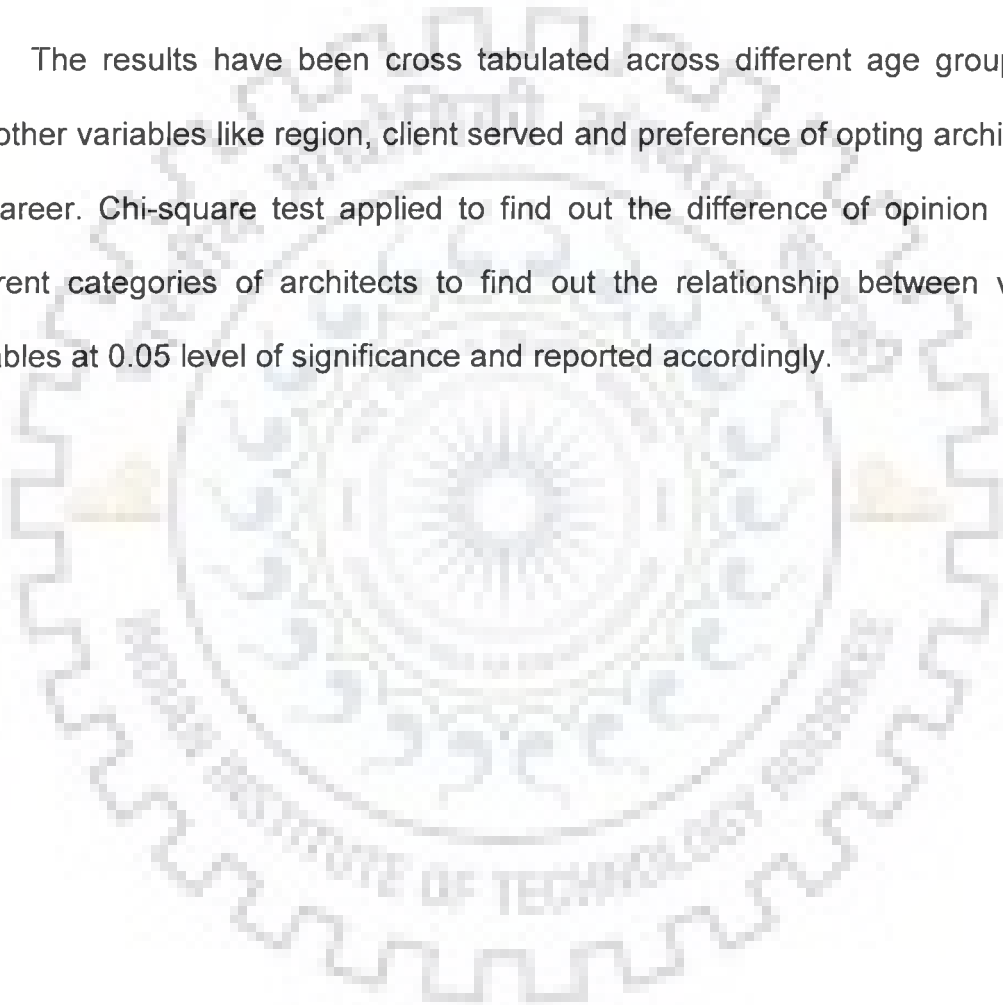
When asked to reflect on the statements 'Larger the firm easier is the survival' and 'Small firms unless specialize will not survive' majority agreed, which clearly indicates that collaborations and ability to work in team have become important for successful survival, Those who wish to have individual identity (remain small in size) must specialize to face the challenges posed by globalization.

The Council of architecture norms debar the architects to advertise their services or to participate in tender bids, (which are so commonly seen in newspapers, advertised even by the government departments) whereas in the changing business environment, where all service providers do advertise their achievements highlighting their competitiveness, Why to debar the architects. This study significantly shows that almost half are in favour of omitting these clauses from professional code of conduct.

Statement	Agree	Do not Know	Disagree	Missing Cases
Architects do not get fee as per COA scale of charges	93.0%	0.5%	3.3%	3.3%
Firms that focus entirely on design will become obsolete	52.6%	18.8%	24.9	3.8%
Larger the firm easier is the survival	56.3%	18.3%	24.4	.9%
Small firms unless specialize will not Survive	58.2%	8.5%	31.9	1.4%
Architects should be free to advertise their Services	49.8%	16.9%	31.0	2.3%
Architects have no option than to participate in tender bids	46.5%	8.5%	41.8	3.3%

When asked to rank the most important skill/ ability to run a successful practice, architects across the nation have ranked business ability foremost followed by sound technical knowledge. They also reported, managerial skills especially budget management, project/construction management, are essential for architects. Only 20% agree that these subjects are adequately taught by architectural schools.

The results have been cross tabulated across different age groups and few other variables like region, client served and preference of opting architecture as career. Chi-square test applied to find out the difference of opinion among different categories of architects to find out the relationship between various variables at 0.05 level of significance and reported accordingly.



ACKNOWLEDGEMENT

This dissertation has given me an insight into the contemporary architectural practices in India along with ways of carrying research. The experience acquired will remain among some of the most memorable experience of my life.

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Prabhjot Kaur

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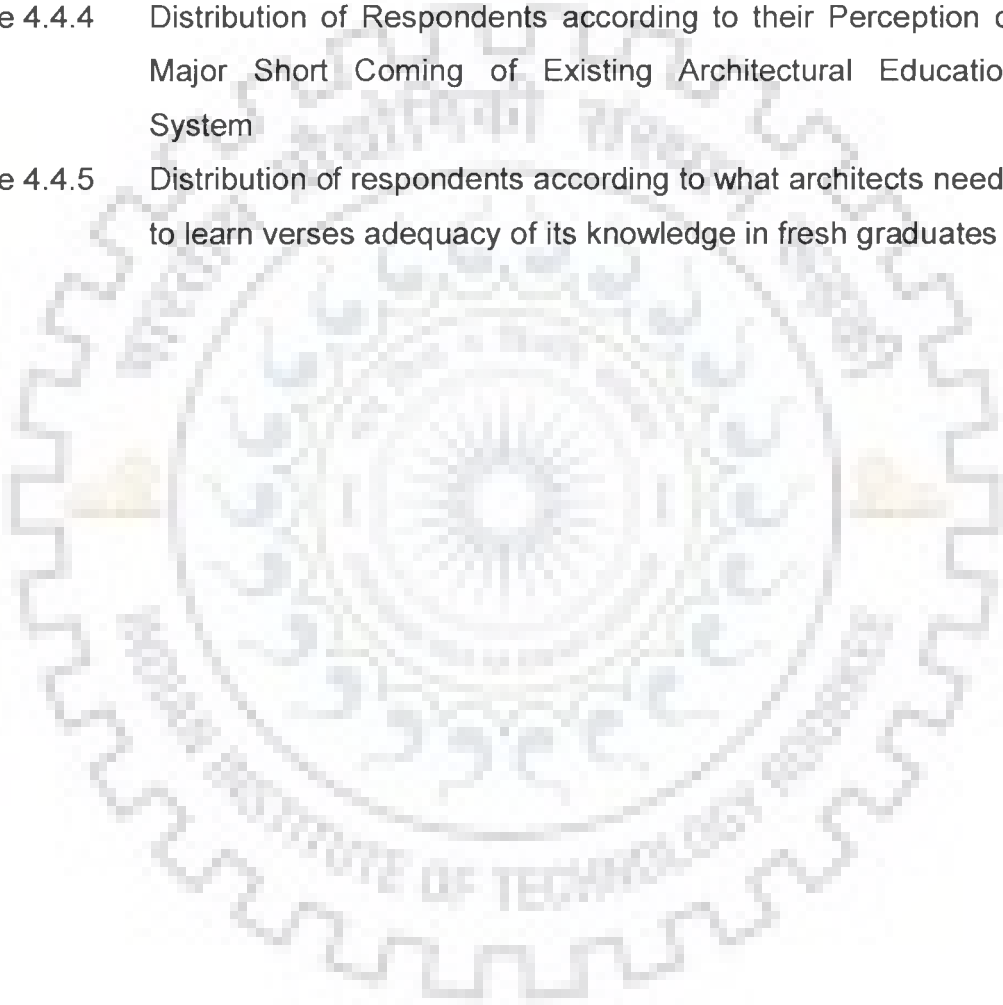
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ABBREVIATIONS USED



AIIA	Associate of Indian Institute of Architects
B.ARCH	Bachelor of Architecture
COA	Council of Architecture, India
FDI	Foreign Direct Investment
G.D.ARCH	Government Diploma in Architecture
GDP	Gross Domestic Product
Govt.	Government
M.ARCH	Master of Architecture
SPSS	Statistical Package for the Social Sciences
UIA	International Union of Architects
U.G.	Under Graduate Studies Leading to B. Architecture
P.G.	Post Graduate Studies Leading to M. Architecture
DF	Degree of Freedom in Chi Square Test
MNC	Multi National Companies
SEZ	Special Economic Zones

INTRODUCTION

1.1 Background

Though the practice/profession of architecture is as old as the beginning of human civilization, the profession has undergone extensive growth and changes since then. As architecture is linked with people and places, which by themselves are dynamic, the profession has been adjusting itself to the changing needs of the society through ages. However the world is in the middle of the most intense and substantial state of flux, never witnessed in the history of mankind. Revolutionary transformations triggered primarily by dramatic economic growth and the free flow of social, cultural and creative ideas across borders are sweeping across the world and more so in developing countries like India and China, which are the fastest growing economies of the world. This has been made possible by globalization and revolutions in the Information Technology. However, the new dynamism introduced by globalization in the businesses worldwide and the zeal displayed by the Indian industry in search of new markets (as also the economic benefits) is yet to find its reflection in architecture profession in spite of the tremendous growth in construction and real estate sectors in India.

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Not only Indian architectural firms by and large are yet to become multinational companies working in international markets (particularly in the developed world) with the exception of few projects by renowned architects; most of the architectural firms (specially the small and medium sized firms and those practicing in small and medium towns) are finding it difficult to get sufficient number/size of projects and/or provide the services required of them in view of the competition faced from the multinational architectural firms that have started working in India, which have wide experience of handling large projects and knowledge of advanced technology.

Globalization has brought with it international competition in trade and services (including architecture) giving rise to unprecedented challenges as well as opportunities for architects. Outsourcing professional services (including architectural services) is another emerging trend, which has the potential of redefining the profession in the coming years. Multinational architectural consultancy firms coming to India have given rise to new challenges, which demand international quality and highest level of efficiency. Entirely new construction technologies and range of new materials, which were hitherto unknown to Indians, have entered the Indian markets. Besides, due to revolution in information technology, information has become universally available and the knowledge of what is happening in any part of the world can reach other parts

within seconds. Whereas better knowledge of emerging trends of architecture styles is an advantage, it throws up new challenges as plagiarism has also become rampant.

Thus, every professional in post globalize era is challenged to provide best of design/service, prove its uniqueness/worth using cutting edge technologies in very short time with nominal fee. A target that is very difficult to achieve without the help of state of art technology, managerial skills, flexibility in approach and a totally committed team work, all of which need to be incorporated in the training of professionals.

Whereas on one hand a larger scale/size of real estate development/projects are being handled by foreign architects at exorbitant fees; many Indian architects are finding it difficult to get projects and/or sufficient fees, specially in small towns and cities. This bipolar situation requires a proper understanding of the current scenario of the type of services required from architect and the competence required of architecture professionals to deliver them, and consequently the appropriateness of the architectural education being imparted in the country for the survival and the growth of the profession, Which at present is rooted in age old model introduced by Britishers in early 20th century³².

1.2 Changing Role of Architect in Society

The role of architect has changed drastically from being a master builder of tombs and temples during ancient periods to designer of churches , plazas and palaces in renaissance period to designer of housing after world wars as 'a servant of society', designer of industrialized buildings using latest innovations and technology in post- industrial revolution period, to designer of 'High-tech' buildings for the new princes of corporation and financial institutions and

merchant princes, to playing significant role in energy conservation (after 1970 energy crisis) and environmental protection and to a well defined professional delivering a diverse range of services during the post modern period⁹⁶.

Radical changes consequent upon globalization and IT revolution have dramatically changed the role of architects in the contemporary society. Not only have the types and size of buildings to be designed/built and clients have changed, there has been a significant change in the services to be provided by the architects. Architects are required to work in team and to collaborate with other specialists especially for larger projects. Collaborations among the many parties involved in the design and construction of built environment has become imperative not only at regional or national level but also for extending their limits overseas to avail opportunities provided by globalization.

In addition, architects like other service providers in a market driven economy have to be good businessmen and managers for successful practice. Architects are also likely to play a bigger social role in dealing with the concerns of the society such as climate change and improvement in social infrastructure particularly in developing countries like India. Therefore, the architect in future is likely to act as collaborator, facilitator and as specialist in a teamwork rather than a solo artist or a team leader. Whereas, the architects coming out of the schools at present are considered ill-equipped to handle such varied roles, necessitating a review and reorientation of architectural education in the country.

1.3 Present Status of Architectural Education

The transformation of architectural practice, the shortcomings of existing architecture education system and the need for educational reforms have been

highlighted by various professionals, academicians and research studies. The content of architectural education throughout India has remained almost the same for the last couple of decades with very little variation. Practical and professional inputs are considered to be inadequate to address the current needs. The practitioners in general find fresh graduates ill equipped to meet the demands of the profession and criticize architectural education. Architecture education is considered by practicing architects as 'half a century behind contemporary practice'⁴⁴, 'archaic / anachronistic'¹¹², 'lacking in both content and direction'¹¹², 'out dated and out of context with respect to prevailing technology in the market'⁶¹, 'inconsistent'¹¹³, 'not been updated to address society's changing needs'⁴⁴, 'students lack the awareness of latest technology and innovations in the building industry'¹⁴⁵, 'students being unaware of the problems faced by the professionals'¹⁵⁵, 'badly lacking managerial skills'¹⁸⁴.

While on one hand the practice of architecture is witnessing a sea change in their process of design and way of delivering their services, facing a tough challenge from the overseas competitors. Its formal education in India is still rooted in age old model introduced by Britishers a century ago on the other. Whereas society in general and clients in particular and specially the business environment is rapidly changing, compelling all professionals to change, and architects are no exception. Yet the Council of architecture, which has statutory powers under architect's act 1972 to regulate the profession and formulate guidelines for its education, is still reprinting one fourth century old norms (Minimum Standards of Architectural Education, Regulations-1983) with very few alterations in COA handbook-2007,⁴⁸ as if nothing has changed. But there exists a yawning gap between the two; hence most professionals are facing difficulties in delivering the services required for contemporary practices.

1.4 Need of Study

There can be no substantiating overhaul of architecture education unless the profession of architecture is understood properly. The major challenge is in understanding the changing demands of the society (read clients) or the market. For which the opinion of the practicing architects is best source and accordingly propose a model of architecture education that prepares students for professional practice in most challenging international pressures. There is also a need to understand the inherent weaknesses of the present architectural education system, which is so loudly criticized at all level for its inability to produce architects as per the needs of profession and the society. It is vital for all concerned to understand the role architects are playing in the society; the services they are extending; the way they are getting and managing their projects/ business, the problems they are facing in extending these services, the demand and preference of clients/ society etc. In short, understand the intricacies and demand of the profession and business of architecture.

In view of the isolation and schism between the professionals and the academicians, a first hand understanding of the professional practice is essential which looks into the present status of architectural profession. The study becomes significant as such study has not been conducted so far in the country. However, similar studies have been conducted in other parts of the world to aid the healthy development of the profession in general and its education in particular. A study of this kind is most warranted in the present circumstances to understand the intricacies of the profession and to reorient its education for its present and futuristic needs.

Keeping all this in mind, A Study of Contemporary Architectural Practices in India has been undertaken for doctoral research with the hypothesis that there exist a yawning gap between the Contemporary architectural practices and its education in the country, so the knowledge structure, skills & abilities required to face the challenges posed by globalization are not adequately addressed / taught in its formal education, Thus...existing architecture education system in India needs to be reoriented, if required replaced by an appropriate model as early as possible.

1.5 Aims and Objectives

The Aim: This present endeavor aims at investigating the current scenario of architecture practice and the critical issues confronting the profession.

Objectives: In order to achieve the above stated aims the following objectives have been framed:

1. To understand the current scenario of architectural practices.
2. To seek practitioners feedback on critical issues confronting architecture professional consequent upon globalization, economic liberalization and technological advancement.
3. To explore the appropriateness of the knowledge structure being taught by the schools, values and skills critically required for practice from the practicing architects, in India.

1.6 Methodology

Exploratory and descriptive research method using quantitative techniques has been implied in this study. Interviews as well as survey techniques have been used to seek the information from practicing architects on the targeted issues.

1.6.1 Survey Aims

Survey aims at collecting the necessary information about the existing practices and important issues of architectural profession in the country.

Data: Primary as well as secondary data has been used for this study.

1.6.2 Survey Tools and Techniques

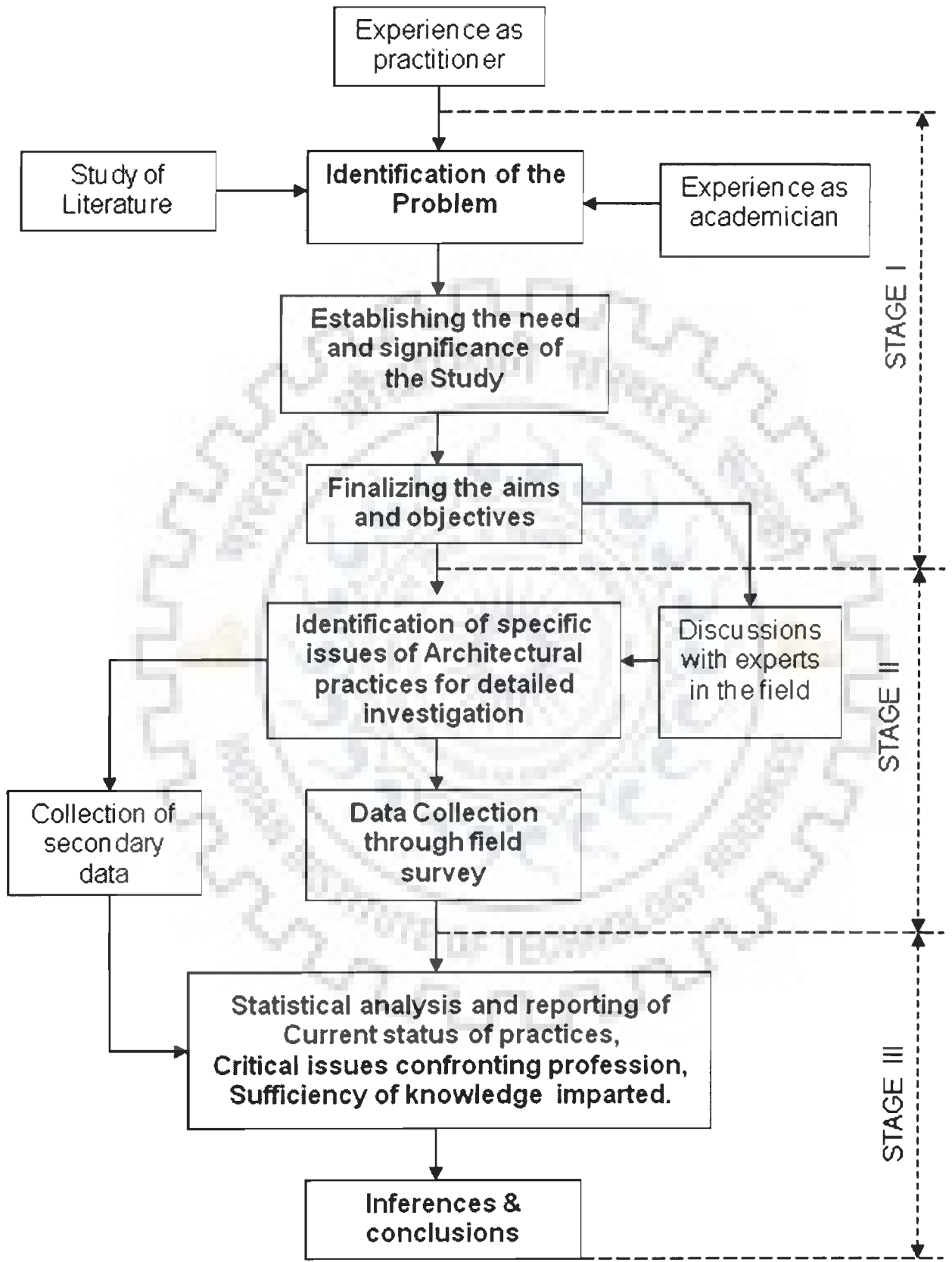
A self-constructed questionnaire has been used to seek the opinion of practitioners on 5-point scale formulated on the basis of case studies, literature and interviews. A pilot survey was conducted in and around Chandigarh, a land mark architectural city, to check the reliability and validity of the questionnaire. The sample for the pilot study was collected from more than forty registered practicing architects. On the basis of its analysis and the suggestions made by the respondents suitable amendments/ suggestions were incorporated before collecting the data at national level

1.6.3 Sampling Techniques

Stratified random sampling techniques have been implied for this investigation. The questionnaire was send through post or emailed to registered practicing architects in five zones of India (North, East, South West, and Central) to collect the sample. In every zone 4 to 5 main cities (with maximum number of Registered Practicing Architects) constitute the sample.

1.6.4 Statistical Analysis

Non-parametric statistical procedures have been adopted. Percentage, weighted means and chi-square test have been applied to analyze the data. Software tool SPSS (Statistical package for the social sciences) has been implied for this investigation.



FLOW CHART OF THE STUDY

1.8 Organization of the Study

The study has been organized in the following stages

Stage I - Identification of the problem and establishing the need for such a research work along the aims and objectives, scope of the study and its limitations are presented in Chapter No 1. The review of related literature and similar studies conducted elsewhere are presented in Chapter No 2. The Council of architecture, India, norms for architectural practice and its education is presented as well along with definitions of important terms adopted by The UIA (International Union of Architects) in its accord (1999) in International Standards of Professionalism of Architectural Practice.

Stage II - The design and procedure of this research is presented in Chapter No 3. (After inferring from the literature and similar studies, practicing architects were interviewed having varied experience across different regions, age groups and professional standing, to have first hand information of the status of contemporary practices. Questionnaire covering various issues was formulated based on the information gathered through literature and interviews. To check the reliability and validity of the data collection tool, a pilot study was conducted and analyzed. On the suggestions of the respondents and analysis of the data, the questionnaire was reviewed and modified before collecting the data at all India level. Thus data at all India level was collected on the finalized issues. Few important ones are, Type and number of projects handled, Services provided, Ways of getting project, Ways of managing the practice, clients demands and

preferences, abilities/skills required for successful practice etc. Their opinions were also sought on critical issues confronting Architectural practice consequent upon globalization.

Stage III - Statistical analysis of the data is done in the next stage and is tabulated and discussed in chapter four. The inferences were drawn and reported in chapter five of this study.



REVIEW OF LITRATURE

2.1 Introduction

A proper understanding of the context and the norms in which architecture is being practiced in the country is a prerequisite for undertaking a research on the subject of this kind. In order to have a comprehensive understanding of the professional practice it is essential to know the socio economic, technological context and the forces of globalization, I.T. revolution and economic liberalization leading to the growth in building industry (and consequently the demand for architectural services and the competition therein) as well as the norms/ codes/ regulations governing the architecture in India. It is also important to know the view of eminent architects on various issues confronting architectural professional practice as well as its education. This chapter presents a brief review of the literature studied on the subject through journals, review of relevant similar research studies conducted in other countries (i.e. England and China) along with the research studies conducted in India on architecture education are also presented in this chapter. The literature reviewed has been discussed under the following headings

- i) Research Studies related to architectural practices and education
- ii) Papers related to architectural practices and education
- iii) Papers related to architectural practices
- iv) Research studies related to architecture education
- v) Paper related to architectural education

- vi) COA (India) norms of Architectural professional practice
- vii) COA (India) norms of Architectural education
- viii) Definitions of important terms adopted by The UIA (International Union of Architects) in its accord (1999)

2.2 Research Studies Related to Architectural Practices and Education

Symes, Eley and Seidel (1995)¹⁷¹ conducted a research in England and reported in the book 'Architects and their practices: A changing profession', various issues related to practice of architectural firms in England and revealed various role played by the architects. For this the trio conducted a random survey to which 610 principles architects of United Kingdom's architectural firms responded. *The authors concluded that the image of design focused architects seems to be out of date.* They emphasized that design plays a necessary but not sufficient role in the work of an architect whereas the creativity appears to be very important for an architect but it is not sufficient for successful survival in the competitive world market. The major findings of the study are:

- a) In addition to design; communication skills are very important which plays a vital role in the professional growth of an architect.
- b) Architects needs to have special ability to design which incorporates latest knowledge of technological innovations. Project management and construction management are few other areas which are integral part of architects' work.
- c) Flexibility as well as personal style is necessary for personal growth of the architects.

- d) Their work habits of all nighters create a significant problem in the management of architect's office which they acquired during their education.
- e) The marketing approach is not a part of architectural education but it is (the marketing expertise) very important for successful practice. They also pointed that the majority of the firms in United Kingdom do not have the planned approaches to market their service.
- f) Special skills are required for the successful conduct of practice. The work of principles are largely self directed and management activities takes bulk of their time whereas only one fourth of time is spend on drawings and only one tenth on the actual-designing work.
- g) The introduction of the computer in the work place has reduced the need for the number of employees. So it resulted in limited employment opportunities for fresh graduates. Computers also helped in significantly reducing the time on research work.
- h) It was also found that there is an urgent need for *management education* along with traditional architectural education.
- i) In the end they said that due to changing societal, economic and political conditions, the architectural profession is adjusting itself to the changing needs and specialization is seen by them as good way to survive in competition but they also made it clear that in such circumstances the architect will be a member of the team and has to allow others to lead the team.

- j) They also reported that there are many subjects which are required for successful practice but are inadequately addressed by architecture education system of England. The list includes office management, marketing, accounting, schematic design, budget management, human behavior, computer aided design, building technology, client relations, communication, construction management, project management, facility management, real estate development, structural / mechanical design, specification and codes, brief preparation, production, research, computerization, urban design / planning and interior design. And concluded that most of them required extra attention.

Charlie Q.L. Xue and Xioyng Chen (2003)³⁴ conducted a research in China and presented a paper on the topic “Chinese Architects and Their Practices – Analysis of a Questionnaire analysis.” In which survey method was used for the research for which a questionnaire was formulated on the bases of the study conducted in England by Symes, Eley and Seidel. The major findings of this study are:

- a) The ‘social work environment’ in China is not conducive for creativity required for architectural design; there is a lot of interference from clients, superiors, local government officials, etc.
- b) They also suggested that the market reforms are welcomed by majority of architects in China.

- c) According to the research findings architects in China spend less time on site supervision and more on design and producing drawings as compared to British architects.
- d) Their main focus is on housing projects, urban design projects.
- e) They also reported that innovation is necessary but it is not enough for survival
- f) The firms/companies who focus only on design are becoming obsolete and are not able to survive.
- g) Chinese architects place public interest over client's demands and majority of them adhere to professional ethics.
- h) Even though they are satisfied with their profession yet their aspiration to improve clearly exists.
- i) This study indicated that architectural trade will subdivide into specializations in the near future and architects will act not as team leader but will be most important player of the team.
- k) The study also investigated, on the lines on study conducted in England, the importance of subjects required for successful practice but poorly tackled in architecture education system on China. The list includes management, marketing, accounting, schematic design, quantitative surveying, human behavior, computer aided design, building technology, public relation with client, communication skills, city planning and urban design, construction management, project management, facility management, interior design, real estate

property, structure, codes and regulations, design procedure, construction document, research, computer skills in office and reported that majority of these abilities are lacking in fresh graduates of China.

2.2.1 Inferences: (Architectural Practices and Education)

The two research studies conducted and reported on the subject so far highlight that design and creativity are very important but 'only design' is not sufficient for successful survival. Architects need to possess communication skills, management skills, entrepreneurship / business ability, sound technical knowledge, ability to efficiently execute their designs along with dignified marketing approach to successfully compete in the market.. According to these studies specialization is considered a good survival strategy when already builders have taken the centre stage in building industry world over and design-build is the model demanded by most clients. They also compared few areas of expertise which are inevitable for architectural practices but poorly tackled by the architectural education system. Curriculum of Architecture and Design at undergraduate level also needs to be reformed according to the changing socio-economic, technological and political scenario, which is rapidly changing.

2.3 Papers Related to Architectural Practices and Education

Vishwamitter and Pushpalata (1999)¹⁸⁶ revealed in their paper '*Architectural Education and Professional Practice: An Interactive Continuum in Action*' that there is growing schism & isolation between professional practice and architectural education in the country. The re-orientation of architectural education and research besides updating the syllabi is necessary in view of changing social and professional

needs and aspirations of the architects to become leaders in designing physical environment. They also revealed that “with new scientific industrial – technological - environment in the country. It has become inevitable to look into the whole curricular system of the teaching institutions that produce architects that will fit into the new environment. It is also necessary to realize that practice of teaching the out-dated content of architectural curriculum will have to be abandon in favour of new areas of architectural studies, practices and applications. But we are still following the age old syllabus that we inherited from the British Legacy.” According to them the success of architectural practice depends heavily on the quality of architect who possess fundamental knowledge and skills of application (read execution) and perception about the societal need in the prevailing technological environment. So according to them reorientation of education to prepare a mind with necessary perception, sensitivity and exploring mind for peeping into future demands of the profession is must. They further revealed that the “ *Architectural profession requires constant rejuvenation, dynamism, exploration and experimentation but profession is passive on this issue, academic institutions are silent – it seems that this has become reciprocative convenience in fact it should be a concern of the academic institutions to have a constant look out for the technological changes and respond to such changes by introducing fresh ideas into the teaching curriculum through a process of updating the same to send a man power into the market that is well equipped to respond to fast changes and innovation in architecture.*”

They further added “On the other hand practicing professionals often think that the academic institutes are not producing the right kind of architectural man

power that can fit into their framework of architectural practice. Teaching and practice is a continuous process, in fact both are two faces of the same coin, so they must roll together in the market for a healthy quality of architectural environment. It also seems that *both academic institutions and the practice are working independently in their respective compartment* within the parameters of demand and supply symbiotic as the productivity and availability of skilled manpower has been induced to carry on practice of architecture.”

So architecture being the profession directly related to the human being has to be treated as a collective responsibility of academic institution and professional organization.

Alfredo Andia (2002)⁴ in his paper *‘Reconstructing the effects of computers on practice and education during the past three decades’* expressed his views that architectural practice and education are consuming the phenomena of digital technology in their own distinctive manner. Professional practice has used computer mainly to increase the efficiency where as the architectural academia has taken a more critical position and used computer technology to reshape the scope of the profession. The schools of architectures in United States supporting this view have become testing ground for new design imaginations, methods and material and type of projects. *Technology affects architects on two distinct planes. The first is at the skill level and second at the level of work processes and professional culture.*

Architectural practice and academia are building separate discourses about design computation. Professional architects integrate information technology and computers as better tools for doing existing manual work. In architectural practice

the computer serve as a vehicle for changing relationship among partners in the design process. This in turn drives new design, building documentation and bidding process. Whereas in architectural education there are five interrelated but divergent discourses of computerization, *First* being design methods focused on the creation of 'intelligent software' and methodology that can aid, enable, or even replace certain elements of intelligence in the design process. The *second* approach is 'CAD visualization' focused on the development of an architectural education that explores the use of CAD software as a visualization tool of traditional modes of teaching and practicing architecture. This tradition is well entrenched in architectural schools, and conforms to the instrumental expectations that professional architects have had of computers. The *third* approach is called 'paperless architecture' concentrates on existing high-end computer graphics to transform design techniques, architectural imaginations, geometrical composition and to enhance the built environment with a new formal vision. A *fourth* approach is 'information architecture' removes architecture from the physical world of buildings to address a new, *virtual architecture*. This area emerges from a resistance of the objective of paperless architecture. Finally the *fifth* academic experience 'virtual studio' explores a parallel dimension of architectural communication in the digital era. The paper concludes these events have the potential to become agents of extra ordinary cultural change in the traditionally protected environment.

Bhalla J.R. (2004)¹⁸ in his paper 'Re-appraise the system' stated that there is a feeling of vacuum among the young architects, a sense of frustrations and alienations exists. And according to him "only a clear philosophy of life and

challenges of future will be able to change this situation. The world today is in the throes of great transition; the youth must understand that they have the capability to control and contribute to the quality of their life". The other important issue raised by him is the relationship of architects and engineers in India. This according to him should be closer and cordial (which at present not the way it should be). So that the cooperation takes place of frequently existing jealousy and suspicion. As all constructions irrespective of its nature is inter disciplinary and it would be advantageous to clearly define the respective spheres of each professional to prevent overlapping. He consider it tragic that architects and engineers even when are educated in close proximity, do not learn to think and work together, they acquire not only different ideology but all to often emotional attitudes that border on contempt, and if the professionals of building industry intend to serve the society they must develop mutual respect of each other. *The fight between engineers and architects has cost both the professional dearer as the patrons of their services are not greatly impressed and are easily convinced that neither talent nor experience is available in the local professionals and thus look towards foreign firms/ designers for the fulfilment of their needs.*

Subramanian R.R. and Sastry N.N. (2006)¹⁶⁹ in their paper '*Reinterpreting the Profession in the Era of Globalization*' expressed that there is a paradigm shift in the socio-economic and technological context of architectural practice and architectural education has to be remolded accordingly. The changes in the technology, communication, science and engineering have brought about a major transformation in the life style of people globally. Resent developments has greatly

influenced the way architecture is being taught and practiced. *The use of latest upgraded software is the new mantra for success.* Most architectural education in India is based on western model and influences, the curriculum and the course content are in general not tailored to the needs of the sub-continent, in fact our country is so diverse as to merit regional variation in the curriculum considering cultural, climatic and other factors.

They further added “Dedicated teachers with vast exposure to the profession and sound theory base are few and far between. The education policy at the undergraduate level should emphasize education of architects rather than training in professional skills, industry sponsored research and consultancy are the prime means of interface between academics and industry.”

They also emphasized that “*the main treat to the profession is not from within, it is from the huge market full of qualified engineers who have made deep inroads into the building trade. Vastu pandits, draftsmen, interior designers, contractors, builders, carpenters, unemployed youth, quacks, etc are all in the fray*”. So the role of the architects must be clear and society should be educated about the benefits of availing architectural services. They also stressed that “In the era of globalization architecture needs to have integration of regional and local know how along with global trends and the trendsetters of the field should incorporate Indian elements to create fusion as in case of fashion design”. They further emphasized “Architecture is a field where most students work through their study years, there is little formal industry – institute interaction, this has produced a gap in school learning and industry requirement. The major area of learning in the education of an architect are

sociology, technology, design synthesis, environmental concepts, range of technological options and the impact of value system on architecture. Architectural education evolves from the nature of man and of society and of its own aspiration, its expressional potentials. The changing role of the *profession requires changes towards managing and coordinating varied specialized skills in the profession and yet to give humanizing quality to the built environment*".

They concluded that in the era of globalization school of architecture need to energize, transform and re-invent them to meet the challenges of international competition. *It is necessary to establish areas of specialization and relevance in the regional context to rise above the prevailing mediocrity in architecture education.*

2.3.1 Inferences

There is a schism and isolation between architectural practice and education in the country and both working in its own compartment, not ready to work together to produce capable architectural manpower. Hence a feeling of frustration and a sense of direction-less-ness in the younger generation and they face lot of hardship to face the challenges posed by globalization. Architectural education system is uniform all over the country with very little variation. It is based on the model inherited a century ago from British legacy. The major drawbacks pointed out by some authors are there is a dearth of good teachers and use of obsolete teaching methods as well as curriculum. They suggested a dire need of rejuvenation and inculcating/ including new emerging areas of study especially in science and technology, management etc must constantly be added to keep pace with changing ground realities.

Technology revolution world over affects architectural practices at two distinct planes i.e. at level skills and at the level of professional culture and architecture education must understand it. Some authors also stressed the need to establish specializations within architecture in view of global trends. They also stressed the need to understand the traditional wisdom as well as regional context to have an edge for global competition.

Computers are inevitable and have redefined / reshaped the scope of the profession. Capacity to use its full potential for new design imaginations to produce landmark structures hitherto unimaginable for want of such a tool which exactly make others understand your design, is vital. Numerous soft wares aids in 3d visualization of most complicated forms and more importantly to communicate those forms exactly to the clients as well as the other members of execution team has become possible. Computers also aids in efficient management of projects. I.T. revolution has made global collaborations a reality. And it serves as a vehicle for changing relationship among partners in the design process, which in turn drives newer designs, building documentation and bidding process world over.

Relationship of architects and engineers are not cordial in India and there exist a sense of jealousy and suspicion among them and numerous engineers (commonly referred as non registered practitioners) are doing architects' work in most cities and are considered as main competitors by architecture fraternity. This fighting is costing both the professionals dearer as the effluent clients instead of taking their services look towards outsiders i.e. foreign firms for their projects as

numerous multinational design firms are operating in India consequent upon signing of global trade treatise.

2.4 Paper Related To Architectural Practices

Kogje Kishore (1991)¹⁰⁷ In his article '*New Roles for Architects*' emphasizes that, "The society of the future is likely to be more interested in results rather than the rosy picture of development being presented before it on paper. The increasing awareness of science and technology will make the future clients more educated, well informed, professional in nature and will be very clear about their requirements and expectation from the *architect who has to adopt a more pragmatic approach rather than the present idealistic approach to meet those requirements.*.. Some such requirements will be, growth in low budget housing demand in semi urban and rural areas, increasing number of turn key building projects, specialized services for energy efficient design, environment protection and conservation of buildings, construction and maintenance and management of all kinds of projects, interior design and real estate consultancy services. He further added the design of buildings and other physical elements in our environment will have to be based on a more scientific approach.

Ray Saumendu (1991)¹⁴⁸ in his paper '*Changing role of architects in the society*' suggests that in the present contexts the architects may follow any of the following three approaches i.e. (a) conservative approach, (b) revolutionary approach, and (c) intermediate approach. In the *conservative approach* he awaits the client's commission, provides his design and withdraws from the scene. The revolutionary approach leads architects to associate him directly with the user

groups. He may not restrict himself as a leader but may become a complainer and spokesman, but the difficulty in this approach is to control the resources and understand the limitations of the society. In the *intermediate approach*, the architect remains a professionally qualified specialist but try to involve the user in his design process. He concluded “Architecture is a dynamic process and a great change is to take place in the profession in the coming years”.

Thomas Fisher (1994)¹⁷⁷ In his paper ‘*Can this profession is saved?*’ is apprehensive that architecture profession is undergoing a tremendous change but it is changing in a lot of different directions. It can be due to effect of worldwide recession of early nineties because of high rate of unemployment and underemployment which led to competition for work and declining income. The other reason stated by him are the *rise of productivity and profitability of firms utilizing the technology*, but computerizations has eliminated certain types of jobs, particularly at the entry level, drafting jobs that architectural school have depended on to complete the technical training of their graduates. *It also has eliminated the barriers of time and distance that and once protected firms from competition. More and more architect now compete with their colleagues using CAD systems, producing drawings on time for lower fees, sitting in their bedrooms or drawing rooms.* Another factor effecting the profession has been a shift in the supply and demand of architectural services. He mentioned some U.K reports which emphasized that there is oversupply of architects and explained that its *economy has shifted from one dominated by many independent land owners who often turned to architect, to one dominated by fewer large corporation and a lot of salaried employees who rarely use*

architects. Another force affecting the long term prospects of the architects has been a shift in the architects' role in the building team. Once the practice of design was a subtractive process in which the architect was in charge of the whole ball of wax, peeling off pieces to give to consultants and contractors, now it is additive, and the architect's role is only one of many small bits assembled along the way by any number of construction coordinators. Meanwhile, a variety of disciplines from engineering of interior design to construction management are increasingly competing with architects as equals. The most difficult long term problem faced by architects is a growing skepticism of all professions with in general public. "Architects are particularly vulnerable to such skepticism because architecture has not become a specialized, knowledge based field as compared to engineering, medicine or law and they are also from public point of view rarefied and elusive creatures." So he advised architect three models which can be followed, they are medicine model, legal model, and engineering model.

Burte, Himanshu (1994)²⁸ In his paper 'Architecture in the Time of Conspicuous Consumption' reported "Architecture is a creation of the market place and market place has a dominant influence on consumerist society, so the aims and objectives of architecture has been transformed into a service industry that holds up the 'mirror' of the beautifying lies for the new society to be moved to tears of gratification at it's own reflection. The market is changing very fast and values are degenerating." The major problems according to him are the falseness of the venture that results in an architecture whose emphasis is no more on simple impeccability and good formal craftsmanship but only on striking a quick loud pose

which rarely has any relation to interior happenings. So there is a great loss of architectural integrity everywhere within the society.

Paul Suneet (1997)¹⁰⁹ interviewed eminent architect **C P Kukereja** and reported in article '*Need for a Realistic Approach*' who revealed his thoughts to diverse issues related to architecture. According to him ignorance of architects in India is disturbing and they should not imitate for the sake of newness but can borrow good ideas for further development, the genuineness should stay. Egoism and politics have entered deep down in this field thus side lining a healthy growth; an element of grouping has taken over within the architectural circle which is the root cause of all the evils of the architecture in India. He also suggested that since the architecture is entering into a golden era and the next twenty years will witness a tremendous amount of building activity, architects should pick up the pace and not commit the same mistakes as committed earlier. Alertness is the key word for survival. An effort should be there to become a complete personality.

Rewal Raj (1997)¹⁴⁹ In his paper '*Re-Invent Modernity*' frankly opinioned on the biggest weakness of contemporary Indian architecture, saying "Architecture in India is shoddily detailed, badly build and atrociously maintained." In this paper he also expressed what architecture means to him as "Architecture which is in tune with nature, which is build appropriately and responds to not only functional requirement but deeper sentiment." He further adds buildings have to be climatically appropriate and merge well with the surrounding and buildings have to have specific ambience with reference to there functional requirement. He also pointed out his design methodology, like many other architects, of taking aspiration from the historical

example and from traditional Indian architecture which helped him attain his present status and respect in society.

Kanvinde A.P (2001)⁹⁹ In his paper '*The challenges before the architectural profession*' has expressed that though historically the role of an architect was not only of an artist's, sculptor's, or engineer's but was of an institution maker, which is not possible in the present time when the architects role is essentially is that of a collaborator working with many specialists.

According to him "Future architecture will not merely be a technological innovation with pursuit for form alone but one that develops a sense of association of the place with it's environmental value". While commenting on architectural education he expressed that the "Teaching methodology should evolve a flexible approach, where the best of talent could be utilized in a limited time that can stir the student's mind and help them set a clear direction in their career. He also stressed that the government patronage and policies are very important but shockingly no efforts in this direction is made so far".

Stein J.A. (2001)¹⁶⁷ on the occasion of 'The Golden Architect Award' Ceremony conferred to him revealed his design philosophy. According to Stein "Architecture is not an industrial subject it is basically when man comes in relationship with nature, it is a home to the imponderable longings of man as well as to his physical needs. *He also felt that good architecture is more important than great architecture.*" He stressed that much of his life has been spent in the observation of increasing stresses. Today there are twice as many people in the world than the ecology of the world at present levels of technology can support. He

added this doesn't mean that they cannot be supported; it simply means that it takes good management to support as many people now on the earth. *Previously, people could live without good management, without too much conflict. Now we cannot live without conflict unless there is science and management.*

Beri shirish (2006)¹² in his paper 'Architecture Without Architects" tried to explain the paradox of today's life that despite man's attachment and mania for technological gadgets and ensuing mechanical comforts, his relaxations lies in their absence. To avoid physical and mental deterioration natural primitive surroundings are must. The modern device can not replace real peace and happiness, just as a child's toys can not substitute human affection. He also pointed out that the environment is deteriorating much to an impersonal boring level. This paper also highlighted that architectural expressions used to change from one region to another as the available resources, the socio cultural attributes, the climate and the site changed. *Whereas today we see the same kind of buildings in any of the metropolises all over the world.* The reason for this, stated to him is "Architect's response to the priority attached to economy at the global level. According to him the chief characteristics needed of an architect even today is his design skills followed by his humanness, a sense of belonging and interest, the other quality evident is in the manner of space creation and utilization with simplicity. Next is display of rare good common sense through its direct functional responses to various functional needs.

2.4.1 Inferences

Various architects have pointed out that India is a country having pluralistic society with varied needs but the training of architects is uniform through out the country, which is not fulfilling the demands of the society so the architects are lacking in an ability to serve all segments of the society. They fundamentally lack in management skill, technical knowledge and business ability. Studies also pointed out that the clients, in general is not aware of architectural services and majority of the client are not ready to pay for just the design, they expect more.

2.5 Research Studies Related to Architectural Education

Chakardeo Ujjwala (2005)³⁰ conducted a doctoral research on '*Architecture education impact of social change*'. According to this study, Every Society is continuously changing. Culture and traditions impart continuity to changing society. Education in turn helps in preserving or altering culture. British knew it; they changed the Indian society to suit their requirements. *With the advancements in the field of technology world is changing at much faster pace than ever before, so is India changing*; education can once again be used to change our society. Formal Architecture Education was introduced by British at the beginning of the 20th century, so the curriculum was formulated according to their needs by the British but now almost after seven decades of independence this education system definitely needs a change because Indian society has pluralistic structure. There is cultural discontinuity, identity loss and there is a synthesis of modernization and traditional set up. The study pointed out that schools of architecture are unevenly distributed in India and more schools are in urban areas and fewer schools in rural areas and

moreover there is no national policy for deciding the location of Architecture School in India. Similarly absence of variation in the content of architecture education throughout India is also highlighted. It also observed that *design is over emphasized by all the schools and practical and professional inputs are inadequate in most of the schools and they utilized 25% of extra load on teaching design only. The study mentioned that construction and technology are second important subjects of the schools, whereas the humanities are totally neglected subjects. A very important conclusion was that architecture profession should be blue collared emphasizing on the practical / execution rather than creating designs or drawings on paper that are difficult to execute. Another aspect that has been highlighted is the need for architects to serve all the sections of the society.*

Chakraborty Manjari (2005)³¹ Conducted a doctoral research on '*Restructuring Undergraduate Education of Architecture in India: Realities and Reforms*' to identify areas requiring revamping, if any, in current undergraduate architectural education in India, and to suggest a restructured form of the same to meet its envisaged role. To achieve this objective a considerable breadth and depth of information and feedback was collected globally and inland compiled, presented and analyzed by her. The major findings of this study were (a) The course duration of five years, uniformly followed all over the country is rigid and too lengthy yet underutilized, (b) Stagnation and redundancy evident in curriculum, (c) Age-old teaching aids and methods continuing, (d) Occasional insufficient confidence in fresh graduates to lead the market, (e) Inadequate research and application orientation towards sustainability, (f) Tentative intake policy and procedure, (g) Greater need for

infrastructural setup, administrative support and regulatory incentive. She concluded the study with a proposal of four-year course duration with flexibility, a detailed fresh curriculum including subjects, course philosophy and subject elaborations, teaching tips etc. She also recommended on student intake, infrastructure, pedagogy, teachers' development, teaching aids, roles of administration and regulations. The most important observation however is that the way the syllabus is perceived, interpreted and administered has to undergo a significant positive change which is achievable through commitment, sincerity and positive spirit of all involved. The study confirmed the hypothesis that *'Undergraduate education of architecture in India has a distinct scope of up gradation as it falls short of expectations by becoming somewhat stale, slack and unfocussed'*. Measures of restructuring the same have been recommended accordingly. The greatest benefit of the whole exercise is the first-hand conviction that it is possible to upgrade the environment by admitting appropriate students, utilizing sincere teachers and providing necessary infrastructure and regulations to enact a sure and certain turnaround of architectural education.

2.5.1 Inferences

The above stated research studies clearly pointed out that content of architecture education throughout India is almost same with very little variation (based on minimum standard of Architectural Education Guidelines of COA (1983) – drafted almost 25 years back. Design is over emphasized by all the schools and practical and professional inputs are inadequate to address the current needs. In most of the schools utilized 25% of extra load on teaching design only. The course

duration of five years, is rigid and too lengthy yet underutilized, Stagnation and redundancy evident in curriculum, Age-old teaching aids and methods continuing, Occasional insufficient confidence in fresh graduates to lead the market, Inadequate research and application orientation towards sustainability, Tentative intake policy and procedure, Greater need for infrastructural setup, administrative support and regulatory incentive. An important conclusion drawn is architecture profession should be blue collared emphasizing on the execution rather than creating designs or drawings on paper that are difficult to execute. Another aspect that has been highlighted is the need for architects to serve all the sections of the society.

2.6 Papers Related to Architectural Education

Crosbie M.J (1995)⁴⁹ in his paper '*The school: How they are failing the profession, and what we can do about it*' has tried to study the rift between the architectural schools and the practitioner, due to which the profession is suffering. The practitioners feel that the *new graduates are virtually useless in practice*, even as interns they *have no knowledge of the practices being followed*. The paper highlighted that there is a serious dissatisfaction in architects over the widening gap between theoretical and practical knowledge and the conflicting objectives of academic preparation and professional practice. Practitioners complain that recently graduated architects are not well prepared to function in today's office environment. New intern architects are said to lack skills as well as sensibility to the real world environment of professional practice. Educators complain that architectural offices are so immersed in the pragmatics of practice that they do not grasp the connection between architecture and cultural evolution, connections that could increase

architecture's influence as a creative force in society. The study investigated the allegation of un-preparedness among graduates of engineering and architectural program, specifically in the following areas, design, constructions, technology, teamwork, business, economics, management, the liberal arts, and communications skills. The paper concludes that *most architectural graduates possess a good understanding of the design process and broad design concepts; but lack knowledge of the practical and technical aspects of construction; such as designing to a budget. They leave school without a good understanding of the role of technology, and with little comprehension of business, economics, and management, which adversely affects their ability to serve the clients or to understand he concerns of their employers.* The responsibility for this deficiency extends to the organizations that accredit these programs. Some practitioners feel that the recruitment from the school of the construction and schools of technology which have good curricula and focus on applied knowledge should be done. They see that academic research as garbled nonsense, communicated in a language that can only be understood by scholars and researchers. Meanwhile the *profession is moving in the opposite direction. Greater competition for jobs, lower fees, impossible deadlines, down sized staff, and professional liabilities are just some of the forces that are making the practice of architecture more demanding. Practitioners have to be highly inventive merely to survive, thus they are experimenting with new form of practice, new partnerships, new project delivery methods, and are trying hard to push the boundaries of their professional services i.e. short expanding many new avenues of practice having newer connotations.* He concluded that "That there is a mitigated

gap between the two and to ease the transition from one to another by making students more aware about what they might find after their graduation. They should understand the profession they are entering and to keep them informed about carrier choices and to increase their contact with the world of practice is the need of the hour”.

Singh Jagbir (1995)¹⁶⁶ In his paper '*Need for a Sensitive Approach towards National Development Programs in architectural Education*', expressed that architects need to look beyond the buildings and to contribute to the overall planning including infrastructure. He emphasized that 23-25 million families in the country has inadequate shelter and there is dire need for architects in the rural development as well. According to him “we need to look at the architects and designers profession in an entirely new way if they are to achieve the expectations that are placed on them. If development is to be made sustainable the use of material and the way buildings are designed and technologies used require paradigm shift”. He further expressed that *architecture education is insensitive and less related to the present day needs of the society*. With context to country like India, where large diversities exists on socio-economic front, climatic conditions, life styles and cultures, requires professionals to cater to all segments of the society. It calls for architects to be responsive to these aspects. At present architects in the country caters to classes (read elite) and not masses (common man). He concluded with following recommendations for improving the present status of architectural education in the country.

- The institutions should facilitate research temper in the education process which at present is negligible).

- The institutions which are now widely spread in country must take up studies on our traditional skills and materials used in their respective states at both rural and urban level and disseminate the knowledge, make society aware of our cost efficient, climatically suitable and sustainable construction.
- Major core courses in environment, technology and design which have a great bearing on the professional practice should start with the series of case studies of real life situations evolving observation and understanding of communities need.
- A series of programmes be formulated at the media level under UGC programmes to develop awareness in the society about architecture.

Raje Anant (1997)¹⁴² in his paper 'Make the Roots of Beliefs Comprehensible' giving answer to series of questions pertaining to Indian architecture responded that the contribution of bureaucracy has retarded the growth of architecture or any form of art. "Enormous power is vested in this country with the planners who are equipped with statistics and numbers, without the insight and sensibility; they have very little meaningful contribution". According to him the quality of output is mediocre and the system has failed to generate intellectual climate among the teachers and the students.

Singh J. (1997)¹⁶⁵ highlighted in his paper 'Architectural Education- The Future Goals' that architectural education all over the country is uniform whereas *it should have core curriculum with different kind of orientation such as Construction, Structure, Design, Management etc. And there is a dire need for specialization even*

at undergraduate level. He also felt the need that fresh graduates should not be given registration immediately after graduation. He also expressed the view that majority of Architects are just 'Rubber Stamps' and are producing substandard work which tarnish the image of the profession.

Akhtar S.M (1998)² in his paper 'Fine Arts or Science' tried to explain the major problems faced by architectural education. According to him the country is facing three-fold problems; (a) The intake of students,(b) The quality of teaching faculty and the (c) Teaching curriculum. He observed that 'Intake of students is done through combined entrance test where majority of the students who are not willing to opt architecture get admission. The problem of getting the right faculty is also very complicated, consultancy being more rewarding for competent people, they are reluctant to join as full time faculty in any architectural institutions. *The other problems faced by the faculty is private practice is not allowed in most institutions so they become "dead wood" with time.* As far as the curriculum is concerned, it still remains rooted in the colonial milieu'. He also stressed the needs to understand the traditional Indian architecture.

Contractor Hafeez (1998)⁴⁴ in his paper '*Embrace Contemporary methodology*' emphasized that "*Architectural education in our country is at least half a century behind contemporary practice* (although common sense dictates that education should be ahead of practice, establishing experimental base). The average Indian architect cannot compete successfully in the international market. The reason behind being obvious, *insufficient knowledge of the latest technology and innovations in the building industry.* It is not that the Indian architect is wanting in

personal initiative or curiosity but a *rigidly pedagogic education holds him back to a certain extent*". According to him architecture ought to be poetic combination of art and technology.

Dengle Narendra (1998)⁵⁹ In his paper '*Decoding The Signals Of Time*' said that "unfortunately what the colleges seem to be more concerned about is a uniform pattern of education with a uniform syllabi, destroying the inherent diversity of architectural thought and expression".

Kanvinde A.P (1998)¹⁰² In his paper '*An observation*' have stated that "Even after sixty years of independence of India, a standard curriculum as approved by AICTE (All India Council of Technical Education) is adopted by all schools through out the country. This is different from what other countries of world follows, where schools are left to themselves to evolve there own standards and quality of education and are rated under two or three categories by the national professional institute of the country, and their standing depends on such ratings but here in India a standard syllabus is imposed on all regions in-spite of varying climatic and cultural backgrounds and peculiarities including mountainous, plains or hilly regions of the country. According to him duration, quality and content of the course should be left to the institutes. It was also observed by him that many schools of architecture have been started in the country with commercial motives so they are deficient in quality, performance, even some of them have been started by developers. There are deteriorating standards. To this he added mere education is not adequate there is dire need to educate the public about good architecture and advantages of taking architect's service. He stressed quality education will emerge only if proper

government policy is formulated as government patronage is also vital for the growth of any profession.

He expressed that for creating good architecture, one's involvement is foremost, even more important than formal education. He quoted the example of Emperor Akbar and Shahjahan, who created ever lasting complexes like Fatehpursikri and Shahjahanbad. In this paper he also tried to motivate the younger generation to organize themselves so that they can be heard at the highest level.

Pandya Yatin (1998)¹³¹ In his paper '*Learning to Teach or Teaching To learn*' observed that "architectural education should recognize architecture as a multidisciplinary entity because in this age is of rapid technological advancement amidst complexities of changing demands and increased volume of constructions. Architectural education has to equip and expose itself to allied disciplines of building sciences and construction management. The need is for constant updating of information".

Sachdev Rosemary (1998)¹⁵⁵ In her paper '*A Dangerous Development...*' revealed that architectural courses in India are more popular than the olden days. But the fresh graduates who start their own practice within a year of finishing their school are not fit to practice as they require some years of experience before they should be let loose on the public, otherwise public complaints are common which are due to poor quality of training received by the students". She also observed that "*Construction knowledge appears non existent in the fresh graduates*". The other drawbacks stated by her are "*faculty are forbidden to practice and lack practical knowledge*", where as in smaller cities even the colleges do not have good libraries

from where the students can get exposure of good architecture. Too much emphasis is laid on theory subject and they are not adequately integrated with the design. *Design also is over emphasized in most schools in India.*

Verma Balbir (1998)¹⁸⁴ in his paper "Relatively Irrelevant" tried to explain that architectural education has grown quantitatively since independence but the curriculum and *system of education has not been updated to address the society's changing aspirations and needs.* The things which were relevant three decades ago are not at all relevant today. *Whereas familiarity with western models of development is essential, it is necessary to focus on traditional and contemporary Indian building practices to make architectural education appropriate.* He added that "architect as team leader, must have knowledge of structures, mechanical and electrical engineering, project management and human resource development techniques. So he should be trained as jack of all trades and master of one (design).

Deobhakta M (2002)⁶⁴ in his paper 'Make the learning process more enjoyable' mentioned that *number of students seeking admission in the architecture schools has gone very down. The main reason given by him was low salaries offered by the practitioners.* He further observed that though there is a tremendous gap between the housing units required and constructed. Yet many architects do not have enough projects, and the quality of professional service has also been going down rapidly.

According to him the *quality of architectural education in India is not of desired standard and the teaching material and methods are antiquated.* He also suggested that innovative teaching techniques should be used to make it more

interesting. Students should be exposed to *current issues such as sustainability, use of appropriate technology, problem of mass housing, housing for disaster prone area and communication skills, time management and marketing of professional services in a dignified, personality development and leadership capabilities; Focus on new avenues such as project management, architectural heritage conservation, property management and appraisal (valuation), techno-legal consultancy etc* should be imparted in addition to making the students aware about their social and professional responsibilities by involving them in live community oriented projects. According to him the best way out is to use innovative methods of teaching to make the learning process an enjoyable one and introduce management skills to create self-reliant professionals who will practice on their own terms to give value for money to their clients in particular and to contribute to the betterment of quality of life in general.

Menon A.G.K. (2002)¹²⁴ In his paper '*Questioning the Status Quo*' compared the views of older and younger generation about future direction of architectural education. He reported that senior professional asserted the importance of retaining the noble ideals of education and that good education should purposefully distance itself from the forces of the market and it should act as trustee of societal welfare. Whereas the younger lot advocated a more positive and pragmatic perspective as the market has created a drastic shift in the perception all over the world. Interestingly the younger architects also concluded that architects should lead and not follow as expressed by their seniors.

Senoj Alexander V (2002)¹⁵⁹ In his paper on '*Revitalizing the Architectural Education*' stressed that the *students should not be encouraged to keep himself in the fantasy world but be prepared realistically to meet the challenges of the dynamic society*. For this the education should be market driven, As the market is dynamic and demands are highly volatile. The students should be trained to tackle any demand and carry in them the qualities to adopt with the changing realities.

Jain U.C. (2006)⁹³ in his paper 'Where are we coming from & where are we going to?' tried to explain the changes in society after independence as he is disappointed with the progress made in the field architecture education in last six decades. According to him the conditions are deteriorating fast and the status of the faculty has gone down as well. There is mushroom growth of architecture schools all over the country but the standard of teachers is degrading and they are not eager to learn or appropriately equip themselves with the latest knowledge, and many institutes fail to look beyond their own boundaries because of lack of enthusiasm in teachers. According to him "Cross fertilization of minds to acquire knowledge is at the lowest and teaching is almost meaningless. Motivation of young minds remains only a distant drumbeat. Messy at a time these places of learning are turned into nothing short of money making slot machine, without concern for any academic pursuit. Only criterion is big balance sheet than better academic performance.

2.6.1 Inferences

It can be inferred from the above studies that at present curriculum of architectural education are obsolete and not up to the mark. Over emphasis is on design, neglecting the other important aspects such as technical knowledge,

management aspects and humanities etc. It was also concluded from the above studies/papers that existing five year program of architectural education is too lengthy and fails to attract good students, time is under-utilized, and there is a stagnation and redundancy in the curriculum. Even the teaching aids and methods used are obsolete. Many authors stressed the need to introduce specialization even at undergraduate level. Some of them also revealed that architectural school in India is not addressing the future needs of the society. Course structure of five years is too long, under utilized, stagnation is evident and redundancy in curriculum, age old teaching aids and obsolete methods of teaching are being used. And the fresh graduates lack basic professional skills.

However it was felt that literature published/ reviewed is inadequate to understand the ground realities and may not reflect the contemporary challenges faced by the profession therefore it was deemed fit to conduct interviews of selected practicing architects across various age groups and standing having varied reputation to know about the changing professional scenario consequent upon globalization, so that all the issues concerning the professional practice can be rightfully identified and investigated.

2.7 COA (India) Norms of Architectural Professional Practice

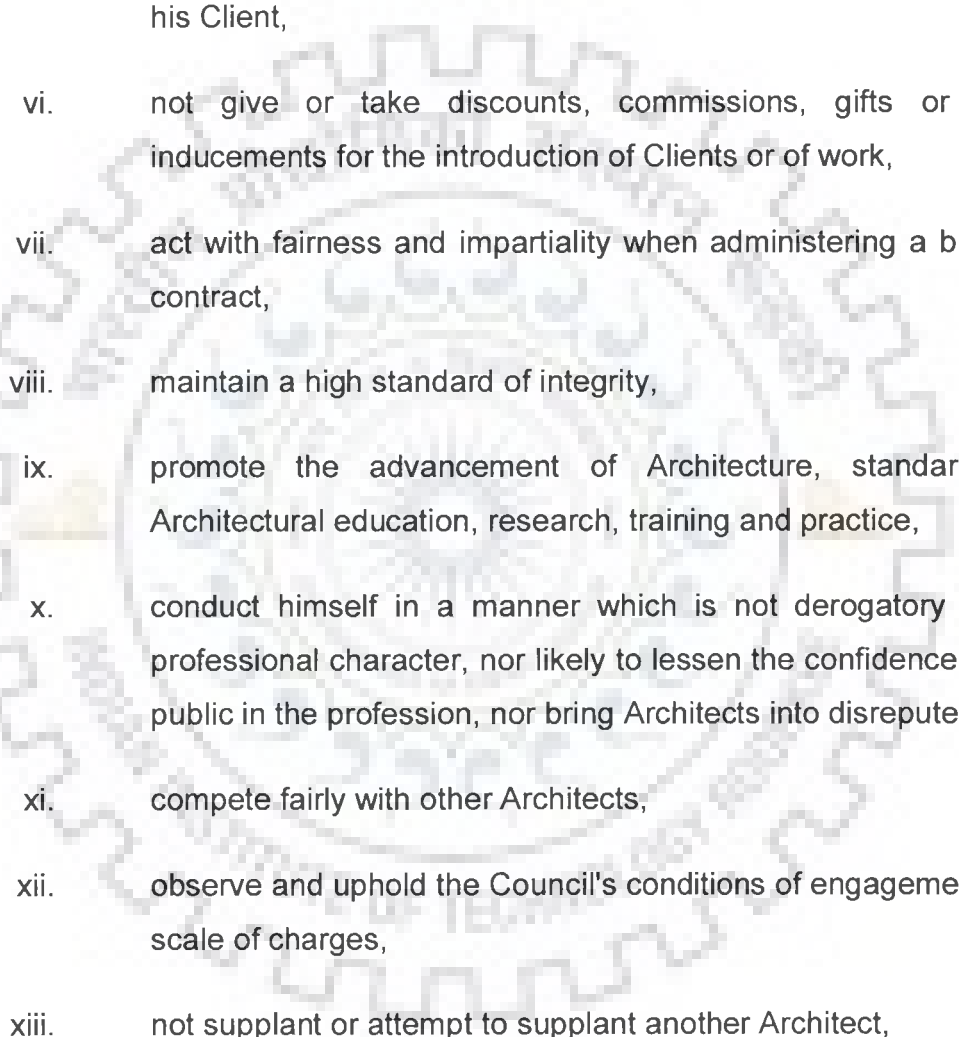
The Council of architecture (India) norms from its hand book of professional document 2007⁴⁸, is presented in this part of the chapter to relate the opinions of various authors with the existing norms enforced on practitioners as well as architectural institutions in India. UIA Definitions as adopted by UIA Accord on

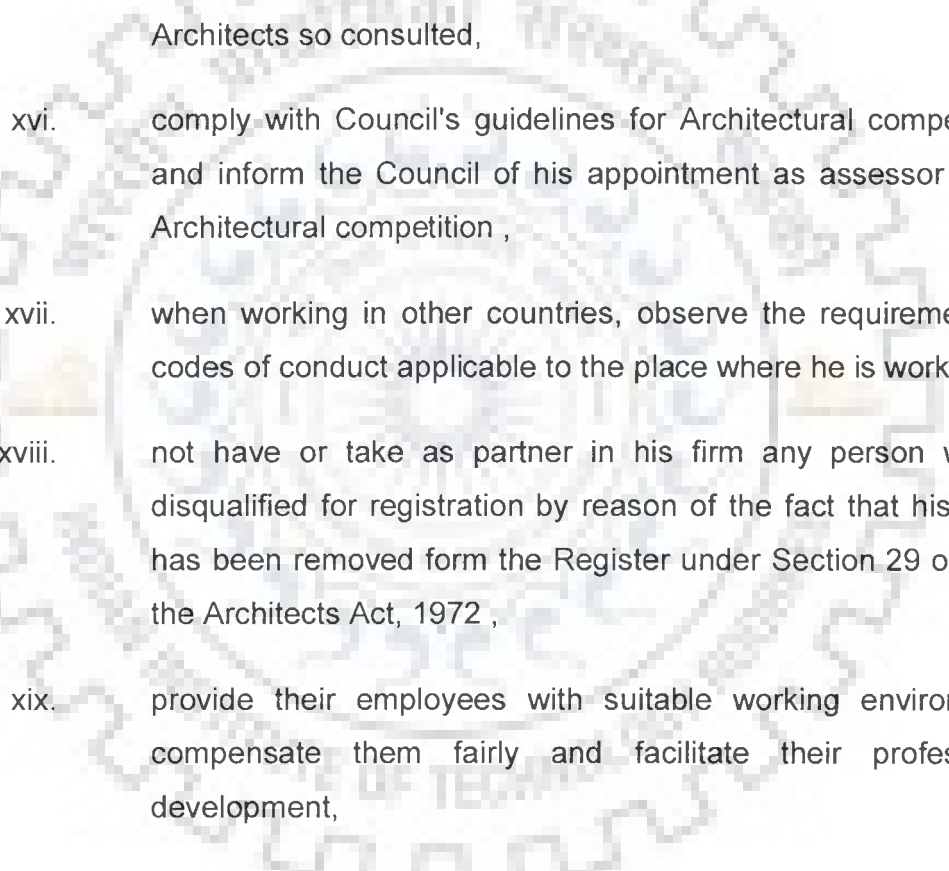
Recommended International Standards of Professionalism in Architectural Practice are also presented.

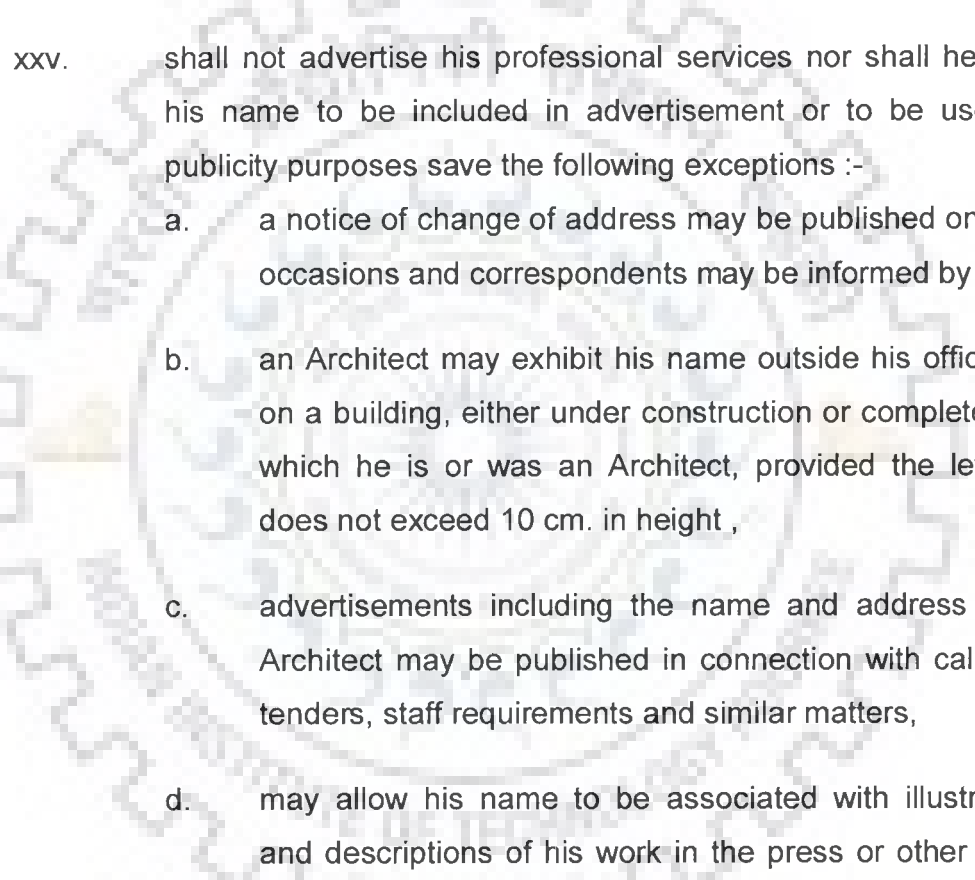
2.7.1 Architects (Professional Conduct) Regulations, 1989

F.No. CA/1/89.- In exercise of the powers conferred by sub-section (1) read with clause (i) of sub-section (2) of Section 45 of the Architects Act, 1972 (Act No. 20 of 1972), the Council of Architecture, with the approval of the Central Government, hereby makes the following regulations to promote the standard of professional conduct/ self-discipline required of an Architect, namely:-

1. Short Title and Commencement :
 1. These regulations may be called with Architects (Professional Conduct) Regulations, 1989.
 2. They shall come into force on the date of their publication in the Official Gazette.*
2.
 1. Without prejudice to the provisions of the Central Civil Services (Conduct) Rules, 1964 or any other similar rules applicable to an Architect, such Architect shall :-
 - i. ensure that his professional activities do not conflict with his general responsibility to contribute to the quality of the environment and future welfare of society,
 - ii. apply his skill to the creative, responsible and economic development of his country,
 - iii. provide professional services of a high standard, to the best of his ability,

- 
- iv. if in private practice, inform his Client of the conditions of engagement and scale of charges and agree that these conditions shall be the basis of the appointment,
 - v. not sub-commission to another Architect or Architects the work for which he has been commissioned without prior agreement of his Client,
 - vi. not give or take discounts, commissions, gifts or other inducements for the introduction of Clients or of work,
 - vii. act with fairness and impartiality when administering a building contract,
 - viii. maintain a high standard of integrity,
 - ix. promote the advancement of Architecture, standards of Architectural education, research, training and practice,
 - x. conduct himself in a manner which is not derogatory to his professional character, nor likely to lessen the confidence of the public in the profession, nor bring Architects into disrepute,
 - xi. compete fairly with other Architects,
 - xii. observe and uphold the Council's conditions of engagement and scale of charges,
 - xiii. not supplant or attempt to supplant another Architect,
 - xiv. not prepare designs in competition with other Architects for a Client without payment or for a reduced fee (except in a competition conducted in accordance with the Architectural competition guidelines approved by the Council),

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- xv. not attempt to obtain, offer to undertake or accept a commission for which he knows another Architect has been selected or employed until he has evidence that the selection, employment or agreement has been terminated and he has given the previous Architect written notice that he is so doing : provided that in the preliminary stages of works, the Client may consult, in order to select the Architect, as many Architects as he wants, provided he makes payment of charges to each of the Architects so consulted,
 - xvi. comply with Council's guidelines for Architectural competitions and inform the Council of his appointment as assessor for an Architectural competition ,
 - xvii. when working in other countries, observe the requirements of codes of conduct applicable to the place where he is working ,
 - xviii. not have or take as partner in his firm any person who is disqualified for registration by reason of the fact that his name has been removed from the Register under Section 29 or 30 of the Architects Act, 1972 ,
 - xix. provide their employees with suitable working environment, compensate them fairly and facilitate their professional development,
 - xx. recognize and respect the professional contribution of his employees,
 - xxi. provide their associates with suitable working environment, compensate them fairly and facilitate their professional development,

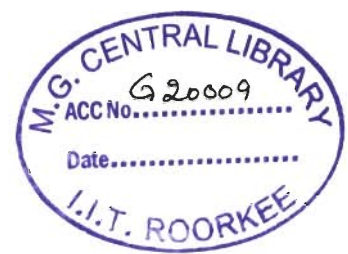
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- xxii. recognize and respect the professional contribution of his associates,
 - xxiii. recognize and respect the professional contribution of the consultants,
 - xxiv. enter into agreement with them defining their scope of work, responsibilities, functions, fees and mode of payment ,
 - xxv. shall not advertise his professional services nor shall he allow his name to be included in advertisement or to be used for publicity purposes save the following exceptions :-
 - a. a notice of change of address may be published on three occasions and correspondents may be informed by post,
 - b. an Architect may exhibit his name outside his office and on a building, either under construction or completed, for which he is or was an Architect, provided the lettering does not exceed 10 cm. in height ,
 - c. advertisements including the name and address of an Architect may be published in connection with calling of tenders, staff requirements and similar matters,
 - d. may allow his name to be associated with illustrations and descriptions of his work in the press or other public media but he shall not give or accept any consideration for such appearances,
 - e. may allow his name to appear in advertisements inserted in the press by suppliers or manufacturers of materials used in a building he has designed, provided his name is included in an unostentatious manner and he does not accept any consideration for its use,

- f. may allow his name to appear in brochure prepared by Clients for the purpose of advertising or promoting projects for which he has been commissioned,
 - g. may produce or publish brochures, pamphlets describing his experience and capabilities for distribution to those potential Clients whom he can identify by name and position ,
 - h. may allow his name to appear in the classified columns of the trade / professional directory and/or telephone directory/ website.
2. In a partnership firm of architects, every partner shall ensure that such partnership firm complies with the provisions of the sub-regulation (1).
 3. Violation of any of the provisions of sub-regulation (1) shall constitute a professional misconduct.

2.7.2 Condition of Engagement and Scale of Charges

Preamble

Architecture is a social art that touches all human beings at all levels of their existence everywhere and everyday. This is the only discipline, which encompasses the four major fields of human endeavor: Humanities, Science, Art, and Technology, actually putting into practice the professional inputs drawn from them. In sum, Architecture is the matrix of human civilization - an authentic measure of the social status, and an evocative expression of the ethos of an era. When conserved, it is heritage and when in ruins, it becomes archaeology, reconstructing tell-tale pictures of the past civilizations.



The demands on the profession over the years have become much more complex in nature and much wider in scope. Architecture uses the philosophic wholesomeness of Humanities, the logical rationalism of Science, the passionate imagination of Art and the inexhaustible resources of Technology. It calls for originality, creativity, conceptualization, perception, aesthetic values, and a holistic judgment of people, places, objects and events.

Architecture is primarily the art and science of designing spaces for serving the multifarious activities of human beings and for meeting their specific needs in a meaningful built environment. When various engineering services are rationally combined with Architecture's basic elements of Space, Structure and Form, the performance of human functions and the operation of mechanical utilities become efficient, pleasant and fulfilling. However, in its broadened scope and baffling complexity, Architecture has generated specializations such as Structural Design, Urban Design, City Planning, Landscape Architecture and Interior Architecture. Retrofitting of Buildings, Architectural Conservation, Construction Management have also lately emerged as specializations. Each of these compliment and support each other.

The primary objective of Structural Design is to evolve a strong, durable and an efficient skeleton so that the space which architecture encloses, and the form in which it expresses itself as interior content and an exterior container, becomes an organic extension of one another. Structure is so fundamental to architecture that it actually determines its two-pronged functions; the utilitarian appropriateness and the

expressive power of aesthetics. Structural design as a creative discipline assumes an indispensable position as a natural extension of Architectural Design. Endowed with an extraordinary power of conceptualization and creativity, an architect can conjure up unprecedented structural systems leading to the genesis of design-ideas introducing new concepts of Space and Form. In other words, the architect's contribution to structural design can effectively bring about qualitative change in the built-environment to stimulate the advancement of society towards a higher order of civilization.

Urban Design is architecture of the cities, highly complex and gargantuan in scale. The primary aim of urban design is to imbibe and maintain a sense of identity and harmony among buildings, open spaces and other structures by means of a pleasant and memorable visual imagery throughout the length and breadth of an urban setting. Accessibility at city-level and the movement at all levels must be designed to operate smoothly. Volumetric relationships, harmonious spatial sequences, transition from buildings to open spaces, streetscape and the services infrastructure must together invest a townscape with an exclusive imageability.

Landscape Architecture deals with the analysis, planning, design, management, preservation and rehabilitation of land and also determines the environmental impact. It is a science capable of objective analysis and synthesis leading to an ecologically-sensitive design, which is self-sustainable. It integrates from the very conception, the elements of architecture, urban design and civil engineering for meaningful and practical solutions. Landscape architecture covers a

wide spectrum of professional expertise, ranging from landscape planning at the regional and city scale on the one end, to the small and medium scale of public and private landscape at the other. It involves dealing with such sites as office plazas/ public squares, highways, city parks/ national parks, housing developments, institutional campuses, zoological and botanical parks.

In case of Interior Architecture, the primary objective is to generate a purposeful ambience such as would stimulate the user's creative potential through multifarious activities. It must facilitate the individual's sense of orientation, identification and eventual appropriation of architectural spaces that meld the interiors and exteriors into symbiotic relationships through varied experiences of scale, volume, light and shade. Interiors are not only to protect the users from the extremes of weather but also to nurture them emotionally. Since the interior spaces are truly the life-force of any building, they must be designed (and not decorated) as detailed artistic articulation of the basic architectural concept with deep insight and sensitivity to fulfill the fundamental functional and aesthetic needs that are efficient and pleasant to live and work in. The development of design is a very conscious act and it infuses life into interiors subconsciously. Creativity is the essence of architecture and harmony an essential aim of architects. Architecture that has been recognized as great, in the historic past as well as in our own time, has been harmonious with nature and its immediate environment. These are the essential tenets of design which architects aspire to follow.

Architecture Design essentially is a product of an individual mind but realized through association of experts from allied fields who contribute in the process of construction. Mutual respect and understanding work wonders for ensuring high quality of the end-product.

The architectural profession feels deeply concerned towards national priorities in the fields of energy conservation, ecology, environmental pollution, protection and preservation of architectural heritage and their precincts, low-cost housing, urban renewals, rural upliftment, economic development at local and district levels, etc. in the interest of quality of life both in rural and urban settlements.

The practice of the architectural profession is regulated by the Architects Act, 1972, and the regulations framed there under. The Council of Architecture has prescribed the Conditions of Engagement and Scale of Charges under the Architects (Professional Conduct) Regulations, 1989. The documents stipulate the parameters within which the Architect is required to function. These define the responsibilities, the scope of work and services, and prescribe the mandatory minimum scale of professional charges with a view to making the Client fully aware of the duties and services which he may expect from the Architect. The professional services required by the Client may not be comprehensive in scope in all cases and accordingly a clear understanding between the two must be arrived at. The Council of Architecture has prescribed the Conditions of Engagement based on general practice of the profession in India. These documents are applicable to all registered architects and such architects who have specialized in areas such as Structural Design, Urban

Design, City Planning, Landscape Architecture, Interior Architecture and Architectural Conservation.

The revised version of these documents reflects the Council's response to the many challenges which the profession of Architecture is facing at present, and is constantly endeavouring to meet them with active concern and unflinching commitment.

* Prescribed under regulation 2(1)(xii) of the Architects Professional Conduct Regulations, 1989. This revised document was approved by the Council of Architecture at its 40th Meeting held on 12th and 13th April, 2002, vide Resolution No. 303.

COMPREHENSIVE ARCHITECTURAL SERVICES

1. Scope of Work

The Architect is required to provide services in respect of the following :

Part I - Architecture

- 1.1 Taking Client's instructions and preparation of design brief.
- 1.2 Site evaluation, analysis and impact of existing and / or proposed development on its immediate environs.
- 1.3 Design and site development.
- 1.4 Structural design.
- 1.5 Sanitary, plumbing, drainage, water supply and sewerage design.

- 1.6 Electrical, electronic, communication systems and design.
- 1.7 Heating, ventilation and air conditioning design (HVAC) and other mechanical systems.
- 1.8 Elevators, escalators, etc.
- 1.9 Fire detection, Fire protection and Security systems etc.
- 1.10 Periodic inspection and evaluation of Construction works.

Part II - Allied Fields

- 1.11 Landscape Architecture
- 1.12 Interior Architecture
- 1.13 Architectural Conservation
- 1.14 Retrofitting of Buildings
- 1.15 Graphic Design and Signage

2. Schedule of services

The Architect shall, after taking instructions from the Client, render the following services:

Concept design [stage 1]:

- 2.01 Ascertain Client's requirements, examine site constraints & potential ; and prepare a design brief for Client's approval.
- 2.02 Prepare report on site evaluation, state of existing buildings, if any ; and analysis and impact of existing and/ or proposed development on its immediate environs.

- 2.03 Prepare drawings and documents to enable the Client to get done the detailed survey and soil investigation at the site of the project.
- 2.04 Furnish report on measures required to be taken to mitigate the adverse impact, if any, of the existing and / or proposed development on its immediate environs.
- 2.05 Prepare conceptual designs with reference to requirements given and prepare rough estimate of cost on area basis.

Preliminary Design and Drawings [Stage 2]:

- 2.06 Modify the conceptual designs incorporating required changes and prepare the preliminary drawings, sketches, study model, etc., for the Client's approval along with preliminary estimate of cost on area basis.

Drawings for Client's/ Statutory Approvals [Stage 3]:

- 2.07 Prepare drawings necessary for Client's/ statutory approvals and ensure compliance with codes, standards and legislation, as applicable and assist the Client in obtaining the statutory approvals thereof, if required.

Working Drawings and Tender Documents [Stage 4]:

- 2.08 Prepare working drawings, specifications and schedule of quantities sufficient to prepare estimate of cost and tender documents including code of practice covering aspects like mode of measurement, method of payments, quality control procedures on materials & works and other conditions of contract.

Appointment of Contractors [Stage 5]:

- 2.09 Invite, receive and analyse tenders; advise Client on appointment of contractors.

Construction [Stage 6]:

- 2.10 Prepare and issue working drawings and details for proper execution of works during construction.
- 2.11 Approve samples of various elements and components.
- 2.12 Check and approve shop drawings submitted by the contractor/ vendors.
- 2.13 Visit the site of work, at intervals mutually agreed upon, to inspect and evaluate the Construction Works and where necessary clarify any decision, offer interpretation of the drawings/specifications, attend conferences and meetings to ensure that the project proceeds generally in accordance with the conditions of contract and keep the Client informed and render advice on actions, if required.
- 2.14 In order to ensure that the work at site proceeds in accordance with the contract documents/ drawings and to exercise time and quality controls, the day-to-day supervision will be carried out by a Construction Manager (Clerk of Works/ Site Supervisor or Construction Management Agency in case of a large and complex project), who shall work under the guidance and direction of the Architect and shall be appointed and paid by the Client.
- 2.15 Issue Certificate of Virtual Completion of works.

Completion [Stage 7]:

- 2.16 Prepare and submit completion reports and drawings for the project as required and assist the Client in obtaining "Completion/ Occupancy Certificate" from statutory authorities, wherever required.
- 2.17 Issue two sets of as built drawings including services and structures.

3. Professional Fee:

3.01 In consideration of the professional services rendered by the Architect, he shall be paid professional fee and other charges in accordance with the Scale of Charges.

3.02 Any tax levied by law, such as Service tax, etc. contingent to professional services rendered by the Architect, shall be payable by the Client, over and above the gross fees charged by the Architect in relation to the services provided.

4. Schedule of Payment

The Architect shall be paid professional fee in the following stages consistent with the work done plus other charges and reimbursable expenses as agreed upon:

Retainer

On appointment/ Signing of Agreement/ Acceptance of offer.

Rs. 20M* or 5% of the total fees payable, whichever is higher, adjustable at the last stage.

Stage 1

On submitting conceptual designs and rough estimate of cost.

10% of the total fees payable.

Stage 2

On submitting the required preliminary scheme for the Client's approval along with the preliminary estimate of cost.

20% of the total fees payable less payment already made at Stage 1.

Stage 3

On incorporating Client's suggestions and submitting drawings for approval from the Client/ statutory authorities, if required. Upon Client's / statutory approval necessary for commencement of construction, wherever applicable.

30% of the total fees payable less payment already made at Stages 1 and 2.

35% of the total fees payable less payment already made at Stages 1 to 3a.

Stage 4

Upon preparation of working drawings, specifications and schedule of quantities sufficient to prepare estimate of cost and preparation of tender documents.

45% of the total fees payable less payment already made at Stages 1 to 3a.

Stage 5

On inviting, receiving and analyzing tenders; advising Client on appointment of contractors.

55% of the total fees payable less payment already made at Stages 1 to 4.

Stage 6

- a. On submitting working drawings and details required for commencement of work at site.
- b.
 - i. On completion of 20% of the work
 - ii. On completion of 40% of the work
 - iii. On completion of 60% of the work
 - iv. On completion of 80% of the work

On Virtual Completion

65% of the total fees payable less payment already made at Stages 1 to 5.

70% of the total fees payable less payment already made at Stages 1 to 6a.

75% of the total fees payable less payment already made at Stages 1 to 6b(i).

80% of the total fees payable less payment already made at Stages 1 to 6b(ii).

85% of the total fees payable less payment already made

at Stages 1 to 6b(iii).

90% of the total fees payable less payment already made

at Stages 1 to 6b(iv).

Stage 7

On submitting Completion Report and drawings for issuance of completion/ occupancy certificate by statutory authorities, wherever required and on issue of as built drawings - 100% of the fees payable less payment already made at various stages and retainer.

* Refer explanatory note 3 under Scale of charges.

5. Effecting payment to the architect:

5.1 The fee payable to the Architect shall be computed on the actual cost of works on completion. The payment due to the Architect at different stages be computed on the following basis:

5.1.1 Retainer: On rough estimate of cost.

5.1.2 At Stage 1: On rough estimate of cost.

5.1.3 At Stages 2 to 4: On preliminary estimate of cost.

5.1.4 At Stages 5 to 6b: Accepted tender cost.

5.1.5 At Stage 7: Actual total cost.

5.2 Progressive, on account, payments shall be made by the Client to the Architect against any of the above stages based on the quantum of work done during that stage, as may be mutually agreed to between the Client and the Architect.

5.3 No deductions shall be made from the fee of the Architect on account of penalty, liquidated damages, part rates or other sums withheld from payment or recovered from contractors/ suppliers.

5.4 When the work is executed wholly or in part with old materials or labour or carriage is provided by the Client, the percentage fees shall be calculated as if the work had been executed wholly by the contractor supplying all labour and new materials.

5.5 The actual cost of the completed works shall include cost of execution of assigned works, referred to in Scope of Work and also the cost of equipment & machinery such as Transformers, DG Sets, Sub-stations, Lifts, Air Conditioning Machines, Pumps & Motors, Water and Sewage Treatment Plant, etc., but excluding the cost of land.

6. Documentation and Communication Charges

Apart from the professional fee, the Client shall pay to the Architect Documentation and Communication charges, @ 10% of the professional fee payable to the Architect at all stages.

7. Reimbursable Expenses

In addition to the amounts reimbursable against site visits by the Architect/ Consultant, the Client will reimburse the Architect the following expenses incurred by him for discharge of his obligations:

7.01. Actual cost of travel (to & fro), boarding & lodging and local transport for any visit made by his staff to the site or such other place as may be necessary in connection with the execution of work and in connection with the performance of duties referred to in this agreement.

7.02. Cost of presentation models, computer simulation, presentation drawings, etc., prepared at the instance of the Client for purposes other than the Design and execution of the project.

8. Client's Role and Responsibilities

The Client shall discharge all his obligations connected with the project and engagement of the Architect as follows:

- 8.01 To provide detailed requirements of the project.
- 8.02 To provide property lease/ ownership documents.
- 8.03 To provide a site plan, to a suitable scale, showing boundaries, contours at suitable intervals, existing physical features including any existing roads, paths, trees, existing structures, existing service and utility lines and such lines to which the proposed service can be connected. In case such information is not readily available, the Client shall arrange for the survey/ collection of necessary information and pay for the same.
- 8.04 To furnish reports on soil conditions and test as required by the Architect or pay for the preparation of the same.
- 8.05 To furnish specific conditions/ Statutory stipulations/ Codes of Practice/Schedule of rates, etc., desired to be followed.
- 8.06 To pay all the fees, levies, security deposits and expenses in respect of statutory sanction.
- 8.07 To give effect to the professional advice of the Architect and cause no changes in the drawings and documents without the consent of the Architect.
- 8.08 To honour Architect's bills within one month of its submission.
- 8.09 To appoint a Construction Manager (Clerk of Works/ Site Supervisor or Construction Management Agency in case of a large and complex project) as per the Architect's advice.

9. Execution of the Assignment

- 9.01 The Architect shall keep the Client informed about the progress of work in his office.
- 9.02 The Architect shall appoint specialised consultants in consultation with the Client, if necessary.
- 9.03 The Architect shall be responsible for the direction and integration of the consultants work. The consultants, however, shall be fully responsible for the calculations, the detailed design and periodic inspection and evaluation of the work entrusted to them. The Architect shall, if requested, make available the design calculations.
- 9.04 The Architect will advise the Client on the Time Schedule (Bar Chart/PERT/CPM Network) prepared by the contractors for the completion of work, if required.
- 9.05 The Architect shall supply to the Client, free of cost, upto six sets of drawings at different stages.
- 9.06 The Architect shall not make any deviations, alterations or omissions from the approved drawings, involving financial implications without prior consent of the Client.
- 9.07 Any professional services to be rendered by the Architect at the instance of the Client after the agreed project completion period shall be compensated for on mutually agreed terms.
- 9.08 The Architect shall exercise all reasonable skill, care and diligence in the discharge of his duties and shall exercise such general superintendence and inspection as may be necessary to ensure that works are being executed in accordance with the Conditions of Contract.

- 9.09 Any revision in the drawings, tenders and documents, once approved, required to be made by the Client shall be compensated as additional services rendered by the Architect and paid for @ 50% of the fee prescribed for the relevant stage(s).
- 9.10 No change shall be made in the approved drawings and specifications at site without the consent of the Architect.
- 9.11 Any curtailment of the professional services, beyond Stage 2, shall make it obligatory for the client to pay at least 20% of the fee for the remaining Stage(s) of the curtailed work/ Services.

10. Time Schedule

The Architect shall, in consultation with the Client, prepare a Time Schedule in respect of various services to be rendered and discharge of Client's obligations.

11. Indemnification

In the event that a claim or suit is brought against the Architect or the Consultants by any third party for damages arising from personal injury or property damage caused wholly by the Client, or anyone employed by the Client, or anyone for whose acts the Client may be held responsible, then the Client shall indemnify the Architect and fully reimburse any loss, damage or expenses, including the attorney's fees, which the Architect may incur in connection therewith.

12. Ownership of Copyright

Architectural design is an intellectual property of the Architect. The drawings, specifications, documents and models as instruments of service are the property of the Architect whether the project, for which they are made, is executed or not. The Client shall retain copies of the Architect's models, drawings, specifications and other documents for his information and use in connection with the project. These

shall not be used for any other project by the Client or the Architect or any other person, except for the repetition as stipulated in the Scale of Charges.

13. Termination of Agreement

13.1 Agreement between the Architect and the Client may be terminated by either one giving the other a written notice of not less than 30 (thirty) days, should either fail substantially to perform his part of responsibilities/duties, so long as the failure is not caused by the one initiating the termination.

13.2 When termination of this Agreement is not related or attributable, directly or indirectly to any act, omission, neglect or default on the part of the Architect, the Architect shall be entitled to professional fees as stipulated under Clause 4 and sub-clauses 9.09 and 9.11 of Clause 9.

13.3 In the event of Architect's firm closing its business or the Client having terminated the agreement, the Client shall have the right to employ another Architect to complete the work, after making payment to the previous architect's firm.

14. Interpretation

In case of any ambiguity or difficulty in the interpretation of the Conditions of Engagement and Scale of Charges, the interpretation of the Council of Architecture shall be final and binding on the Architect and the Client.

15. Arbitration

All disputes or differences which may arise between the Client and the Architect under "Conditions of Engagement and Scale of Charges" with regard to the meaning or interpretation or matter or things done or to be done in pursuance hereof, such disputes and differences shall be referred for arbitration to the Council of Architecture. The arbitrator shall be appointed by the President, Council of Architecture. The arbitration shall be conducted as per the provisions of the

Arbitration and Conciliation Act, 1996. The decision and award of the arbitrator shall be final and binding on the Architect and the Client.

2.7.3 COA Education Norms

Minimum Standards of Architectural Education Regulations, 1983*

In exercise of the powers conferred by clauses (e), (g), (h) and (j) of sub-section (2) of section 45 read with section 21 of the Architects Act, 1972 (20 of 1972), the Council of Architecture, with the approval of the Central Government, hereby makes the following regulations, namely:-

1. Short Title and Commencement

- a. These regulations may be called the Council of Architecture (Minimum Standards of Architectural Education) Regulations, 1983.
- b. They shall come into force on the date of their publication in the Official Gazette.*

2. Definitions

In these regulations, unless the context otherwise requires

- a. "Act" means the Architects Act, 1972 (20 of 1972);
- b. "Council" means of Council of Architecture constituted under Section 3;
- c. "Executive Committee" means the Executive Committee constituted under Section 3;
- d. "Faculty" means the full-time teaching staff members in the service of the institution;
- e. "Institutions" means the colleges/departments/schools of architecture in India imparting instructions for recognized qualifications;
- f. "Recognized qualifications" means any qualification in architecture for the time being included in the Schedule or notified under section 15 of Act.

3. Duration and Stages of the Course

- a. The architecture course shall be of minimum duration of 5 academic years or 10 semesters of approximately 16 working weeks each inclusive of six months/one semester of approximately 16 working weeks of practical training after the first stage in a professional office.

- b. The architecture course may be conducted in two stages.
- c. The first 3 academic years / 6 semesters of approximately 16 working weeks each of the course shall be a basic standard course and shall be the first stage:

Provided that candidates admitted to the course shall complete the first stage within 5 years of admission to the course.

- d. The second stage of the course shall be of 2 academic years / 4 semesters of approximately 16 working weeks each.
- e. The completion of first stage shall not qualify candidates for registration under the Architects Act, 1972.

4. Admission to the Architecture Course

- a. ** No candidate, with less than 50% marks in aggregate, shall be admitted to the architecture course unless he/she has passed an examination at the end of the new 10+2 scheme of Senior School Certificate Examination or equivalent with Mathematics as a subject of examinations at the 10+2 level.
- b. Where 10+2 scheme is not introduced, candidates must have passed after 11 years schooling the Higher Secondary/ pre-university/ pre-engineering or equivalent examinations in the Science group of any recognized University or Board with English, Physics, Chemistry and Mathematics as compulsory subjects.
- c. The Institutions may subject the candidates, seeking admission to the architecture course, to aptitude tests specially designed to assess the candidates' aptitude; provided that no separate aptitude tests may be conducted where admissions are made through competitive examinations.
- d. The institutions shall not give weightage of more than 50% marks for aptitude tests in the matter of admissions.

5. Intake and Migration

- a. The sanctioned intake of candidates at the first year level shall not exceed a maximum of 40 in a class. If more than 40 candidates are admitted, separate classes shall be organized.

- b. The institutions may permit, at their discretion, migration of students from one institution to another subject to the maximum number of students not exceeding the permitted maximum intake in a class.

6. Courses and periods of Studies

- a. The institutions imparting instructions in architecture required for granting recognized qualifications may follow the courses and periods of studies as prescribed in Appendix-A.
- b. The institution shall, as an integral part of architectural education curriculum and as a part of teaching programme, arrange for study tours, visits to places of architectural interests.

7. Professional examination, Standards of proficiency and conditions of admissions, qualification of examiners

- a. The University or an independent examining body shall conduct the examinations at the end of each stage.
- b. The sessional work shall, as far as possible, be assessed by a jury of internal and external examiners.
- c. The weightage of marks for subjects having both class work marks as well as examination marks may not exceed the ratio of 50:50.
- d. The pass percentage shall not be less than 45% in each subject and shall not be less than 50% in the aggregate.
- e. Candidates who have passed in the internal assessment shall only be permitted to appear in an examination.
- f. An examiner for any of the subjects of examination shall have a minimum of 3 years teaching/professional experience in his/her field of study.

8. Standards of staff, equipment, accommodation, training and other facilities for technical education

- a. The institutions shall maintain a teacher/student ratio of 1:8.
- b. The institutions shall have a minimum number of 12 faculty members for a student strength of 100.
- c. The institution with the maximum intake of 40 in a class may have the faculty pattern as prescribed in Appendix-B.

- d. The institutions shall encourage the faculty members to involve in professional practice including research.
- e. The institutions shall provide facilities as indicated in Appendix-C.
- f. The institutions shall encourage exchange of faculty members for academic programmes.

Notwithstanding anything contained in these regulations, the institutions may prescribe minimum standards of Architectural Education provided such standards does not , in the opinion of the Council, fall below the minimum standards prescribed from time to time by the Council to meet the requirements of the profession and education thereof.

APPENDIX - A

Courses, Periods of Study and Subjects of Examination

Stage 1 - Basic Course

Sl No.	Subjects of Examination	Minimum
	No. of periods of 50 to 60 minutes duration	
01.	Architectural Design	600
02.	Building Construction	360
03.	Building Materials and Sciences	60
04.	Architectural Drawing and Graphics	360
05.	History of Architecture	120
06.	Workshop Practice	120
07.	Landscape Design	60
08.	Structural Mechanics and Theory of Structure	300
09.	Surveying and Levelling	60
10.	Building Services & Equipment	90
11.	Humanities	60
12.	Estimating & Costing	60
13.	Principles of Human Settlements	60
	Total	2310

Note:

1. The names given to the subjects of study are suggestive only. The same subjects pertaining to the architecture may be taught under different names. The emphasis on teaching various subjects may vary from institution to institution. New subjects may be introduced and certain subjects given less emphasis depending upon the requirement and educational philosophy of an institution. The subjects of Landscape Design, Humanities and Estimating & Costing may, if desired, be taught in the second stage of the course.
2. For the purpose of calculating the periods of study, 30 periods per week per semester/term of class are considered to be adequate. For 3 years of study at the rate of 16 weeks per semester/term, the total for first stage works out to be 2880 periods.
3. In order to give freedom to the Institutions to orient the Course as per their own philosophy, approx. 75 percent of the total periods of study have been taken into account for calculating the minimum hours of study for each subject while the institutions may allot the balance approx. 25 percent of the study periods to the subjects of the choice.
4. Minimum total contact periods should be 2880. Thus, 570 periods are to be allotted by the institution to the subjects of their choice.

Brief description of the subjects listed in the First Stage of the Course**1. ARCHITECTURAL DESIGN**

Applying the knowledge gained in other subjects and to design buildings of medium complexity e.g. Schools, Colleges, Dispensaries, Shops and Houses, etc., and present them in graphic form.

2. BUILDING CONSTRUCTION

Knowledge of various methods of building construction of medium complexity with timber, stone, bricks, concrete etc. including foundation, walls, roofs, staircase, joinery and finishes.

3. BUILDING MATERIAL AND SCIENCES

Knowledge of basic building materials and their behaviour such as bricks, stones, metals, timber and finishing materials. Effects of climate on built environment to be able to design for comfortable conditions.

4. ARCHITECTURAL DRAWING AND GRAPHICS

Ability to present in graphic form all elements of design - Study of shades and shadows, textures, tones, colours, geometrical form, perspectives and projections, free hand drawing and rendering.

5. HISTORY OF ARCHITECTURE

Study of various styles of Architecture and methods of construction through the ages in the world with emphasis on Indian Architecture.

6. WORKSHOP PRACTICE

Ability to make building models with various materials such as card-board, wood, plastics, plaster of paris and metals. Ability to make simple joints in timber, pipes and other materials.

7. LANDSCAPE DESIGN

Understanding of Landscape elements like trees, shrubs, plants, water, rocks and development of landscape planning and application in architectural design.

8. STRUCTURAL MECHANICS AND THEORY OF STRUCTURES

Understanding the structural concepts and behaviour of structural elements, simple calculations for columns, beams, frames, footings, slabs, walls in concrete, steel and timber.

9. SURVEYING AND LEVELLING

Understanding of various survey and levelling instruments, carrying out surveys of land of medium complexity and preparation of survey plans.

10. BUILDING SERVICES & EQUIPMENT

Study of and designing for water supply, drainage, sewage disposal, electricity supply, wiring and lighting for buildings.

11. HUMANITIES

Study of sociology, economics and culture, as applicable for design of human settlements.

12. ESTIMATING AND COSTING

Systems of taking out quantities and estimating for all trades involved in construction of medium complexity.

13. PRINCIPLES OF HUMAN SETTLEMENTS

Man and environment: Biological and behavioural responses to human settlements; Design for living, natural and built-environment. Ancient texts and treatises on settlement and area planning in India. Human settlements during ancient medieval and modern periods in India, Europe and other parts of the world. Characteristics of human settlements built by Muslims and Hindu rulers in India.

Stage-II

Subjects of Examination		Minimum
No. of periods of 50 to 60 minutes duration		
01.	Architectural design, planning and thesis	600
02.	Building Construction & Materials and Specifications	360
03.	Building Sciences and Services	60
04.	Town Planning Theory	360
05.	Professional Practice	120
06.	Building Bye-laws	120
07.	Structural System	60
08.	Electives such as :	300
i.	Housing	60
ii.	Urban Design	
iii.	Interior Design	
iv.	Building Management	
v.	Landscape Design	
vi.	Urban Planning	60
Total		1110

Note:

- i. The names given to the subjects of study are suggestive only. The same subjects pertaining to the architecture may be taught under different names.

The emphasis on teaching various subjects may vary from institution to institution. New subjects may be introduced and certain subjects given less emphasis depending upon the requirement and educational philosophy of an institution. Teaching in the second stage may be a lot more flexible. Students may obtain employment and may come back to complete the prescribed course later. It may also be possible to complete the second stage of the course as a part time course depending upon the facilities available in an institution.

- ii. For the purpose of calculating the periods of study, 30 periods per week per semester/term of class are considered to be adequate for 1½ years of study at the rate of 16 weeks per semester/term, the total for second stage work out to be 1440 hours.
- iii. In order to give freedom to the institutions to orient their course as per their own philosophy, approx. 75 per cent of the total periods of study have been taken into account for calculating the minimum period of study for each subject while the institutions may allot the balance approx. 25 per cent of the study periods to the subject of their choice.
- iv. Minimum total contact period should be 1440. Thus 360 periods are to be allotted by the institution to the subjects of their choice.

Brief Description of the Subjects Listed in the Second Stage of the Course

01. Architectural Design, Planning and Thesis

Design of complicated buildings and campuses involving analytical studies of building and spaces from sociological, economic and cultural points of view such as Universities, industrial Estates, Housing Schemes etc. Thesis on a subject requiring detailed analytical study to lay down validity and design criteria presented in graphic form, models and report. Thesis may also be on research projects presented as a written report.

02. Building Construction, Materials AND Specifications

Study of advanced building construction methods with new materials such as plastics, metals, synthetic boards and latest techniques in the use of concrete.

03. Building Sciences & Services

Study of Accoustics, Air-Conditioning, Heating, Cooling, Mechanical installations, Fire-control, Water supply and Drainage system for complicated buildings.

04. Town Planning (Theory)

A general understanding of Town Planning principles as they have evolved through the ages.

05. Professional Practice

The examination in professional practice is designed to assess the knowledge, skill and maturity which fit the architect to fulfill his professional duties and his understanding of the management of an office organization for such as a purpose. The syllabi should cover the following areas of study:- General principles of Indian Contract Act; Building Contracts generally, Conditions and forms of contract, Administration of contracts, Principles of arbitration, Indian Arbitration Act, 1940, valuation of properties, Architectural competitions; Easements of properties; Report writing; Codes of Practice; Conditions of Engagement; Duties and responsibilities of an architect in relation to owner, contractor, relate professional and public; Indian Standards & Codes of Practice.

(Planning and Building legislation etc. has been omitted because this is covered under Building Bye-laws - item 6)

06. Building Bye-Law

Study of building regulations to enable to design and prepare drawings for submission to concerned bodies.

07. Structure Systems

Study of new structural technology such as space frames, prestressing, shells and understanding of the limitations and scope of these techniques. Calculations for these techniques are not expected.

08. Electives Such as

- (a) Housing
- (b) Urban Design

- (c) Interior Design
- (d) Building Management
- (e) Landscape Design
- (f) Urban Planning

Intensive study of one or more of the subjects offered as elective depending upon the expertise available to an institution. The list of the subjects may be enlarged but they should be related to Architecture.

APPENDIX - B

Statement showing the designation, pay-scale and qualification etc. required to be prescribed for faculty positions:

Sl. No.	Designation	Pay-Scale	Qualifications
1.	Lecturer	Rs. 700-40-1100-50-1600	Bachelor's Degree in Architecture or equivalent plus two years of relevant professional experience. OR Master's Degree in Architecture or equivalent and one year's relevant professional experience. Provided further that if a candidate does not possess a Master's Degree in Architecture and professional experience or a person possessing such experience is not found suitable, the person appointed will be required to obtain the desired professional experience within a period of five years on his appointment failing which he will not be able to earn future increment until he fulfils this requirement.
2.	Reader/Asstt. Professor	Rs. 1200-50-1300-60-1900.	B.Arch. or equivalent with 7 years Asstt. Professor experience in Teaching / Research/ Professional Work. OR M. Arch. Or equivalent with 5 years experience in Teaching/Professional Work.
3.	Professor	Rs 1500-60-1800-100-2000-125/2-2500	B.Arch. or equivalent with 10 years of experience in Teaching/Research Work. Experience of guiding research. OR M. Arch. or equivalent with 8 years of experience in Teaching/ Research/ Professional Work.
4.	Principal/Head of Department	Rs. 1500-60-1800-100-2000-125/2-2500 plus special pay.	B.Arch. or equivalent with 10 years experience in Teaching / Research

/ Professional Work. Experience of guiding research. OR M. Arch. Or equivalent with 8 years of experience in Teaching/ Research / Professional work.

5. The Institution may appoint Professor of Eminence.

Note:

1. It is advisable that approx. 25% of the teaching load should be allotted to the visiting faculty so that the students are brought in closer contact with the persons actively engaged in practice.
2. Each institution may have a staff structure consisting of the following:
Principal or Head of Department and Professors, Asstt. Professors/Readers and Lecturers in the ratio of 1:2:4.
3. The Institutions may recruit qualified persons in the field of Engineering/Qty. Surveying/Art/Humanities depending on the actual requirements against the total sanctioned strength.
4. The equivalent qualification shall mean any such qualification as recognised by the Council of Architecture for registration as an Architect under section 25 of the Architects Act, 1972.

APPENDIX - C

Physical Facilities

The Institution of Architecture should be located in a building to have a floor area of about 15 sq.m.m. per student. The building should include class rooms and at least 5 studios, adequate space for faculty members, library, workshop, materials museum, laboratories, exhibition/conference room, office accommodation and common area for students and staff. The space requirements per student for architectural education whether in the Institution or in the Hostel are apt to be more than for most other types of professional courses like engineering and medicine because of the large space required for preparation of drawings. This factor should be borne in mind in the design of Hostels and Studios. Facilities may also be provided for extra-curricular activities and sports. The equipment in the workshop/laboratories has also to be provided to meet with the special requirement for architectural education. It is desirable to provide locker

facilities in the studios for students. The Library, Workshops, Laboratories and Photography unit should be managed by professionally qualified staff with adequate supporting staff to assist the students and faculty members in their academic programmes. There should also be administrative supporting staff to run the Architectural Institutions.

It is desirable to provide hostel accommodation and residential accommodation for staff and students in close proximity of the institution.

** Amended by Notification in the Gazette of India Part III - Section 4 on January 7, 2006.

2.7.4 Definitions of Important Terms Adopted by The UIA (International Union of Architects) in its accord (1999) in 'International Standards of Professionalism of Architectural Practice'.

Practice of Architecture

Definition:

The practice of architecture consists of the provision of professional services in connection with town planning and the design, construction, enlargement, conservation, restoration, or alteration of a building or group of buildings. These professional services include, but are not limited to, planning and land-use planning, urban design, provision of preliminary studies, designs, models, drawings, specifications and technical documentation, coordination of technical documentation prepared by others (consulting engineers, urban planners, landscape architects and other specialist consultants) as appropriate and without limitation, construction economics, contract administration, monitoring of construction (referred to as «supervision» in some countries), and project management.

Architect

Definition:

The designation «architect» is generally reserved by law or custom to a person who is professionally and academically qualified and generally registered/licensed/certified

to practice architecture in the jurisdiction in which he or she practices and is responsible for advocating the fair and sustainable development, welfare, and the cultural expression of society's habitat in terms of space, forms, and historical context.

Fundamental Requirements of an Architect

Definition:

The fundamental requirements for registration/licensing/certification as an architect as defined above, are the knowledge, skills, and abilities listed below that must be mastered through recognized education and training, and demonstrable knowledge, capability, and experience in order to be considered professionally qualified to practice architecture. Fundamental knowledge and abilities of an architect These include:

- Σ Ability to create architectural designs that satisfy both aesthetic and technical requirements, and which aim to be environmentally sustainable;
- Σ Adequate knowledge of the history and theories of architecture and related arts, technologies, and human sciences;
- Σ Knowledge of the fine arts as an influence on the quality of architectural design;
- Σ Adequate knowledge of urban design, planning, and the skills involved in the planning process;
- Σ Understanding of the relationship between people and buildings and between buildings and their environments, and of the need to relate buildings and the spaces between them to human needs and scale;
- An adequate knowledge of the means of achieving environmentally sustainable design;
- Σ Understanding of the profession of architecture and the role of architects in society, in particular in preparing briefs that account for social factors;
- Σ Understanding of the methods of investigation and preparation of the brief for a design project;
- Σ Understanding of the structural design, construction, and engineering problems associated with building design;
- Σ Adequate knowledge of physical problems and technologies and of the function of

buildings so as to provide them with internal conditions of comfort and protection against climate;

- Σ Necessary design skills to meet building users' requirements within the constraints imposed by cost factors and building regulations;
- Σ Adequate knowledge of the industries, organizations, regulations, and procedures involved in translating design concepts into buildings and integrating plans into overall planning;
- Σ Adequate knowledge of project financing, project management , and cost control.

Education

Definition:

Architectural education should ensure that all graduates have knowledge and ability in architectural design, including technical systems and requirements as well as consideration of health, safety, and ecological balance; that they understand the cultural, intellectual, historical, social, economic, and environmental context for architecture; and that they comprehend thoroughly the architects' roles and responsibilities in society, which depend on a cultivated, analytical and creative mind.

DESIGN AND PROCEDURE

3.1 Introduction

Methods and procedure are bound to be imperatives of the nature of the study. Since the present study required the collection of data from the practicing architects, which necessitated the construction and standardization of a tool that could be used to collect the relevant data. For this purpose a methodology for conducting research was devised after going through the available literature on the subject. Many practicing architects were also interviewed to find out the most important issues pertaining to architectural practices in contemporary scenario. The literature studied and the interviews helped the investigator to formulate the following hypotheses for this study. Based on these hypotheses the tool for collecting the data was devised.

3.2 Hypothesis

On the basis of literature reviewed and the feedback given by practicing architects. The following null hypotheses were framed as advised ¹²⁵, in addition to the one stated in Chapter No 1.

1. Age of the architect has no impact on the ways of getting the project.
2. Age of the architect has no impact on the ways of managing architectural practice.
3. Level of operation of the architect has no impact on the ways of getting the project.

4. Level of operation of the architect has no impact on the ways of managing architectural practice.
5. Type of client served has no impact on the ways of getting the project.
6. Type of client served has no impact on the ways of managing architectural practice.
7. Choice of opting architecture has no impact on the ways of getting the project.
8. Choice of opting architecture has no impact on the ways of managing architectural practice.

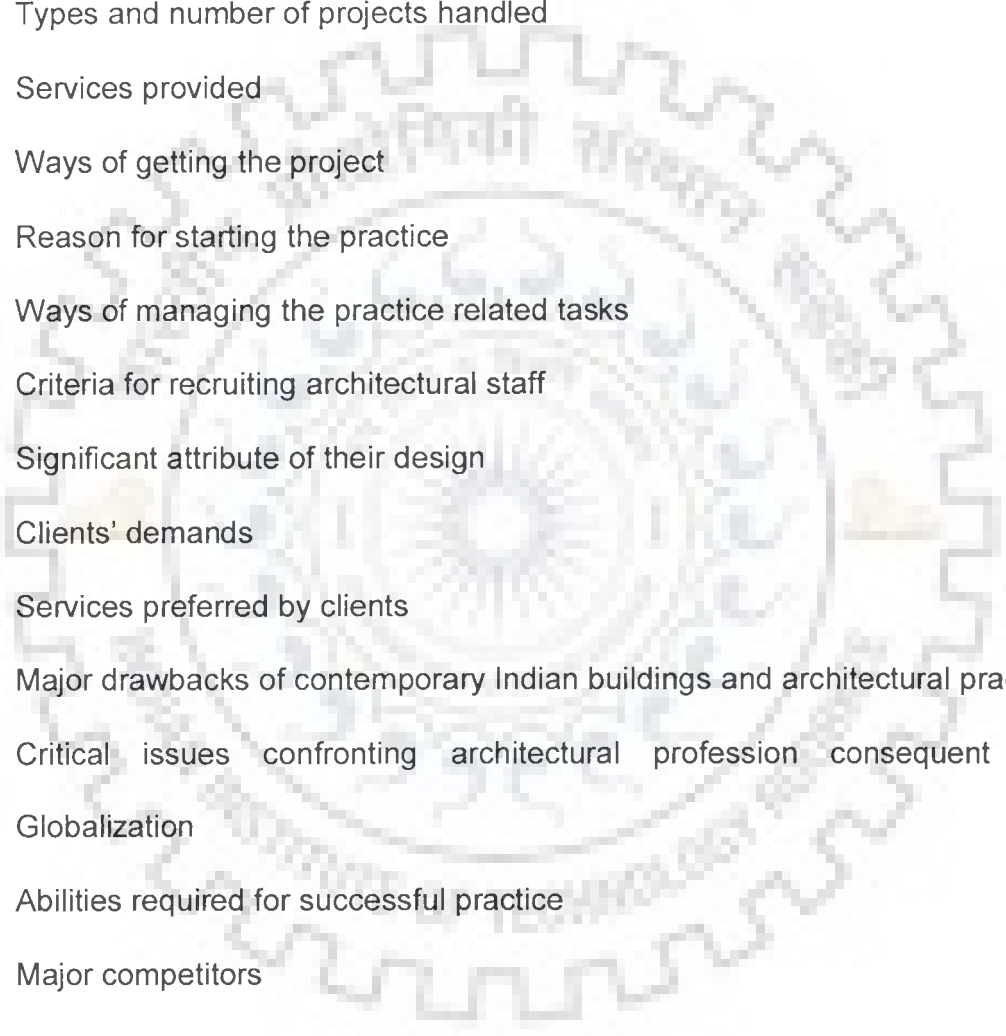
3.3 Preparation of the Tool

In view of the objectives of the study, a tool was needed to know about the status of contemporary practices and adequacy of its education prevalent in the country. *Neither any standardized tool was available, nor was any systematic and statistically valid study on the topic ever conducted in India.* Therefore the investigator thought it proper to design the needed tool. The personal experience of the investigator as a practitioner (for five years) as well as an academician (for over two decades) and the literature reviewed aided in formulation of an interview schedule to collect first hand information from reputed practitioners and to know the ground reality of the profession. All efforts had been made to interview architects across different age groups, professional standings, reputation, serving in mega, medium and small towns. A semi-structured questionnaire used for this purpose along with the list of practicing architects interviewed is attached as Annexure-1 and Annexure-2.

Most of the eminent practitioners interviewed indicated that the *competition has increased many folds* consequent upon globalization specially after the signing of global trade treaties. *Business environment has drastically changed*, there is tremendous change in the *clients, their demands, aspirations and expectations have increased significantly*. They also reported that there are *significant changes at the projects level, in ways of getting project and managing various practice related tasks, the social work environment of architectural practice is experiencing a sea change consequent upon globalization, liberalization and IT revolution*. New challenge facing the practitioners most importantly is delivering the services in hitherto unknown speed meeting tough time targets and providing the designs within stipulated costs, using latest software for design visualization and presentation were also highlighted by them. The survival strategy that are being adopted by them and others (in their opinion) or that need to be adopted to meet these challenges caused by new business environment was also emphasized. More importantly the need to collaborate among architecture fraternity or to work in team with other professionals of building industry to produce joint ventures were also highlighted by them during discussions. Since the demands of the profession have changed the criterion for recruiting architectural staff has also changed remarkably. While expressing their opinion on adequacy of existing architectural education system to meet the changing demands and the areas in which most of the fresh graduates lack knowledge, and the areas in which specialization is more warranted in view of changed business environment were also highlighted during the discussions. More information / feedback on these issues were needed to get a right picture of the current scenario

of the professional practice in the country. So they helped / guided the investigator in the formulation of the questionnaire which was used initially.

A trial form was thus prepared in which all the issues figured in the interviews and the literature studied were included. The issues incorporated are:

- 
- Types and number of projects handled
 - Services provided
 - Ways of getting the project
 - Reason for starting the practice
 - Ways of managing the practice related tasks
 - Criteria for recruiting architectural staff
 - Significant attribute of their design
 - Clients' demands
 - Services preferred by clients
 - Major drawbacks of contemporary Indian buildings and architectural practices
 - Critical issues confronting architectural profession consequent upon Globalization
 - Abilities required for successful practice
 - Major competitors
 - Survival strategy
 - Reasons for not accepting any clients / project

Their opinion on the architectural education was also sought and the issues incorporated are:

- Need and type of specialization required

- Reasons for architecture not sought after profession or not being the first preference of most new entrants
- Difficulties faced by fresh graduates to survive in their own practices
- The major short coming of existing architectural education system, importance of few listed subjects in architectural practice and the adequacy of their knowledge in fresh graduates.

The questionnaire thus devised with the help of experts used for conducting the pilot study is enclosed as Annexure-3. A total number of twenty-two issues were figured and included. Out of them sixteen were related to architecture practices and six were related to architecture education. The major portion of questionnaire was built on 5 point scale and the architects were asked to tick the most suited option, for example in case of services provided (question No.2).

The respondents were asked to reflect on the following five point scale

[1] Always, [2] Often, [3] Sometimes, [4] rarely, [5] never.

And for questions related to significant attributes of their design (question No. 7) the significance reflected on a 5 point scale as follows:

[1] Very significant, [2] Significant, [3] Do not know [4] Insignificant, [5] Very insignificant.

Likewise for questions related to clients' demands (question No. 8) are depicted on following five points.

[1] Strongly agree, [2] Agree, [3] Do not know, [4] Disagree, [5] Strongly disagree.

The other format used in the trial form was that the respondents were asked to do ranking for example in question no 6, they were asked to rank various

criteria listed for recruiting architectural staff. The same pattern is followed in case of 'Abilities required for successful practice' and 'Specialization required at U.G level' or they were simply asked to tick the right choice as is given in 'Ways of getting the projects' (question no. 3), in 'Survival strategy' (question no 14) and in 'Reasons for not accepting any clients / project (question no 15).

3.4 Pilot Study

After the construction of the trial form, the investigator conducted a pilot study in Chandigarh and the adjoining cities of Panchkula and Mohali (commonly called tricity). The main objective of the pilot study was to meet the requirements of the scientific imperatives of the tool construction as rigorously as possible. The trial form was administered to forty six architects so as to figure out and retain the most important / suitable issues for the final form. Data were collected by personally visiting them. The purpose of collecting data was explained to them. The need to give honest response was emphasized. They were also requested to respond to all questions and to suggest the improvements required, if any. Majority of them were of the opinion that the questionnaire is quite lengthy and it took too long to fill it. They apprehended that getting desired response on such a form will be quite difficult. They suggested to leave certain issues of lesser importance and to modify the few which seems repetitive. Based on the experts' advice, the tool was reviewed and modified accordingly. The final form thus prepared was used to seek the required information regarding the status of contemporary architecture practices and adequacy in its education system on all India level (enclosed as Annexure-4).

Table 3.1 shows the issues raised and number of options given in the pilot survey as well as retain in the final form. It clearly shows the alternation / deletion done for the final questionnaire.

Table 3.1 Issues raised and number of options given in the pilot and final survey

S.no.	Issues investigated	Options in pilot survey	Option finally retained
ARCHITECTURE PRACTICES			
1	Type of project handled	10	10
2	Services provided	12	8
3	Ways of getting the project	11	9
4	Reasons of starting practice	5	Deleted
5	Ways of managing office tasks	15	15
6	Criteria for recruiting architectural staff	10	10
7	Major design focus	16	12
8	Client's demands	9	9
9	Services preferred by clients	3	3
10	Few important issues pertaining architectural practice	34	30
11	Major shortcomings of Indian buildings	8	Deleted
	And Indian architectural practices	16	Deleted
12	Critical issues confronting architectural profession, consequent upon Globalization	13	11
13	Abilities required for successful practice	4	4
14	Major competitors	7	7
15	Survival strategy	11	11

16	Reasons for not accepting any clients	3	3
	Reasons for not accepting a project:	3	3
ARCHITECTURAL EDUCATION			
17	Perception about existing architectural education	6	6
18	Specialization required at UG level	8	8
19	Reason of architecture not being a sought after branch	3	3
20	Major shortcomings of fresh graduates	8	Deleted
21	The major short coming of existing architectural education system	4	4
22	Subjects required for contemporary practices and their adequacy in existing education system	21	21

3.5 Sample Design

A questionnaire survey was conducted at national level for which 1500 questionnaires were mailed or distributed to randomly selected practicing architects in the major towns of the country, covering all five zones i.e. north, east, south, west and central. An equal number of emails were also sent. In the absence of any data base/ list of practicing architects / firms with Council of Architecture(COA), a list has specifically been prepared based on the lists of practicing architects provided by Department of Architecture, Indian Institute of Technology Roorkee, Roorkee, Chandigarh College of Architecture, Chandigarh, Department of Architecture, Guru Nanak Dev University, Amritsar and Department of Architecture, Giani Zail Singh

College of Engineering and Technology, Bathinda with whom the students of these Institutes had taken their practical training since 2000, and with which investigator is closely associated. Even the email ids were not readily available, so the list was prepared based on Council of Architecture directory 2005 and the email ids given in The Journal of Indian Institute of Architects (JIIA). Help of senior students of above mentioned colleges, acquaintances and friends efforts were being taken to approach the practicing architects all over the country. The executive members of various IIA Chapters also helped the investigator in this daunting task. The investigator personally attended annual meetings of Indian Institute of Architects (IIA) 'Natcon 06' held in December 2006, IIA Punjab - Chandigarh Chapter held in January 2007 and Ludhiana Architects Association (LAA) meet held in March 2007. In addition seminars, workshop, lectures held in the region were also attended to interact with the architects of repute and to get the questionnaires filled personally. The data was collected from 213 respondents during December 2006 to April 2008. The data collected was statistically analyzed using SPSS software. To tabulate the data collected frequency of each of the 5 responses were calculated, but for the final tabulation, agreed and the strongly agreed were clubbed together and disagree and strongly disagree were also clubbed together and the data was finally tabulated separately for each issue. Few of these issues were also cross-tabulated to find out the impact of one over the other.

3.6 Statistical Strategy

For the purpose of analyzing the data collected, frequencies of the responses given were calculated in all of the cases. Chi square test was applied to check the impact of few variables, like (a) age, (b) level of operation, (c) type of client served and (d) choice of opting architecture profession as career on the 'Ways of getting the projects' and on the 'Ways of managing various practice related tasks'. Weighted mean was also calculated to find out the final ranking of the options given in the following issues i.e. 'Criteria of recruiting architectural staff', 'Abilities required for successful practice' and 'Specialization required at UG level'.

3.6.1 Chi Square Test

Chi square is an important non parametric test being used frequently by researchers in the field of Social Sciences and clinical research in Medical Profession as a test of independence. We require only the degree of freedom for applying this test. The degree of freedom is equal to,

$$\text{Degree of freedom (DF)} = (C-1) \times (R-1)$$

Where C is the number of columns and R is the number of rows, in the data to be cross tabulated, in the sample. As a test of independence Chi square test enables us to explain whether or not two attributes are associated i.e. whether the age has any relationship with ways of getting the projects, Chi square test helps in deciding such issues. In such situations, one has to proceed with null hypothesis that the two attributes viz the 'Age' and 'Ways of getting the projects' are independent, which means that age is not affecting the ways of getting the projects.

On this basis, calculations of the expected frequencies were worked out and the value of Chi square was calculated.

If the calculated value is less than the table value at a certain level of significance for given degree of freedom, it is concluded that null hypothesis stands, which means that the two attributes are independent or not associated i.e. the age has no impact on managing various office tasks. But if the calculated value of Chi square is greater than its table value, inferences would be that null hypothesis does not hold good which means the two attributes are associated and the association is not because of some chance factor but it exists in reality i.e. the age has significant impact on managing various practice related tasks ¹²⁵. (Chi Square distribution table is enclosed as Annexure-5).

(Note of caution – Chi Square is not a measure of the degree of relationship or the form of relationship between two attributes, it is simply a technique of judging the significance of such association or relationship between two attributes.

$$\text{Chi square} = \frac{\sum (f_o - f_e)}{f_e}$$

Where, f_o = frequency observed

f_e = frequency expected

Since the data collected is non parametric in nature, Chi square test had been applied in this study to understand the impact of one variable on the other.

3.6.2 Weighted mean

Weighted mean was also calculated for some of the questions, in which the respondents were asked to rank the options given. For example in question number 12, the respondents were asked to rank the four abilities listed for successful

practice. The weights were assigned in the reverse order of the rank given i.e. the 'Rank 1' is assigned 4 weight, 'Rank 2' is assigned 3 weight, 'Rank 3' is given 2 weight and 'Rank 4' is assigned 1 weight. The frequency attained in each case is multiplied by the respective weight. The some total is then divided by the total frequency i.e. 213 to find out the mean weight. The final ranking thus achieved on the basis of weighted mean (As shown in the table 3.2 for data refer table 4.3.11) was Business ability-Rank 1, Technical know how- Rank 2, Design ability- Rank 3, Integrity-Rank 4.

Table 3.2: Calculation of weighed mean

S. No.	Abilities listed	(a) Ranks given	(b) Weight assigned	(c) Number of responses/ Frequency	(d) Sum total (b) *(c)	(e) (d) / 213 Total no. of responses	(f) Overall ranking
1	Integrity	1	4	32	128		
		2	3	9	27		
		3	2	39	78		
		4	1	126	126		
		G. Total			359/213	1.68	4
2	Business ability	1	4	84			
		2	3	63			
		3	2	19			
		4	1	42			
		G. Total			605/213	2.84	1
3	Design ability	1	4	64			
		2	3	41			
		3	2	75			
		4	1	26			
		G. Total			555/213	2.60	3
4	Technical know how	1	4	53			
		2	3	82			
		3	2	62			
		4	1	11			
		G. Total			593/213	2.78	2

3.7 Zone wise Distribution of Respondents

Table 3.3 Distribution of Respondents According to Zone

Region		
North region	count	108
	%	50.7
east region	count	23
	%	10.8
South region	count	37
	%	17.4
West region	count	24
	%	11.3
central region	count	22
	%	10.3
Total	count	213
	%	100

Out of the total 213 responses received, 50.7 % (108) respondents are from North region covering the cities of Bathinda, Chandigarh, Faridabad, Gaziabad, Gurgaon, Jaipur, Jammu, Lucknow, Ludhiana, Mohali, New Delhi, Noida, and Panchkula, 10.8 % (23) respondents are from East region covering the cities of Bhubaneswar, Gauhati, Kolkata, and Patna, 17.4 % (37) respondents are from South region consisting of cities Bangalore, Chennai, Hyderabad, Kochi, and Trivanthapuram, and 10.3 % (22) respondents are from Central region covering the cities of Bhopal, Gwalior, Nagpur and Raipur. and 11.3 % (24) are from the Western region consisting of cities of Ahmedabad, Mumbai, Nasik, Vadodara. as indicated in table 3.3

FINDINGS AND ANALYSIS

4.1 Introduction

This chapter includes the background information of the respondents and the analysis, results and findings of the survey conducted. The background information contains the profile/characteristics of the respondents in terms of their age, level of education, their choice of opting architecture as profession, as well as, the geographic region handled by them, the types of clients served, the size of firms, annual turnover and ways of charging fees are also incorporated in this section. The findings and discussions of the data collected are discussed under two parts as under:

- i) Results and findings related to Professional Practice
- ii) Results and findings related to Architectural Education.

4.2 Profile of the Respondents

The profile of the respondents is presented in terms of distribution of respondents according to their age, gender, educational qualification and their preference of opting architecture. There after the information about their firms that is the geographical region handled by them, their main clients, the size of the firms (in terms of number of architect employees in the firm) and the annual turnover and amount of business handled of the firm is presented. The basis of charging fees is also presented in the part.

4.2.1. Age wise Distribution of Respondents

On the basis of age the sample is subdivided in three parts as under:

Figure-1
Distribution of Respondents
According To Their Age

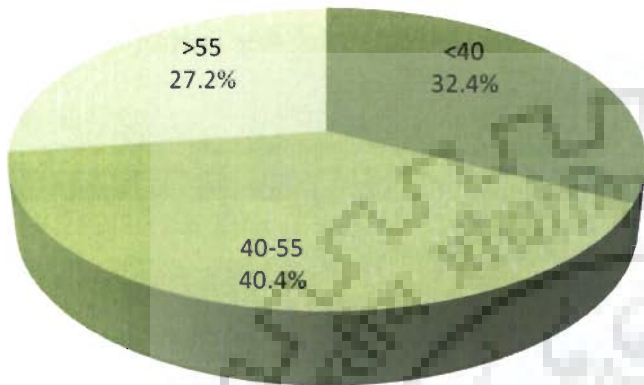


Figure-2
Distribution of Respondents
According to Gender

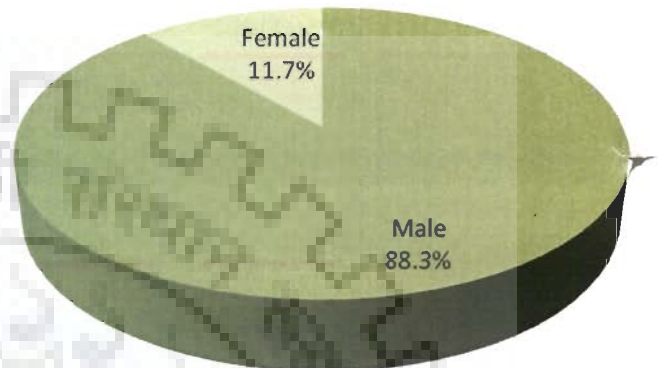
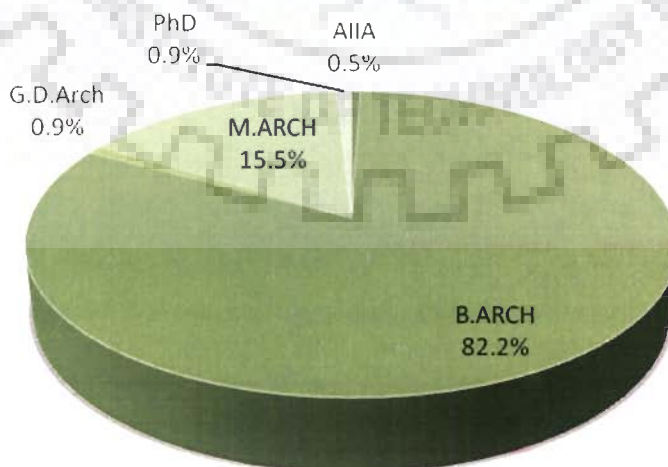


Figure-3
Distribution of Respondents According to their
educational qualification



- i) Younger age group consists of practicing architects of less than 40 years of age.
- ii) Middle age group consists of practicing architects between 40 and 55 years of age.
- iii) Older age group consists of practicing architects of more than 55 years of age.

As shown in table 4.2.1 and figure-1, 32.4% of the respondents were below 40 years of age (Younger age group) and 27.2% were above 55 years of age (Older age group) and the rest were within the age group of 40-55 (Middle age group). With minimum reported age of 25 years and maximum reported as 73 years (mean age comes out to be 46.23 years) in the sample taken.

Table 4.2.1 Distribution of respondents according to their age

Age wise Distribution		
Younger Age Group (less than 40 years)	Count	69
	%	32.4
Middle Age Group (between 40-55 years)	Count	86
	%	40.4
Older Age Group (More than 55 years)	Count	58
	%	27.2
Grand Total	Count	213
	%	100

4.2.2. Gender wise Distribution of Respondents

As indicated in the table 4.2.2 and figure-2 majority of respondents were male 88.3 % (188) and only 11.7 % (25) were female practicing architects. It shows that even though female architects constitute 34% population (COA norms) of registered architects but only very few 11.7% go for their own practice.

Table 4.2.2: Distribution of Respondents according to Gender

Gender Wise Distribution		
Female	Count	25
	%	11.7
Male	Count	188
	%	88.3
Total	Count	213
	%	100

4.2.3 Qualification wise Distribution of Respondents

The table 4.2.3 and figure-3 shows the educational level of practicing architects. It was found that majority (82.2%) are holding bachelor degree (B.Arch.) and only 0.9 % having doctoral degree (Ph.D.) and 15.5 % respondents are having master degree (M.Arch. or its equivalent) in India. It was also found that the ratio of AIIA was nominal as compared to B.Arch. so it is inferred that majority architects in the country are trained through university system.

Table 4.2.3: Distribution of Respondents according to their Educational Qualification

Qualification of Respondents		
Associates Indian Institute of Architects (AIIA)	Count	1
	%	0.5
Bachelor of Architecture (B.Arch.)	Count	175
	%	82.2
Government diploma in Architecture (G.D.Arch.)	Count	2
	%	0.9
Master of Architecture (M.Arch.)	Count	33
	%	15.5
Ph.D. in Architecture	Count	2
	%	0.9
Total	Count	213
	%	100

4.2.4 Distribution of Respondents According to their Choice of Opting Architecture

As indicated in table 4.2.4 and figure-4 the sample consists of 66.2 % of respondents who had opted architecture as their first choice at the time of admission and only 13.6 % of them are in this profession because they have no other option. This finding is significant as it is time and again reported in the journals that uninterested lot of students are taking/getting admissions in architectural institutes and all efforts must be made to permit only the interested lot having aptitude for the profession be allowed. As those opted for architecture as their first choice are more likely to remain in the profession and work for the betterment of the profession.

Table 4.2.4: Distribution of Respondents according to their Choice of Opting

Architecture		
Choice of Opting Architecture		
First option	Count	141
	%	66.2
Second Option	Count	43
	%	20.2
Any other	Count	29
	%	13.6
Total	Count	213
	%	100

This may be the reason that COA conduct NATA (National Aptitude Test for Architecture), IIA (Indian Institute of Architects) conduct its own aptitude test. AIEEE (All India Entrance Examination for Engineering) have its own architecture aptitude test and even IITs (Indian Institute of Technology) entrance examination

Figure-4
Distribution of Respondents According to their Choice of Opting Architecture

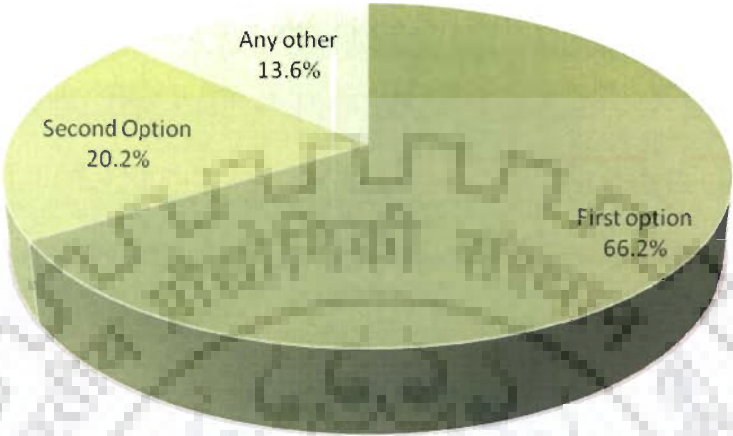
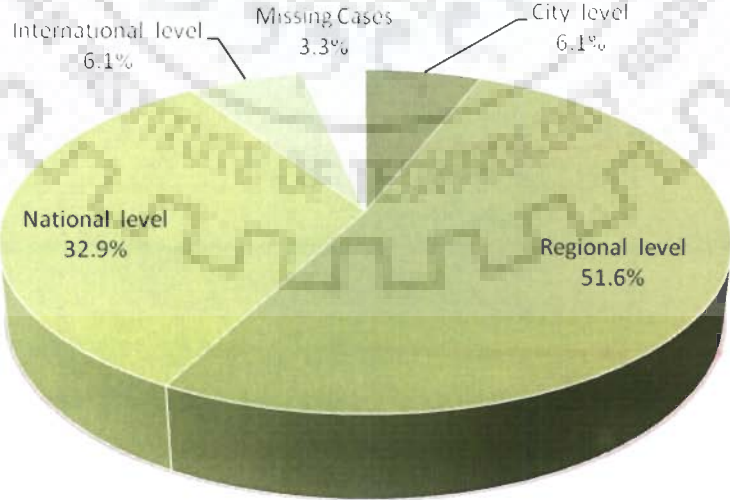


Figure-5
Distribution of Respondents According to Geographic Region Handled



have a separate architecture aptitude test. And no person without clearing aptitude tests is given admission to pursue study and also registration to practice as per COA India norms.

4.2.5. Geographic Region Handled

As indicated in table- 4.2.5 and figure-5 out of the total respondents 6.1% of the architects serve only at City level, whereas 51.5% serve at Regional level, and 32.9% are serving the National level. Only 6.1 % of architects reported that they are serving the International clients doing projects worldwide

Table 4.2.5: Distribution of Respondents according to Geographic Region Handled

Geographic Region Handled		
Missing Cases	Count	7
	%	3.3%
City level	Count	13
	%	6.1%
Regional level	Count	110
	%	51.5%
National level	Count	70
	%	32.9%
International level	Count	13
	%	6.1%
Grand Total	Count	213
	%	100

Note - The respondents ticked more than one given level of operation were put in the higher ticked bracket i.e. Those ticked regional as well as national level were put in the national level bracket.

Figure-6
Distribution of Respondents According to Type of Clients Served

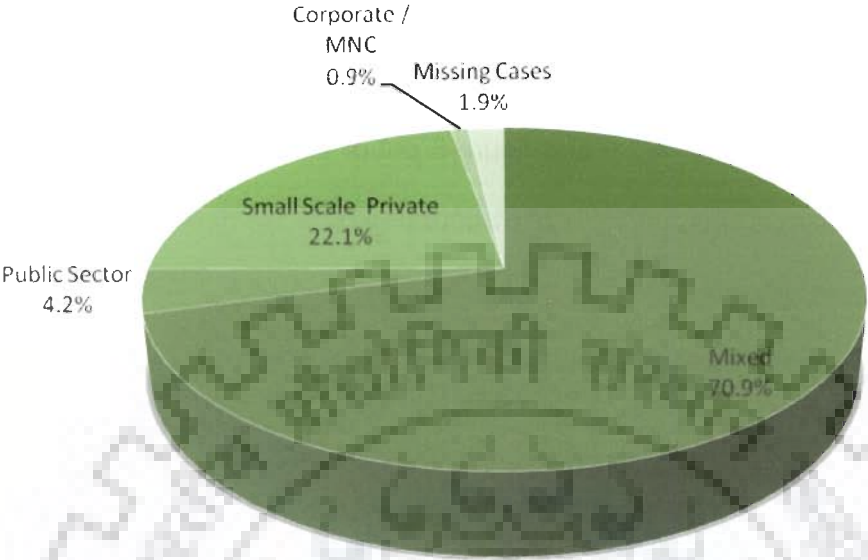
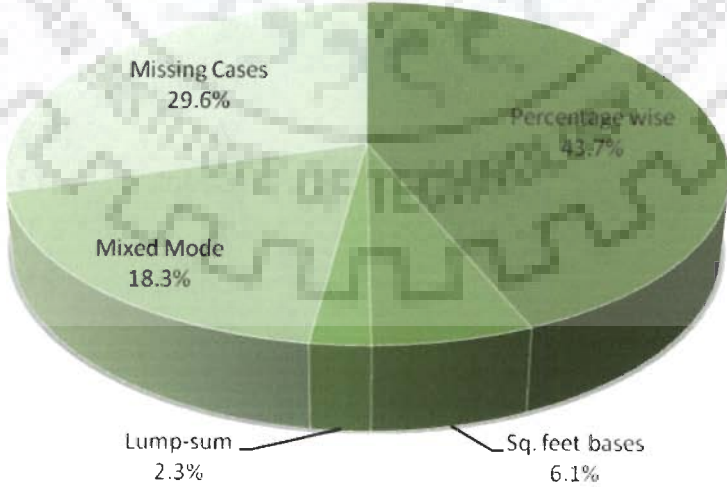


Figure-7
Distribution of Respondents According to way of charging fee



4.2.6. Type of Clients Served

As indicated in table- 4.2.6 and figure-6, it was found that only about 1% of respondents are doing the projects exclusively for Corporate sector / Multinational companies and 4.2% are serving only for public/ government sector, 22.1% are catering mainly to small scale/ individual clients, whereas 70.9% are doing mixed projects, i.e. whatever comes to them they enjoy doing. This highlights that majority architects in India are doing mixed projects i.e. they prefer to remain a generalist rather than becoming a specialist of any one type of projects or catering to any one kind of client.

Table 4.2.6: Distribution of Respondents According to Type of Clients Served

Clients Served		
Missing Data	Count	4
	%	1.9%
Corporate/ MNC	Count	2
	%	0.9%
Public Sector	Count	9
	%	4.2%
Small Scale Private	Count	47
	%	22.1%
Mixed	Count	151
	%	70.9%
Grand Total	Count	213
	%	100

Note - The respondents ticked more than one given choice in this case were put in the mixed category.

4.2.7. Size of Firms

On the basis of number of employees the sample has been categorized as follows

- (i) Small firms, with up to 5 architects
- (ii) Medium firms having 6-10 architects and
- (iii) Large size firms with more than 11 architects.

Table 4.2.7: Distribution of Respondents according to their Firm Size

		Total no. of employees	Total no. of architect employees	Architects upto 5 years experience	Architects with 5-10 yrs experience	Architects with >10 year experience yrs
Upto 5	Count	37	131	89	51	66
	%	17.4	77.1	86.4	91.1	100
6-10	Count	63	34	14	5	—
	%	29.6	20.0	13.6	8.9	—
More than 11	Count	57	5	—	—	—
	%	26.7	2.9	—	—	—
Total	Count	157	170	103	56	66
	%	73.7	79.8	—	—	—
Missing Cases	Count	56	43	—	—	—
	%	26.3	20.2	—	—	—
Grand Total	Count	213	213	213	213	213
	%	100	100	100	100	100

It is evident from the sample collected that more than three fourth i.e. 77.1% of the firms are small in size having upto 5 architects, one fifth i.e. 20% firms are medium sized firms having 6-10 architects and only 2.9% firms are large in size having more than 11 architects.

4.2.8. Annual Turn Over and Amount of Business Handled

Table 4.2.8: Distribution of Respondents According to their Annual Turn Over And Amount of Business Handled

	Minimum	Maximum	Mean
Annual turn-over (in crores)	0.02	5.00	0.7508
Business handled(in crores)	2.00	250.00	74.9808

The table 4.2.8 shows that the annual turn over ranges from 0.02 crores (2 lakh) per annum to 5 crore per annum. When asked to furnish the details about amount of business handled per annum, the minimum 'Business handled' reported is 2 crores and the maximum is 250 crores which shows that wide range of samples have been taken for the study. It also highlights that there is wide variation in the income as well as business handled by architects.

4.2.9. Way of Charging Fee

Table 4.2.9: Distribution of Respondents according to way of charging fee

Basis of charging fee		
Percentage wise	Count	93
	%	43.7
Sq. feet bases	Count	13
	%	6.1
Lump-sum	Count	5
	%	2.3
Mixed Mode	Count	39
	%	18.3
Sub –Total	Count	150
	%	70.4
Missing Cases	Count	63
	%	29.6
Grand Total	Count	213
	%	100

The table-4.2.9 and figure-7 shows that the mode of charging fee varies from architect to architect. The most common mode reported was percentage wise. 43.7% reported that they always charge fee on the basis of percentage following the COA guidelines. Only 2.3 % of architects charge their fee as lump-sum amount, whereas 6.1% are charging their fees on square-foot basis. 18.3% architects have reported that their way of charging fee depends on the type and size of the project and they have flexible approach in this regard.

4.3 Results and Findings Related to Professional Practice

The findings and analysis of important issues related to professional practice, identified in the previous chapter i.e., type and number of projects handled, services provided, ways of getting projects, ways of managing various office tasks, criteria for recruiting architectural staff, the major design attributes, the clients' demands, the types of services preferred by clients and the respondents' opinion / perception about few important and critical issues confronting architectural profession are reported in this part.

The most important abilities required for successful practice of the profession, the major competitors in the profession and the survival strategies adopted are also presented in this part. The findings on the reason for not accepting a client or a project are discussed as well. Along with the discussions on the responses on the above mentioned issues, the impact of age, level of operation, type of client served, and the choice of opting architecture as profession has been cross tabulated to find out their impact on the ways of getting the projects and the ways of managing various practice related tasks, to validate the hypothesis, have also been reported in this part.

4.3.1 Types and Number of Projects Handled

Table 4.3.1: Percentage Distribution of Respondents according to Types and Number of Projects Handled.

	Type of projects	Min. Number	Max. Number	Mean	1 – 10 projects (Percentage)	11 - 20 project (Percentage)	> 20 project (Percentage)	Architect act as team leader
1	Housing projects	0	55	7.08	82.6	8.6	9.4	76.5
2	Industrial buildings	0	25	3.59	92.0	3.8	4.2	66.2
3	Urban renewal/design	0	35	2.39	90.6	5.2	4.2	26.3
4	Interior design	0	400	16.89	58.7	18.8	22.5	82.2
5	Landscape design	0	100	5.32	86.9	2.3	10.8	43.7
6	Offices, malls, multiplex etc	0	50	4.03	86.4	9.9	3.8	63.4
7	Institutional/public buildings	0	60	4.26	92.5	4.2	3.3	78.4
8	Health resorts, Hospitals, Spa	0	75	2.45	95.5	2.8	1.4	60.6
9	Hotels, Resorts, Amusement parks	0	125	6.75	85.0	9.4	5.6	73.2
10	Individual houses/small buildings	0	400	46.52	32.4	13.1	54.5	84.5

Maximum numbers of reported projects in the architects' offices, as highlighted in table 4.3.1 are '*Individual Houses and Small Buildings*' followed by '*Interior-design*', '*Housing Projects*' with mean number of projects per year being 46.52, 16.89 and 7.08 respectively. The least reported projects were *urban renewal / design* with mean being 2.39 projects only.

Regarding the issue of architect being the team leader, 84.5 % of respondents are of the view that architects are still the team leader of *Individual Houses/Small Buildings*, followed by 82.25 % in case of *interior design* projects and 76.5% in case of housing projects. Whereas only in 26.3% of the respondents agreed that the architects are the team leaders in *Urban renewal / design* projects.

4.3.2 Services Provided

The above table clearly indicates that only 7.5 % of architects in the country are providing 'Feasibility report' as an integral part of their service. Whereas 5.2 % architects do not provide this service, missing data is much higher in this case (with 12.7 % not preferring to even answer this question) which also indicates that these respondents do not consider providing 'Feasibility report' as an architect's job.

Table 4.3.2: Distribution of Respondents according to Services Provided.

Type of service		Missing cases	Always	Often	Sometimes	Rarely	Never
1 Feasibility report	Count	27	16	24	62	73	11
	%	12.7	7.5	11.3	29.1	34.3	5.2
2 Tender documents	Count	20	69	59	58	7	—
	%	9.4	32.4	27.7	27.2	3.3	—
3 Structural design	Count	18	157	16	6	4	12
	%	8.5	73.7	7.5	2.8	1.9	5.6
4 Services details	Count	22	131	42	12	4	2
	%	10.3	61.5	19.7	5.6	1.9	.9
5 Turn key projects /services	Count	26	14	21	63	44	45
	%	12.2	6.6	9.9	29.6	20.7	21.1
6 Design and statutory approval	Count	20	114	52	23	—	4
	%	9.4	53.5	24.4	10.8	—	1.9
7 Construction drawings/document	Count	18	181	7	6	1	—
	%	8.5	85.0	3.3	2.8	.5	—
8 Estimates/specifications	Count	30	105	66	10	2	—
	%	14.1%	49.3%	31.0%	4.7%	.9%	—
9 Site supervision	Count	22	140	40	4	3	4
	%	10.3	65.7	18.8	1.9	1.4	1.9

In other words 92.5 % architects pay less attention to it. The most important reason for this may be that architects do not have formal training for it during their Undergraduate/ graduate studies. Media reports on the other hand highlights the unsurpassed / unbelievable boom is being witnessed in the real estate/housing projects countrywide (consequent upon globalization, liberalization and other socio economic changes). '*Feasibility reports*' (as part of the project report) are essential for establishing the economic viability of the project and getting financial support / loans for almost all projects. It is observed that in most cases the chartered accountants or civil engineers prepare such reports, thereby architects are not being able to make use of the opportunity.

In case of preparation of '*Tender Documents*' it was reported by 32.4% architects that tender documents are always prepared by them, and only 3.3% rarely provide this service. An approximate three fourth (73.7%) of architects provide '*Structural Design / Drawing Services*' to their clients either on their own or with the help of their consultants, 5.6% of them never provided this service. This highlights that 5.6% architect do not consider giving '*Structural Design / Drawing Service*' is an architect's job. As indicated in the above table that 61.5% architects always provide '*Building Services Details*' to their client whereas only 0.9% never provided this service.

In case of '*Turn key projects / services*' only 6.6% architects are providing this service as an integral part and 9.9% are providing it often whereas around 30% are sometimes venturing into this area and one third 33.3% (21.1%+12.2%) had never provided this service to their clients. The underlying reason may be that as per COA's Architects Professional Conduct Regulation 1989, an architect

has to act as a professional advisor to his client and charged with the exercise of judicial functions between client and contractor, thus forbids an architect to indulge / involve himself in any construction activity.

Providing Design and giving Drawings for Statutory approval is a service commonly demanded by the small scale clients / individual building owners. The study reveals that 53.5% architects always provide this service and 1.9% never gives design only to their clients, this highlights that around 2% architects consider giving comprehensive architectural services is the right way of giving quality work and providing just the design concepts and its sanctioned drawings does not ensure good architecture. It is further reported that 85% architects always provide *construction drawings* to their clients, 3.3% often whereas 2.8% sometime do so. *Estimates and details specifications* are always provided by 49.3% architects whereas 31.0% often do so and just 4.7% sometimes gives this service to their clients. '*Site supervision*' is always provided by 65.7% of respondents and 1.9% never provides this service.

A look at the table also highlight that '*Construction drawing*' is most provided services (85.0%), followed by '*Structure drawing*' (73.7%) and '*Site supervision*' (65.7%) and the least provided are '*Feasibility report*' (7.5%) and '*Turn key projects / services*' (6.6%). In other words though the clients invariably approach an architect for getting their building designed but in physical terms they wished to have most importantly the '*Construction drawings*', '*Structural drawings*' and '*Site supervision*' from an architect.

4.3.3 Ways of Getting the Project

Table 4.3.3: Distribution of Respondents according to Ways of Getting the Project

Way of getting the projects			
1	Through personal contacts	Count	194
		%	91.1
2	Reputation as a good designer	Count	189
		%	88.7
3	Family background	Count	59
		%	27.7
4	My experience/specialization	Count	174
		%	81.7
5	Through competitions	Count	59
		%	27.7
6	Updated knowledge of real estate news	Count	60
		%	28.2
7	Regular interaction with building industry	Count	100
		%	46.9
8	Updated knowledge of planning reports	Count	43
		%	20.2
9	Internet / call center / media	Count	18
		%	8.5

The table 4.3.3 indicates that 91.1% of architects get projects 'Through personal contacts', whereas 88.7% respondents reported that 'Reputation as a good designer' helped them to get projects. 'Experience as well as specialization' also played a vital role in getting the project with 81.7% respondents reporting that they get projects due to their 'Experience or Specialization'. The least reported way in this survey is the use of 'Internet / call centre / media' for getting the projects, reported by just by 8.5% of the respondents, while 20.2% reported that 'Updated knowledge of planning reports' played a role in getting the projects. It was also seen that 27% architects get their projects 'Through competitions'.

4.3.3.1 Impact of Age on Ways of Getting the Project

Table 4.3.3.1: Impact of Age on Ways of Getting the Projects.

	Way of getting the projects	<40 (in %)	40 – 55 (in %)	>55 (in %)	Chi square value	Table value	DF	Significance
1	Through personal contacts	34.5%	38.1%	27.3%	5.768	5.991	2	Insignificant
2	Reputation as a good designer	31.2%	39.2%	29.6%	4.885	5.991	2	Insignificant
3	Family background	45.8%	35.6%	18.6%	7.173	5.991	2	Significant
4	Experience/specialization	31.0%	40.2%	28.7%	1.339	5.991	2	Insignificant
5	Through competitions	3.4%	52.5%	44.1%	32.680	5.991	2	Significant
6	Updated knowledge of Real estate news	13.3%	65.0%	21.7%	22.862	5.991	2	Significant
7	Regular interaction with building industry	31.0%	55.0%	14.0%	22.214	5.991	2	Significant
8	Updated knowledge of planning reports	20.9%	27.9%	51.2%	15.593	5.991	2	Significant
9	Internet / call center / media	50.0%	44.4%	5.6%	5.354	5.991	2	Insignificant

The table 4.3.3.1 shows the impact of age of an architect on his way of getting the projects. For this purpose the age was categorized as follows.

- i) Younger age group (< 40)
- ii) Middle age group (40 to 55) and
- iii) Older age group (> 55)

There after cross tabulation was done and Chi square was calculated to see the significance of age with various methods of getting projects. Insignificant relationship was found between the age and getting the work (a) 'Through personal contacts', (b) 'Reputation as a good designer', (c) 'Expertise / Specialization', and (d) 'Using internet, call centre/ media' because when the Chi

square value was calculated it came out to be less than the table value of 5.991 at .05 level of significance at 2 degree of freedom. That shows the age of an architect do not impact the above stated ways of getting the projects. In other words all age groups had similar response in this regard.

But in case of *'Family background'*, *'Getting projects through competition'*, *'Update knowledge of real estate news'* and *'Regular interaction with building industry'* and having *'Updated knowledge of planning reports'*, a significant relation was found which shows that age has relationship with all the five above stated ways of getting projects in other words, architects of different age groups differ in this regards i.e. getting the projects because of *'Family background'*, *'Through competition'*, *'Update knowledge of real estate news'* and *'Regular interaction with Building industry'* and having *'Updated knowledge of planning reports'*, their response varies significantly.

Thus the hypothesis that age has a relation with ways of getting projects, *'Through personal contacts'*, *'Reputation as a good designer'*, *'Experience / specialization'* and *'Internet / call center / media'* is rejected, whereas age has a relation with ways of getting the projects Because of *'Family background'*, *'Through competitions'*, *'Updated knowledge of real estate news'*, *'Regular interaction with building industry'* and *'Updated knowledge of planning reports'* it is accepted.

This is also found out in this exercise that age is playing a vital role as *'Internet / call Centre / media'* is being used mostly by the architects of younger age group (less than 40 years of age) to get their project whereas the architects of middle age group (40-55years) is more depended on their ability to have *'Updated knowledge of real estate news'* and architects of older generation

(>55years) still depend on 'Updated news of government planning reports' for getting their work.

4.3.3.2 Impact of Level of Operation on Ways of Getting the Projects

Effort was made to find out the impact of level of operation of architectural firms / practicing architects on how they get their projects For this purpose level of operation was categorize in four parts i.e. (a) City level, (b) Regional level, (c) National level and (d) International level. Chi square test was applied to check the impact of level of operation on ways of getting the projects.

Table 4.3.3.2: Impact of Level of Operation on Ways of Getting the Projects

	Ways of getting the projects	City wide	Regional	National	Inter-national	Chi square	Table value	DF	Significance
1	Through personal contacts	5.7	55.2	29.9	5.7	13.041	9.488	4	Significant
2	Reputation as a good designer	6.9	47.1	36.0	6.9	15.052	9.488	4	Significant
3	Family background	10.2	52.5	23.7	3.4	17.044	9.488	4	Significant
4	Experience/specialization	7.5	53.4	28.7	6.9	09.497	9.488	4	Significant
5	Through competitions	0.0	15.3	61.0	20.3	72.684	9.488	4	Very Significant
6	Updated knowledge of Real estate news	5.0	61.7	20.0	3.3	18.504	9.488	4	Significant
7	Regular interaction with building industry	3.0	71.0	18.0	2.0	38.746	9.488	4	Very Significant
8	Updated knowledge of planning reports	7.0	48.8	32.6	2.3	17.344	9.488	4	Significant
9	Internet / call center / media	0.0	54.4	5.6	0.0	14.482	9.488	4	Significant

Very significant relationship was found in case of getting the work 'Through Competitions' and having 'Regular Interaction with Building Industry' and significant relationship was found in all the remaining methods of getting the

projects i.e. *'Through personal contacts'*, *'Reputation as a good designer'*, *'Family background'*, *'Experience / specialization'*, *'Updated knowledge of real estate news'*, *'Updated knowledge of planning reports'* and *'Internet / call center / media'*.

Thus the null hypothesis that level of operation has no impact on the way of getting the project is rejected and alternate hypothesis that level of operation has impact on the way of getting the project through all stated means is accepted.

It also emerged out of this exercise that architects which are operating at city level get most of their projects because of *'Family background'* or because of *'Experience / specialization'*, while those who are operating at regional level are getting most of the projects through *'Regular interaction with building industry'*. The architects whose area of operation is at National or International level get their projects *'Through competitions'* followed by *'Reputation as a good designer'* or because of their *'Experience / specialization'*.

4.3.3.3 Impact of Type of Client Served on Ways of Getting the Projects

The table 4.3.3.3 highlights the impact of type of client served on the ways of getting the project. For this purpose respondents were divided in four categories, i.e. architects primarily doing projects for (a) Corporate sector / Multinational companies / Firms, (b) Government / Public sector clients, (c) Small scale private clients and (d) Mixed clients. Thereafter it was cross tabulated with ways of getting the projects. Chi square test was applied to check the significance of type of client served on various ways of getting the projects. It was found that type of client served has significant relationship with all the stated ways of getting the projects, i.e., *'Through personal contacts'*, *'Reputation as a good designer'*, *'Family background'*, *'Experience / specialization'*, *'Through competitions'*, *'Updated knowledge of real estate news'*, *'Regular interaction with building*

industry', 'Updated knowledge of planning reports' and 'Internet / call center / media'.

Table 4.3.3.3: Impact of Type of client Served on Ways of Getting the Projects

	Ways of Getting the Projects	Corporate/ MNC	Public/Govt	Small scale private	Mixed	Chi square value	Table value	DF	Significance
1	Through personal contacts	1.0	4.6	22.7	69.6	2.363	9.488	4	Significant
2	Reputation as a good designer	1.1	4.2	19.6	74.1	13.361	9.488	4	Significant
3	Family background	0.0	0.0	47.5	52.5	33.467	9.488	4	Significant
4	Experience/specialization	0.0	1.7	25.3	72.4	36.368	9.488	4	Significant
5	Through competitions	0.0	1.7	23.7	72.9	31.651	9.488	4	Significant
6	Updated knowledge of Real estate news	0.0	0.0	43.3	56.7	25.389	9.488	4	Significant
7	Regular interaction with building industry	0.0	7.0	32.0	61.0	19.776	9.488	4	Significant
8	Updated knowledge of planning reports	0.0	0.0	34.9	62.8	17.350	9.488	4	Significant
9	Internet / call center / media	0.0	5.6	5.6	86.9	13.963	9.488	4	Significant

Thus the null hypothesis that type of client served has no impact on the ways of getting the projects is rejected and alternate hypothesis that type of client served has impact on ways of getting the projects is accepted.

It also emerged out of this exercise that the majority of architects working for Corporate sector / MNC clients are getting the projects due to their 'Reputation as a good designer' and those working for public / government sector

clients are getting most of their projects due to 'Regular interaction with building industry' whereas the majority architects working on small scale/private clients are getting their work either because of 'Family background' or due to 'Updated knowledge of real estate news'. And those working for mixed clients / projects depend on 'Internet / call center / media' as well as on their 'Reputation as a good designer' to get their projects.

4.3.3. 4 Impact of Opting Architecture on Ways of Getting the Projects

Table 4.3.3.4: Impact of Opting Architecture on Ways of Getting the Projects.

	Ways of Getting the Projects	First option	Second option	Any other	Chi square value	Table value	DF	Significance
1	Through personal contacts	65.5	20.6	13.9	0.523	5.991	2	Insignificant
2	Reputation as a good designer	72.5	13.2	14.3	50.831	5.991	2	Significant
3	Family background	69.5	11.9	18.6	04.450	5.991	2	Insignificant
4	Experience/specialization	66.1	21.8	12.1	02.954	5.991	2	Insignificant
5	Through competitions	66.1	15.3	18.6	02.500	5.991	2	Insignificant
6	Updated knowledge of Real estate news	71.7	26.7	1.7	10.873	5.991	2	Significant
7	Regular interaction with building industry	73.0	21.0	6.0	09.408	5.991	2	Significant
8	Updated knowledge of planning reports	39.5	37.2	23.3	17.196	5.991	2	Significant
9	Internet / call center / media	72.2	27.8	0.0	03.346	5.991	2	Insignificant

To see the impact of opting architecture on ways of getting the projects on three categories of respondents i.e. architects who had opted architecture as first option, those who had opted it as second option and those who had opted architecture not as their first or second option. Chi square test was implied to check whether the choice of opting architecture is playing any role in ways of getting the projects.

Insignificant relationship was found in the ways of getting the projects '*Through personal contacts*', '*Family background*', '*Experience/specialization*', '*Through competitions*', and '*Internet / call center / media*' and Significant relationship is found in all others, i.e., '*Reputation as a good designer*', '*Updated knowledge of real estate news*', '*Regular interaction with building industry*' and '*Updated knowledge of planning reports*'.

Thus the null hypothesis that choice of opting architecture has no impact on the ways of getting the projects is partially accepted, i.e. for getting the projects '*Through personal contacts*' , '*Family background*', '*Experience / specialization*', '*Through competitions*', '*Internet / call center / media*' choice of opting architecture has no impact. and alternate hypothesis that choice of opting architecture has impact on ways of getting the project such as '*Reputation as a good designer*', '*Updated knowledge of Real estate news*', '*Regular interaction with building industry*' and '*Updated knowledge of planning reports*' is accepted. In other words architects of the pre determined three categories, i.e. architects (a) those had opted architecture as first option, (b) those who had opted it as second option and (c) those who had opted architecture not as their first or second option, do not differ on the issue of getting the work '*Through personal contacts*', '*Family background*', '*Experience / specialization*', '*Through competitions*' and '*Internet /*

call center / media' but their perception differs significantly on the issue of getting the work through '*Reputation as a good designer*', '*Updated knowledge of real estate news*', '*Regular interaction with building industry*' and '*Updated knowledge of planning reports*'.

It is also evident that architects who had opted architecture as their first choice reported that they get most of their work because of their '*Regular interaction with building industry*' whereas those who had opted it as second or any other option reported that they get most of their projects because of '*Updated knowledge of planning reports*'.

4.3.4 Ways of Managing the Practice Related Tasks

The table-4.3.4 and figure-8 indicates that only 20.7 % architects get the '*Statutory Approvals of the Drawings*' themselves whereas 29.1% architects outsource this task, which highlights outsourcing is playing a vital role in getting the '*Statutory approvals*'. It is observed that the municipal committees many a time have middle man in most of the cities to undertake this task. It is also emphasized by architects interviewed that in most situations diploma holders/ draftsmen undertake such a work and it saves a lot of architect's personal time. In case of '*Preparation of construction drawings*' 62.0% architects get this work done by their staff. It is noteworthy that young fresh graduates most of the time get this work, and their initial survival depend on their ability to prepare good construction drawings. 58.7% architects '*Coordinate the work of consultants*' themselves whereas 14.1% reported that it is done collectively in their office.

Table 4.3.4: Distribution of Respondents According to Ways of Managing the Practice Related Tasks:

Practice Related Tasks			Missing cases	Myself	My staff	Consultants	Out sourcing	Client	Collectively
1	Statutory approval of drawings	Count	5	44	57	9	62	16	20
		%	2.3	20.7	26.8	4.2	29.1	7.5	9.4
2	Preparation of construction drawings	Count	2	42	132	7	11	--	19
		%	.9	19.7	62.0	3.3	5.2	--	8.9
3	Coordinating consultants	Count	13	125	28	6	11	--	30
		%	6.1	58.7	13.1	2.8	5.2	--	14.1
4	Writing specifications	Count	6	44	52	35	7	--	69
		%	2.8	20.7	24.4	16.4	3.3	--	32.4
5	Preparation of construction documents	Count	8	39	67	24	24	--	51
		%	3.8	18.3	31.5	11.3	11.3	--	23.9
6	Site supervision	Count	11	50	21	--	--	--	131
		%	5.2	23.5	9.9	--	--	--	61.5
7	Monitoring the progress of the projects	Count	19	105	22	--	--	--	67
		%	8.9	49.3	10.3	--	--	--	31.5
8	Conducting the meetings	Count	14	160	1	--	--	--	38
		%	6.6	75.1	.5	--	--	--	17.8
9	Important decision in a project are taken by	Count	20	145	1	--	1	1	45
		%	9.4	68.1	.5	--	.5	.5	21.1
10	Major design decisions are taken by	Count	22	157	1	--	--	3	30
		%	10.3	73.7	.5	--	--	1.4	14.1
11	Office publicity / marketing	Count	81	75	19	2	12	--	24
		%	38.0	35.2	8.9	.9	5.6	--	11.3
12	Socializing with client	Count	38	141	10	--	2	--	22
		%	17.8	66.2	4.7	--	.9	--	10.3
13	Recruiting staff	Count	11	176	8	5	2	--	11
		%	5.2	82.6	3.8	2.3	.9	--	5.2
14	Participating in competitions	Count	35	38	36	4	8	1	91
		%	16.4	17.8	16.9	1.9	3.8	.5	42.7
15	Getting agreements in writing	Count	24	116	25	13	10	--	25
		%	11.3	54.5	11.7	6.1	4.7	--	11.7

In case of '*Specifications Writing*' around 20% architects write it themselves. For preparing the '*Construction (Tender) Documents*' 18.3% architects reported that they are doing this task themselves, 31.5% assign this work to staff and 11.3% architects take the help of their consultants and similar percentage get this work done through outsourcing. It is reported by 23.5% architects that they supervise their sites themselves whereas 61.5 % of architects managed this task collectively as team work in their offices. Regarding the '*Monitoring the progress of the projects*' 49.3 % reported that they do it themselves whereas 10.3 % reported that it is done by their staff. For '*Conducting the meetings*' 75% architects reported that they do it themselves whereas 17.8% reported that they are doing it collectively. '*Important decisions in a project*' are taken by 68% architects themselves and 21.1% reported that it is done collectively in their office. It is also evident from the table that the architect themselves play the most important role in *taking 'Major design decisions'* (73.7%) whereas it is reported by 14.1% that they are taken collectively, and in just 1.4% cases it is done by the clients. Regarding '*Office publicity / marketing*' it was reported that 35.2 % architects are engaged in this activity whereas 11.3% are doing it collectively. It is amazing that 38% architects have not responded to this activity as missing cases are highest in this case. The reason may be that the Council Of Architecture professional conduct regulation forbids the architect to advertise their services. For '*Socializing with the clients*' in view of getting the project two-third 66.2% of architects do it themselves and 10.3% reported that they do it collectively. Regarding '*Recruiting architectural staff*' 82.6% of the architects do it themselves and only 5.2% rely on their team for recruiting architectural staff. This survey highlights that architects are not outsourcing this work to numerous agencies operating to do this work.

When asked to respond on how they 'Participate in any competition' 42.7% architects reported that it is a team work in their office and only 17.8% reported that they are doing it themselves. It is obvious that in large firms it is a team work whereas in small firms architect had no option yet it is clear that only 3.8% architects take outside help for this task. In case of 'Getting agreement in writing' 54.5% reported that they do it themselves whereas 11.7% engage their staff in this task and a similar percentage reported that it is being done as team work.

4.3.4.1 Impact of Age on the Ways of Managing Practice Related Tasks

The table 4.3.4.1 shows the impact of age of an architect on his / her way of managing various practice related tasks. For this purpose the age was categorized as follows.

- i) Younger age group (less than 40 years)
- ii) Middle age group (between 40 to 55 years) and
- iii) Older age group (More than 55 years).

Table 4.3.4.1: Impact of Age on The Ways of Managing Practice Related Tasks.

	Practice Related Tasks	< 40 (in %)	40 – 55 (in %)	> 55 (in %)	Chi square value	Table value	DF	Significance
1	Statutory approval of drawings	38.6	52.3	9.1	77.192	21.026	12	Significant
2	Preparation of construction drawings	35.7	50.0	14.3	51.395	18.307	10	Significant
3	Coordinating consultants	41.6	40.0	18.4	53.724	18.307	10	Significant
4	Writing specifications	34.1	45.5	20.5	28.767	18.307	10	Significant
5	Preparation of construction documents	28.2	43.6	28.2	56.044	18.307	10	Significant

Table 4.3.4.1contd/--

6	Site supervision	54.0	32.0	14.0	24.154	12.592	6	Significant
7	Monitoring the progress of the projects	50.5	34.3	15.2	49.180	12.592	6	Significant
8	Conducting meetings the	36.9	36.3	26.9	14.800	12.592	6	Significant
9	Important decision in a project are taken by	40.0	33.8	26.2	21.508	18.307	10	Significant
10	Major design decisions are taken by	38.2	32.5	29.3	23.114	15.507	8	Significant
11	Office publicity / marketing	38.7	33.3	28.0	30.137	18.307	10	Significant
12	Socializing with client	31.2	45.4	23.4	16.161	15.507	8	Significant
13	Recruiting staff	33.5	42.0	24.4	38.034	18.307	10	Significant
14	Participating in competitions	57.9	18.4	23.7	47.408	21.026	12	Significant
15	Getting agreements in writing	37.1	43.1	19.8v	57.952	18.307	10	Significant

Thereafter Chi square tests were implied to check the significance of age on the above stated tasks and it was found that age has *significant* relationship in case of 'Writing specification', 'Conducting meeting', 'Taking important decisions of the project', 'Major design decisions', 'Office publicity / marketing' and 'Socializing with the client'. In some tasks *very significant* relationships was found i.e. 'Getting the statutory approval', 'Preparation of construction drawings', 'Coordinating with consultants', 'Preparation of tender document', 'Site supervision' and 'Monitoring the progress of the project', 'Recruiting staff', 'Participating in competitions' and 'Getting agreements in writing'. Thus the null hypothesis that age has no relation with the ways of managing practice related tasks is rejected and alternate hypothesis that age has an impact on ways of managing practice related tasks is accepted.

This also emerged out of this exercise that the majority of younger age group architects spend their time in '*Participating in competition*' whereas the middle age group laid more stress on '*Getting the statutory approval*' themselves and the older generations architects spent maximum time on '*Taking major design decisions*' themselves.

4.3.4.2 Impact of Level of Operation on Ways of Managing Practice Related Tasks

Table 4.3.4.2: Impact of Level of Operation on Ways of Managing Practice Related Tasks.

	Practice Related Tasks	City wide	Regional	National	Inter-national	Chi square	Table value	DF	Significance
1	Statutory approval of drawings	6.8	77.3	13.6	0.0	191.34	36.415	24	Significant
2	Preparation of construction drawings	2.4	78.6	16.7	0.0	72.178	31.410	20	Significant
3	Coordinating consultants	7.2	61.6	23.2	8.0	74.047	31.410	20	Significant
4	Writing specifications	6.8	63.6	29.5	0.0	48.123	31.410	20	Significant
5	Preparation of construction documents	7.7	66.7	15.4	5.1	45.148	31.410	20	Significant
6	Site supervision	12.0	74.0	10.0	0.0	38.308	21.026	12	Significant
7	Monitoring the progress of the projects	7.6	74.3	10.5	1.9	69.715	21.026	12	Significant
8	Conducting the meetings	8.1	53.1	28.8	7.5	14.394	21.026	12	Insignificant
9	Important decision in a project are taken by	6.2	63.4	20.7	8.3	68.892	31.410	20	Significant
10	Major design decisions are taken by	7.6	56.7	25.5	7.6	32.857	26.296	16	Significant
11	Office publicity / marketing	4.0	60.0	18.7	12.0	56.135	31.410	20	Significant
12	Socializing with client	7.1	51.8	29.1	9.2	32.097	26.296	16	Significant
13	Recruiting staff	6.8	51.1	31.3	7.4	37.211	31.410	20	Significant
14	Participating competitions in	10.5	60.5	23.7	5.3	32.515	36.415	24	Insignificant
15	Getting agreements in writing	6.0	56.0	24.1	10.3	66.296	31.410	20	Significant

Effort was made to find out the impact of level of operation of architectural firms on how they manage practice related tasks. For this purpose level of operation was categorized in four parts i.e. City level, Regional level, National level and International level. Chi square test was applied to check the impact of level of operation on managing various practice related tasks. Very significant relationship was found in case of '*Statutory approval of drawings*', '*Preparation of construction drawings*', '*Coordinating with consultants*', '*Monitoring the progress of the project*', '*Important project decisions*', '*Office publicity / marketing*' and '*Getting agreements in writing*'. The insignificant relationship was found in '*Conducting Meetings*' and '*Participating in competitions*' in all the remaining tasks significant relationship was found.

Thus the null hypothesis that level of operation has no impact on the way of managing various practice related tasks, is accepted in case of '*Conducting meetings*', and '*Participating in competitions*' i.e. the architects operating at different levels do not differ significantly on their ways and managing the above stated tasks and alternate hypothesis that level of operation has impact on the way of managing various practice related tasks in all other tasks except the two stated above is accepted i.e. the architects operating at different level significantly differ on their ways of managing the tasks except '*Conducting the meetings*' and '*Participating in competitions*'. It is also evident that while managing office tasks the architects which are operating at city level, '*Supervising the site*', is their primary focus while those who are operating at regional level pay more stress on the '*Preparation of construction drawings*'. The architects of national level spend their maximum time/attention to '*Writing specification*' whereas the international players are busy with their '*Office publicity /marketing*' of their services.

4.3.4.3 Impact of Type of Client Served on Ways of Managing Practice Related Tasks

The table 4.3.4.3 highlights the Impact of type of client served on the ways of managing office tasks. For this purpose respondents were categories as follows (a) architects primarily serving in corporate/ multi national company clients, (b) government / public sector clients, (c) small scale private clients and (d) mixed clients thereafter it was cross tabulated with various practice related tasks. Chi square test was applied to check the significance of type of client served on various practice related tasks and it was found that type of client served has insignificant relationship with activities like '*Preparation of construction drawing*' and '*Recruiting staff*' whereas in all other tasks significant or very significant relationship was found as shown in the table.

Thus the null hypothesis that type of client served has no impact on the way of managing various practice related tasks is accepted in case of '*Preparation of construction drawing*' and '*Recruiting staff*' and alternate hypothesis that type of client served has impact on all other practice related tasks except the two stated above is accepted.

In other words the architects serving different clients do not differ significantly on their ways of managing the tasks of '*Preparation of construction drawings*' and '*Recruiting staff*' but they do differ significantly in ways of doing all other tasks.

Table 4.3.4.3: Impact of Type of Projects Handled on Ways of Managing Practice Related Tasks

	Practice Related Tasks	Corporate / MNC	Public/Govt	Small scale private	Mixed	Chi square value	Table value	DF	Significance
1	Statutory approval of drawings	0.0	4.5	22.7	65.9	132.40	36.415	24	Significant
2	Preparation of construction drawings	0.0	7.1	16.7	71.4	18.735	31.410	20	Insignificant
3	Coordinating consultants	0.0	5.6	24.0	69.6	50.684	31.410	20	Significant
4	Writing specifications	4.5	15.9	15.9	63.6	81.633	31.410	20	Significant
5	Preparation of construction documents	0.0	0.0	20.5	76.9	60.260	31.410	20	Significant
6	Site supervision	0.0	9.1	18.2	45.5	60.207	21.026	12	Significant
7	Monitoring the progress of the projects	1.9	5.7	23.8	68.6	55.117	21.026	12	Significant
8	Conducting the meetings	0.0	4.4	25.0	69.4	36.875	21.026	12	Significant
9	Important decision in a project are taken by	1.4	5.5	15.9	75.9	32.872	31.410	20	Significant
10	Major design decisions are taken by	1.3	5.1	19.7	73.9	50.340	26.296	16	Significant
11	Office publicity / marketing	0.0	9.3	17.3	73.3	37.365	31.410	20	Significant
12	Socializing with client	0.0	1.4	23.4	73.8	39.607	26.296	16	Significant
13	Recruiting staff	1.1	4.5	23.9	69.3	25.344	31.410	20	Insignificant
14	Participating in competitions	0.0	5.3	28.9	63.2	53.086	36.415	24	Significant
15	Getting agreements in writing	0.0	5.2	25.9	67.2	41.641	31.410	20	Significant

It also emerged out of this exercise that the majority of architects working for corporate/MNC projects as well as public/Government sector projects are laying much more stress on '*Writing specifications*' themselves whereas the majority architects working on small scale projects are spending of their of time on '*Participating in competition*' and those working on mixed project spend most of their time in the '*Preparation of construction documents*'.

4.3.4.4 Impact of Opting Architecture on Ways of Managing Practice Related Tasks

To see the impact of opting architecture on ways of managing practice related tasks on three categories of respondents i.e. architects who had opted architecture as first option, those who had opted it as second option and those who had opted architecture not as first or second option. Chi square test was applied to check whether the choice of opting architecture is playing any role in ways of managing practice related tasks. Insignificant relationship was found in '*Statutory approval of drawings*', '*Site supervision*', in taking '*Important project decisions*', and taking '*Major design decisions*', '*Recruiting staff*' and '*Getting agreements in writing*'. significant or very significant relationship is found in all other tasks.

Thus the null hypothesis that choice of opting architecture has no impact on the way of managing various practice related tasks such as in '*Statutory approval of drawings*', '*Site supervision*', In taking '*Important project decisions*', In taking '*Major design decisions*', '*Recruiting staff*' and '*Getting agreement in writing*' is accepted and alternate hypothesis that choice of opting architecture has impact on all other except the above stated six tasks is accepted.

Table 4.3.4.4: Impact of Opting Architecture on Ways of Managing Practice Related Tasks

	Practice Related Tasks	First option	Second option	Any other	Chi square value	Table value	DF	Significance
1	Statutory approval of drawings	77.3	27.7	0.0	20.778	21.026	12	Insignificant
2	Preparation of construction drawings	83.3	16.7	0.0	32.781	18.307	10	Significant
3	Coordinating consultants	56.0	28.0	16.0	34.904	18.307	10	Significant
4	Writing specifications	79.5	13.6	6.8	27.441	18.307	10	Significant
5	Preparation of construction documents	61.5	23.1	15.4	28.922	18.307	10	Significant
6	Site supervision	74.0	16.0	10.0	6.595	12.592	6	Insignificant
7	Monitoring the progress of the projects	63.8	16.2	20.0	26.298	12.592	6	Significant
8	Conducting the meetings	65.0	23.8	11.2	25.148	12.592	6	Significant
9	Important decision in a project are taken by	61.4	25.5	13.1	14.595	18.307	10	Insignificant
10	Major design decisions are taken by	65.0	22.9	12.1	10.619	15.507	8	Insignificant
11	Office publicity / marketing	69.3	21.3	9.4	20.621	18.307	10	Significant
12	Socializing with client	69.5	22.0	8.5	29.314	15.507	8	Significant
13	Recruiting staff	65.3	20.5	14.2	11.780	18.307	10	Insignificant
14	Participating in competitions	68.4	31.6	0.0	41.798	21.026	12	Significant
15	Getting agreements in writing	60.3	25.9	13.8	16.573	18.307	10	Insignificant

It is also evident that architects who had opted architecture as their first choice reported that the '*Preparation of construction drawing*' takes most of their time where as in case of those who had opted it not as their first or second option reported that '*Monitoring the progress of the project*' consumes most of their time. And those who had opted architecture as their second option reported that '*Coordinating the consultants*' consumes their maximum time.

4.3.5 Criteria for Recruiting Architectural Staff

Table 4.3.5: Distribution of Respondents according to Criteria for Recruiting Architectural Staff

	Criteria		Missing cases	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Rank 10	Weighted Mean	Overall Ranking
1	Design ability	Count	28	75	39	—	16	7	9	5	23	4	7	15.09	3
		%	13.1	35.2	18.3	—	7.5	3.3	4.2	2.3	10.8	1.9	3.3		
2	Academic record	Count	72	26	5	11	22	—	21	14	14	16	12	14.07	10
		%	33.8	12.2	2.3	5.2	10.3	—	9.9	6.6	6.6	7.5	5.6		
3	Integrity	Count	50	75	—	14	13	14	15	22	6	4	—	14.80	6
		%	23.5	35.2	—	6.6	6.1	6.6	7.0	10.3	2.8	1.9	—		
4	Wider skills	Count	64	32	11	8	3	13	14	33	15	6	14	14.72	7
		%	30.0	15.0	5.2	3.8	1.4	6.1	6.6	15.5	7.0	2.8	6.6		
5	Good personality	Count	58	28	9	3	10	6	10	25	31	22	11	15.14	4
		%	27.2	13.1	4.2	1.4	4.7	2.8	4.7	11.7	14.6	10.3	5.2		
6	Computer skills	Count	13	98	15	18	4	13	22	13	13	4	—	16.86	1
		%	6.1	46.0	7.0	8.5	1.9	6.1	10.3	6.1	6.1	1.9	—		
7	Demand of salary	Count	55	42	13	—	4	23	2	23	20	16	15	14.45	9
		%	25.8	19.7	6.1	—	1.9	10.8	.9	10.8	9.4	7.5	7.0		
8	Communication skills	Count	27	71	33	9	9	5	4	14	20	10	11	15.04	5
		%	12.7	33.3	15.5	4.2	4.2	2.3	1.9	6.6	9.4	4.7	5.2		
9	Sound technical knowledge	Count	25	89	16	30	16	1	16	—	20	—	—	15.66	2
		%	11.7	41.8	7.5	14.1	7.5	.5	7.5	—	9.4	—	—		
10	Possibility of long term associations	Count	38	71	16	10	10	15	7	1	24	18	3	14.72	8
		%	17.8	33.3	7.5	4.7	4.7	7.0	3.3	.5	11.3	8.5	1.4		

The table 4.3.5 shows the percentage distribution of respondents giving different ranks to various variables which they keep in mind while recruiting architectural staff. To find out the most important criteria for recruiting such staff the weighted mean was calculated (as explained in chapter 3) which shows that 'Computer skill' is the most sought after skill for recruiting architectural staff. The other skills required in the descending orders are, 'Sound technical knowledge', 'Design ability', 'Good personality', 'Communication skill', 'Integrity', 'Wider skills' and 'Possibility of long term association', whereas the 'Demand of salary' and 'Academic record' were least ranked by them.

4.3.6 Major Attributes of Design

As indicated in the table 4.3.6 and figure-9, 'Functional Efficiency' (98.6%), and 'Visual Appearance' (97.2%), 'Cost Efficiency' (97.2%), 'Structural Efficiency' (96.2%), 'Client Satisfaction' (96.1%), and 'Construction Technology' (91.5%) were found to be most significant attribute while designing their building for more than ninety percent architects.

It was also found that more than three-fourth respondents also think 'Energy efficiency' (88.3%), 'Use of latest / appropriate materials' (88.3%), 'Adherence to building bye laws' (79.3%), 'End user's satisfaction' (77.5%), 'Efficient building services' (77.0%), is important whereas the least reported attributes are 'Public recognition' (69.6%), and 'Contextual appropriateness' (63.4%).

Figure-9
Major Attributes of Design

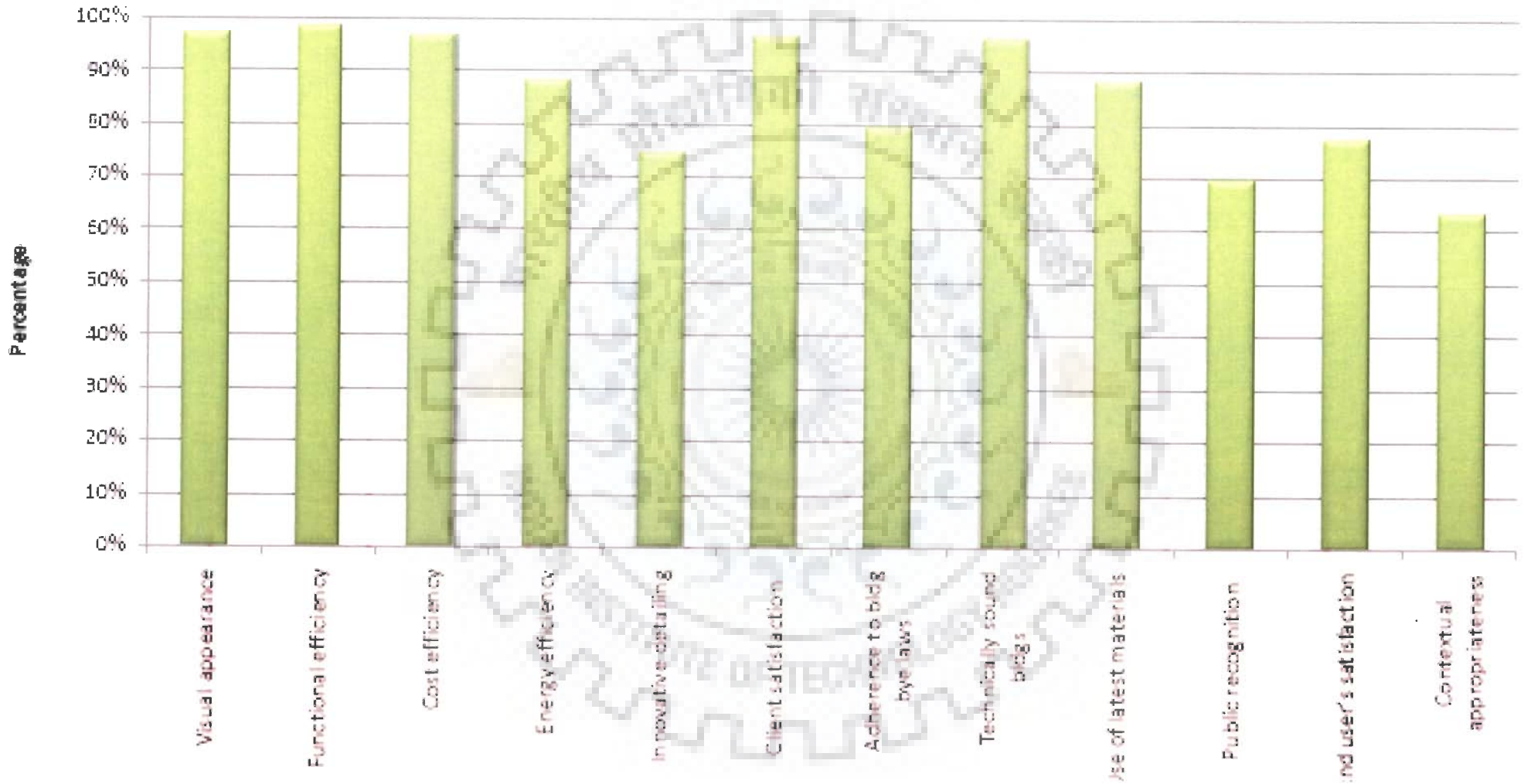
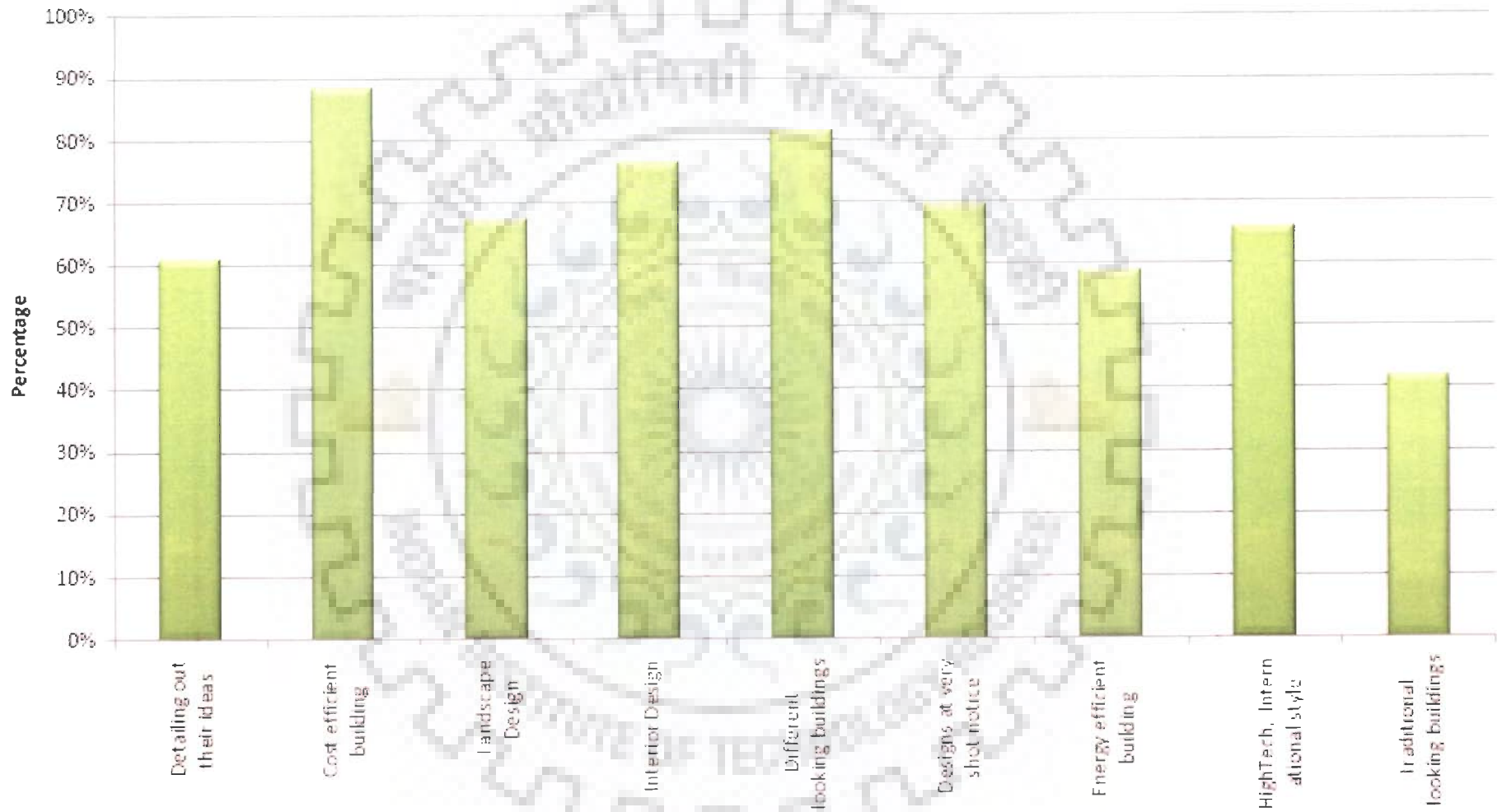


Table 4.3.6: Distribution of Respondents according to Major Design Attributes.

	Design Attributes		Missing cases	Significant	Do not know	insignificant
1	Visual appearance	Count	5	207	1	-
		%	2.3	97.2	.5	-
2	Functional efficiency	Count	2	210	1	-
		%	0.9	98.6	0.5	-
3	Cost efficiency	Count	2	206	4	1
		%	0.9	96.7	1.9	0.5
4	Energy efficiency	Count	2	188	22	1
		%	0.9	88.3	10.3	0.5
5	Innovative detailing	Count	2	159	44	8
		%	0.9	74.6	20.7	3.8
6	Client satisfaction	Count	2	206	2	3
		%	0.9	96.7	.9	1.4
7	Adherence to building bye laws	Count	2	169	39	3
		%	0.9	79.3	18.3	1.4
8	Technically sound building	Count	2	205	4	2
		%	0.9	96.2	1.9	0.9
9	Use of latest / appropriate materials	Count	12	188	9	4
		%	5.6	88.3	4.2	1.9
10	Public recognition	Count	7	149	14	43
		%	3.3	69.6	6.6	20.5
11	End user's satisfaction	Count	11	165	24	13
		%	5.2	77.5	11.3	6.1
12	Contextual appropriateness	Count	17	135	13	48
		%	8.0	63.4	6.1	22.5

Figure-10
Client's Demands



4.3.7 Client's Demands

Table 4.3.7: Distribution of Respondents according to the Demands of Clients'.

Clients' Demands			Missing data	Agree	Do not know	Disagree
1	Detailing out their ideas	Count	32	130	19	32
		%	15.0	61.0	8.9	15.0
2	Cost efficient building	Count	6	188	10	9
		%	2.8	88.3	4.7	4.2
3	Landscape Design	Count	18	143	25	27
		%	8.5	67.1	11.7	12.7
4	Interior Design	Count	30	162	12	9
		%	14.1	76.1	5.6	4.2
5	Different looking buildings	Count	10	173	13	17
		%	4.7	81.2	6.1	8.0
6	Designs at very short notice	Count	18	148	18	29
		%	8.5	69.5	8.5	13.6
7	Energy efficient building	Count	13	125	12	63
		%	6.1	58.7	5.6	29.6
8	High Tech, International style	Count	13	140	38	22
		%	6.1	65.7	17.8	10.3
9	Traditional looking buildings	Count	13	89	32	79
		%	6.1	41.8	15.0	37.1

According to the table 4.3.7 and figure-10 the most important demand of the client is the 'Cost efficient building' (88.3%). People also preferred 'Different looking buildings' (81.2%), for which most of time they took an architect's service. In 69.5% cases architects agree that clients demand 'Design at very short notice'. Regarding 'Detailing out of client's idea', 61% architect agreed to the statement whereas only 41.8% expressed the similar views on the statement that 'traditional looking buildings' are demanded by clients. 65.7% reported that client wants

'High tech, international style' and only 58.7% reported that 'Energy efficient buildings' are demanded by clients. 'Landscape design' is demanded by 76.1% clients and 'Interior design' by whooping 81.2% of the clients. It can be inferred that most important demand of Indian client in general is 'Cost efficient building' (88.3%) followed by 'Different looking building' (81.2%) and 'Interior design' (76.1%). The least demanded is 'Traditional looking buildings' (41.8%) in this survey.

4.3.8 The Type of Services Preferred by Clients

Table 4.3.8: Distribution of Respondents according to preference of Clients

Clients' Preference			Missing data	Agree	Do not know	Disagree
1	Design only or sanction plans	Count	17	85	7	104
		%	8.0	39.9	3.3	48.8
2	Turn key projects	Count	29	105	10	69
		%	13.6	49.3	4.7	32.4
3	Comprehensive architectural Services	Count	21	164	13	15
		%	9.9	77.0	6.1	7.0

Regarding type of services preferred by clients, 77.0% of the respondent agree that the client preferred 'Comprehensive Architectural Services' and only 39.9% with 'Design Only Services'. The most significant finding in this case is that almost 49.3% agree that the client demand 'Turn key services' as shown in the above table whereas according to the table 4.3.2 at present only 6.6% architects are always providing 'Turn key projects / services' to their clients and 9.9% reported they do it often and 29.6% sometimes providing this service, whereas 21.1% architects have never provided and 12.2% evaded to answer, may be they are reluctant to accept that they are unable to provide this service which is demanded by almost 50% clients.

4.3.9 Few Important Issues Confronting Architectural Practices

Table 4.3.9: Distribution of Respondents According to Important Issues confronting architectural practice.

	Important statements		Missing cases	Agree	Do not know	Disagree
1	Architects should adopt a more pragmatic (practical) approach rather than idealistic approach to compete in the International market	Count	5	175	4	29
		%	2.3	82.2	1.9	13.6
2	Architects do not get fee as per COA scale of charges	Count	7	198	1	7
		%	3.3	93.0	.5	3.3
3	Architect still is and will remain a team leader	Count	4	189	11	9
		%	1.9	88.7	5.2	4.2
4	Mindless application of western concepts (planning, materials) are in appropriate in the Indian context	Count	3	145	20	45
		%	1.4	68.1	9.4	21.1
5	Society must be made aware of traditional architecture wisdom through our designs	Count	2	185	9	17
		%	.9	86.9	4.2	8.0
6	Larger the firm easier is the survival	Count	2	120	39	52
		%	.9	56.3	18.3	24.4
7	Small firms unless specialize will not survive	Count	3	124	18	68
		%	1.4	58.2	8.5	31.9
8	Architect still is professional advisor (has judicial function) between the client and contractor	Count	6	138	23	46
		%	2.8	64.8	10.8	21.6
9	Architects should uphold their design standards regardless of the fee involved	Count	2	199	---	12
		%	.9	93.4	---	5.6
10	Inducements are necessary for getting projects	Count	7	101	38	67
		%	3.3	47.4	17.8	31.5
11	Computer is being used as design tool in my office	Count	8	166	5	34
		%	3.8	77.9	2.3	16.0
12	Firms that focus entirely on design will become obsolete	Count	8	112	40	53
		%	3.8	52.6	18.8	24.9
13	Efficiency is more important than creativity in the design for any project	Count	6	133	19	55
		%	2.8	62.4	8.9	25.8
14	Political contacts are important for getting prestigious projects	Count	2	128	33	50
		%	.9	60.1	15.5	23.5
15	Getting projects through broker are becoming common for Mega projects	Count	3	54	89	67
		%	1.4	25.4	41.8	31.5

Table 4.3.9 contd/--

16	Client in general is fascinated for foreign architects / design firms	Count	13	127	27	46
		%	6.1	59.6	12.7	21.6
17	I would be willing to work outside architecture for more money, recognition	Count	5	37	78	93
		%	2.3	17.4	36.6	43.7
18	If starting over. I would become an architect again.	Count	8	170	25	10
		%	3.8	79.8	11.7	4.7
19	Indian client in general is very interfering in the design process	Count	10	103	66	34
		%	4.7	48.4	31.0	16.0
20	Client change the design at will, without architect's approval	Count	2	50	61	100
		%	.9	23.5	28.6	46.9
21	Client rewards architects creativity and ready to pay as per COA scale of charges	Count	8	52	17	136
		%	3.8	24.4	8.0	63.8
22	I am satisfied with the social work environment for architectural practice	Count	8	55	50	100
		%	3.8	25.8	23.5	46.9
23	Most architects adhere to strict professional codes of ethics	Count	4	30	29	150
		%	1.9	14.1	13.6	70.4
24	Architect should enter into agreement with his consultants / clients	Count	2	177	14	20
		%	.9	83.1	6.6	9.4
25	There should be no bar on the advertisement methods for architects	Count	5	106	36	66
		%	2.3	49.8	16.9	31.0
26	There should be no bar on the tender bids for architects	Count	7	99	18	89
		%	3.3	46.5	8.5	41.8
27	COA role in regulating the architecture profession and promoting architecture education is satisfactory	Count	3	47	23	140
		%	1.4	22.1	10.8	65.7
28	It is difficult to find more than 30 minute of uninterrupted time in a working day	Count	14	126	13	60
		%	6.6	59.2	6.1	28.2
29	Setting a workable time schedule for projects is a top priority for me / my firm	Count	10	137	49	17
		%	4.7	64.3	23.0	8.0
30	Architect job is to be good rather than original	Count	12	114	34	53
		%	5.6	53.5	16.0	24.9

When asked about whether the 'Architect should have pragmatic approach or the idealistic approach' 82.2% are in favor of the pragmatic approach and only 13.6% are in the favor of idealistic approach. 93.4% of the architects in the country reported that they are 'Not getting fee as per COA scale of charges'. In other words just about 3.4% of the architects are getting fee as stipulated in the

norms. 88.7% respondents reported that '*Architect still is and will remain a team leader*'. 68.1% architects consider that copying west is inappropriate, this shows majority feels that architecture is not a universal solution and understanding local needs / materials are very important and architecture must respond to the context. 86.5% are of the opinion that society should be made aware of the traditional architectural wisdom by the architects through their design. That means their design should imbibe Indianness and not western concepts.

When asked to reflect on the statements '*Larger the firm easier is the survival*' and '*Small firms unless specialize will not survive*' majority agreed, which clearly indicates that collaborations and ability to work in teams have become important for successful survival, Those who wish to have an individual identity (remain small in size) must specialize to face the challenges posed by globalization.

When asked to respond on the statement architect still is professional advisor (has judicial function) between the client and contractor. 64.8% of architects are of the opinion that architects these days are still professional advisor between clients and contractor. Whereas around 22% disagreed on the issue and 11% are not sure. When asked to comment on the statement '*Architects should uphold their design standards regardless of the fee involved*' 93.4% respondents are strongly of the opinion that for sake of money they should not be any compromise on the quality of design.

Around half the architects 47.4% agree that the political / social environment of the country is such that to get the projects one has to bribe/give inducements to the people concern. Whereas just around one third (31.5%) are not indulging in such tactics for getting the work.

Regarding use of computers in their offices 77.9% architects reported that they are using it not only as a drafting tool but as a *'Design tool in their office'*. Approximately half (52.6%) of the architects believe that firms that focus on design (i.e. providing just the design) will find it difficult to survive and will become obsolete in the changed scenario whereas one fourth 24.9% believe that it will not, and the remaining one fourth are not yet sure of the fate of such firms which stick to providing just the design. When the demand is increasing for one stop shops in the form of *'Turn key Services'* or *'Comprehensive Architectural Services'* and numerous projects are already coming up in this way i.e. on turn key basis (by the builders) or as joint ventures of construction and design firms.

When asked to respond to the statement *'Efficiency is more important than creativity in the design for any project'* 62.4% of architects agree with the statement and 25.8% do not. Whereas 10% are yet to decide. This highlights that there is an urgent need to produce architects who indulge in or be an integral part of building industry team to produce efficient (in terms of cost and time) buildings which is the main demands put up by clients (Table 4.3.7) and need of the masses as well. As obvious in the literature review the architects are serving only the elite class. Even after 60 years of independence they fail to address the society's specially the middle and lower income people, demands and their education also stressed to create different looking buildings which can be afforded only by the creamy layer. 60.1% agreed with the statement *'Political contacts are important for getting prestigious projects'* highlights the social work environment for architectural practices in India and an urgent need to introduce

awareness of political happenings and its importance for architects in the architecture education itself.

When asked to respond on the *Role of brokers in getting mega projects*. Only one fourth (24.4%) agreed and a whopping 43.2% preferred not to respond. When asked about whether they will work outside their domain i.e. architecture for more money and recognition only 17.4% of the respondents agreed and 36.6% are undecided but 43.7% disagreed. The similar response is received when asked '*if given a chance will they become architect again*' not surprisingly four fifth (79.8%) agreed and only 4.7% disagreed to the statement. This shows that architects in India in general are satisfied with their profession but aspiration to improve and earn more clearly exists. Only 16% architects disagree with the statement that '*Clients interfere a lot*'. While the remaining 84% either agree or are not sure. But once the design is delivered about half (46.9%) disagree that '*Client change their design without their consent*' but the rest agree (23.5%) that they do so. It is a different issue whether the clients is interfering or not, change the design afterward or not but invariable, they do not pay the architects their dues, 63.8% agree that they are not getting their dues only 24.4% agree that '*Client rewards their creativity / design ability*' and generously pay for it.

Only one fourth (25.8%) of the architects in this survey are found to be satisfied with the way they have to get the '*Statutory approvals*' for their buildings / get the plans approved, or get their buildings executed in piecemeal by number of contractors in traditional way.

When asked to comment on the statement most architects '*Adhere to strict professional codes of ethics*', 70.4% respondent feels that most architects do not

adhere to professional code of ethics. When asked to respond on whether *'Architects should enter into agreement with his consultants/clients'* 83.1% agree that they should do so. The reason may be that business environment of the country is rapidly changing and verbal agreement do not hold good any more, even court cases involving architects are on the rise. So they feel that there is an urgent need for proper agreement / contract between parties concern clearly demarcating their responsibilities. When asked to respond on should their be a *'Bar on tender bids for architects'* 41.8% practicing architects disagree that architects should participate in the tender bids which are advertised to select the most competitive bid whereas 46.5% are of the opinion that they should be allowed to do so.

Majority 65.7% agree that *'COA performance is unsatisfactory'* whereas only 22.1% feel that it is other way round. 58.2% architects reported that it is always possible to distinguish a buildings designed by architect. 59.2% feel that they do not get sufficient time for creative pursuits during the working hours. So they have to work late nights or during week ends. Regarding managing time 64.3% of the respondents agreed that setting a workable time schedule for any project is top priority for their firms whereas regarding advertisements to be allowed majority agreed. 24.9% of respondents believe that originality should always comes out of an architect and 53.5% are of the opinion that in a country where majority population is middle income group, require good buildings over original/ trend setting buildings. So the ability to produce cost efficient, energy efficient buildings overweight over producing original buildings i.e. not copied from anywhere, which is otherwise also rare these days.

4.3.10 Most Critical Issues Confronting Architectural Profession

As indicated in the Table 4.3.10 and figure-11 it is reported by 93.4% architects that most important challenge is in *providing their service with hitherto unknown speed*. The client has money but very less time so all the projects have to be executed in a targeted time and the main pressure on the architect is to finalize all design decisions very quickly. Lax attitude and slow designing ability do not work these days. The other main challenges reported by respondent are *Amount of money involved has increased many folds* 93.4% so its return and repayment of loans etc. plays a significant role. This also highlights that if the projects are not executed in the time blame game starts, so it is too important to have clear understanding of laws and liabilities and also to have legal contracts with the clients.

The other important challenges considered by the respondents are that each and *'Every project has to be commercial viable'* 90.1% followed by *'Scientific approach to design is must for successful survival'* 90.1%, around 80% respondents reported that *'Absence of mid level skilled personnel'*, (81.2%) and *'Potential threat to regional Indian identity in architecture due to demand of universal architectural style'* (81.2%) are the critical issues.

Significant percentage are also of the view that *'Need to constantly update the latest in architectural styles'* (77.9%), and *'Tough competition from international design firms'* (72.3%) needs to be urgently addressed.

Figure-11
Critical Issues Confronting Architectural Profession

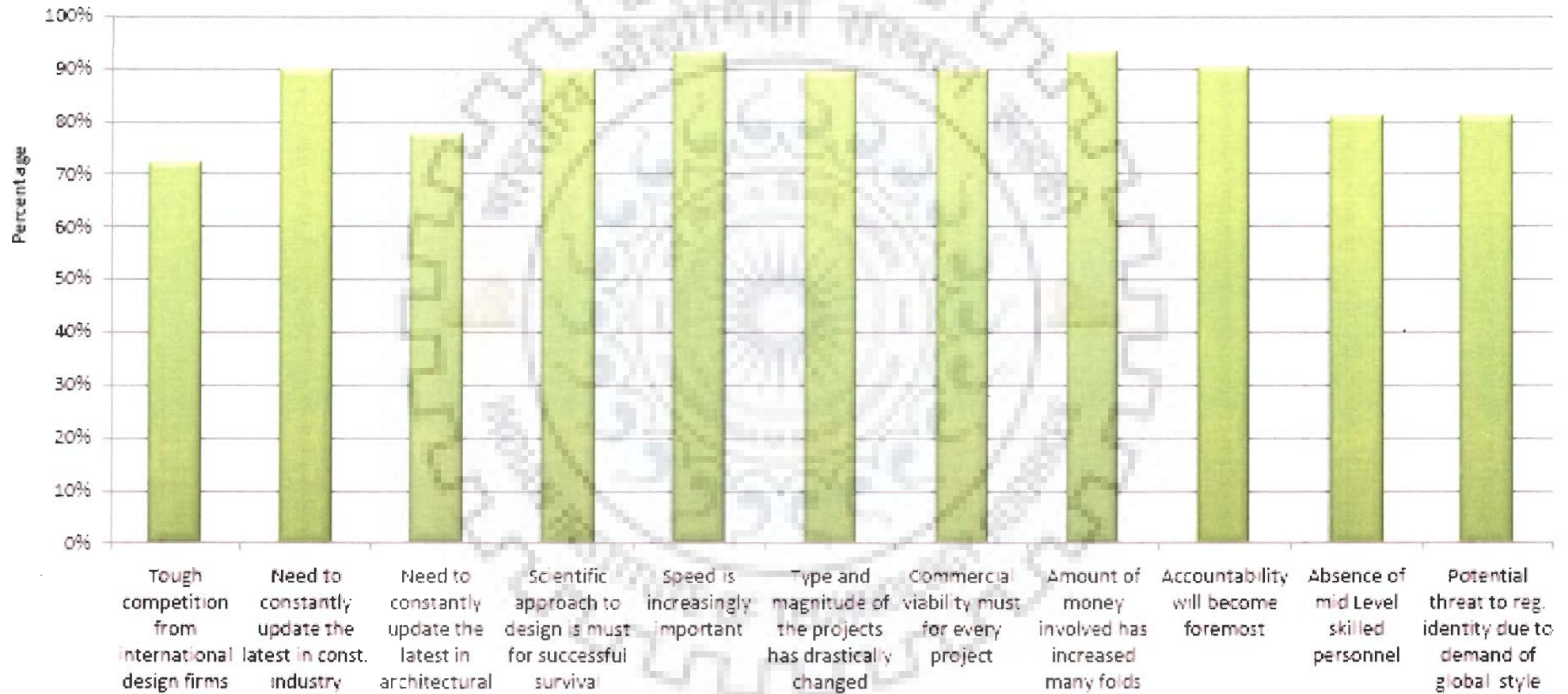


Table 4.3.10: Distribution of Respondents according to Most Critical Issues Confronting Architectural Profession

Most Critical Issues			Missing Data	Agree	Donot Know	Disagree
1	Tough competition from international design firms	Count	4	154	25	30
		%	1.9	72.3	11.7	14.1
2	Need to constantly update the latest in construction industry	Count	6	192	3	12
		%	2.8	90.1	1.4	5.6
3	Need to constantly update the latest in architectural styles	Count	4	166	19	24
		%	1.9	77.9	8.9	11.3
4	Scientific approach to design is must for successful survival	Count	8	192	11	2
		%	3.8	90.1	5.2	.9
5	Speed is increasingly important	Count	5	199	6	3
		%	2.3	93.4	2.8	1.4
6	Type and magnitude of the projects has drastically changed	Count	2	191	13	7
		%	.9	89.7	6.1	3.3
7	Commercial viability must for every project	Count	2	192	11	8
		%	.9	90.1	5.2	3.8
8	Amount of money involved has increased many folds	Count	4	199	9	1
		%	1.9	93.4	4.2	.5
9	Accountability will become foremost	Count	6	193	13	1
		%	2.8	90.6	6.1	.5
10	Absence of mid level skilled personnel	Count	10	173	11	19
		%	4.7	81.2	5.2	8.9
11	Potential threat to regional Indian identity in architecture due to demand of universal architectural style	Count	4	173	14	22
		%	1.9	81.2	6.6	10.3

4.3.11 Abilities Required for Successful Practice

Table 4.3.11: Distribution of Respondents according to their Perception of Abilities Required for Successful Practice.

	Abilities Required for Successful Practice		Missing cases	Rank 1	Rank 2	Rank 3	Rank 4	Weighted Mean	Overall Ranking
1	Integrity	Count	7	32	9	39	126	1.68	4
		%	3.3	15.0	4.2	18.3	59.2		
2	Business ability	Count	5	84	63	19	42	2.84	1
		%	2.3	39.4	29.6	8.9	19.7		
3	Design ability	Count	7	64	41	75	26	2.60	3
		%	3.3	30.0	19.2	35.2	12.2		
4	Technical know how	Count	5	53	82	62	11	2.78	2
		%	2.3	24.9	38.5	29.1	5.2		

Maximum architects had ranked Business ability on the first place (39.4%), followed by Design ability (30%), Technical know how 24.9%, whereas integrity is ranked at first place by only 15% of the respondents. Weighted mean was calculated by assigning the weights as explained in chapter-3, which helped in the overall ranking of these ability in the following order, Business ability, Technical know how, Design ability and Integrity.

4.3.12 Major Competitors

Table 4.3.12: Distribution of Respondents according to their Perception of Major Competitor

	Major Competitors		Missing Cases	Agree	Do not know	Disagree	Rank
1	Non-registered practitioners	Count	4	88	29	92	4
		%	1.9	41.3	13.6	43.2	
2	Project Managers	Count	2	43	73	95	6
		%	0.9	20.2	34.3	44.6	
3	Vastu consultants	Count	3	77	41	92	5
		%	1.4	36.2	19.2	43.2	
4	Urban designer/town planners	Count	8	31	76	98	7
		%	3.8	14.6	35.7	46.0	
5	Foreign architects/design firms	Count	10	120	12	71	1
		%	4.7	56.3	5.6	33.3	
6	Builder/developer/promoters	Count	12	119	21	61	2
		%	5.6	55.9	9.9	28.6	
7	Foreign trained Indian architects	Count	9	99	38	67	3
		%	4.2	46.5	17.8	31.5	

As shown in the table 4.3.12 (56.3%) architects in the post globalize period consider *Foreign Architects/Design Firms* as their main competitors because they are known for their efficient services. They talk on scientific grounds and have very large design teams as well as office infrastructure spread globally, They are also preferred by (59.6%) Indian clients, as highlighted in table 4.3.9. The reason could be just the fascination for foreign stamp.

The next on the list is *Builders/ Developers / Promoters* (conglomerate). 55.9% of the respondents reported them as their major rivals because this conglomerate has emerged as major service provider of built spaces on turn key basis giving less botheration to the clients and providing them spaces at

competitive rates. Media reports (Electronic as well as print) highlight their stakes in numerous advertisements.

The other competitors reported by 46.5% architects are *Foreign Trained Indian Architect* who have local knowledge and foreign acumen / exposure, and 41.3% as Non-registered practitioners who are doing most of the work in medium and small cities in the absence of required number of registered architects, and they charge less fee and are able to satisfy their clients' needs.

The least reported competitor was the *Urban Designer / Town Planners*. It seems that their area of the work/ jurisdiction of work is different as stated in table 4.3.1 the Urban renewal projects are the least number of the project with the architects. Numerous integrated towns special economic zones (SEZ) high tech cities, IT parks are not in direct preview of architects, Urban designer town designer play a vital role in their planning. In most cases they are developed by the multinational companies or mega business houses that have their own in house design-teams who performs all the activity right from conception to completion stage. Very few architects reported that they are doing such projects.

4.3.13 Survival Strategy

As indicated in Table 4.3.13 (79.4%) architects reported that most important success mantras is *exploring new approaches to architectural practices* followed by 77.0% as upgrading own capabilities, and by upgrading office infrastructure, it is worth mentioning here that there are very less avenue for the higher education or continuing learning in the country and the architects have no option than to do the needful themselves. Though the Government has Quality Improvement Program (QIP scheme) but it is observed that very less number of short term courses are organized for practicing architects and even if organized

very less number of participants are there may be due to the reason that they are not designed to address the specific demands or convenience of practicing architects. Most architects reported that they are upgrading their knowledge on their own along with upgrading their office infrastructure to compete with their competitor. The least preferred, survival strategy reported by just (8.9%) respondents is becoming franchise of bigger multinational firms.

Table 4.3.13: Distribution of Respondents according to their Survival Strategy.

Survival Strategy			No	Yes
1	By upgrading office infrastructure	Count	59	154
		%	27.7	72.3
2	Upgrading my own capabilities	Count	49	164
		%	23.0	77.0
3	Hiring people with different specialization	Count	66	147
		%	31.0	69.0
4	Hiring young computer trained staff	Count	82	131
		%	38.5	61.5
5	Sub contracting architectural work	Count	188	25
		%	88.3	11.7
6	Collaborating with Indian architectural firms	Count	128	85
		%	60.1	39.9
7	Collaborating with Foreign architectural firms	Count	85	128
		%	39.9	60.1
8	Becoming Franchise of bigger/multinational firms	Count	194	19
		%	91.1	8.9
9	Exploring opportunity in other cities/countries	Count	104	109
		%	48.8	51.2
10	Exploring new approaches to architectural practices	Count	46	167
		%	21.6	78.4
11	Becoming a builder/developer/promoter/myself	Count	128	85
		%	60.1	39.9

4.3.14 Reasons for Not Accepting a Client

Table 4.3.14: Distribution of Respondents according to Their Reasons for not Accepting a Client.

Reason for not accepting a client			No	Yes
1	Incompatibility with your office philosophy	Count	139	74
		%	65.3	34.7
2	Unsatisfactory payment	Count	73	140
		%	34.3	65.7
3	Very interfering	Count	98	115
		%	46.0	54.0

The above table shows that most common reason for not accepting a particular client is '*Unsatisfactory Payments*' (65.7%) followed by '*Interference By Client's In The Design Process*' (54.0%) and the least reported reason is '*Incompatibility With Office Philosophy*' by (34.7%) of the respondents.

4.3.15 Reasons for Not Accepting A Project

Table 4.3.15: Distribution of Respondents according to Their Reasons for not Accepting a Project

Reason for not accepting a project			No	Yes
1	Inexperience in handling its size/budget	Count	178	35
		%	83.6	16.4
2	Shortage of skilled task force	Count	98	115
		%	46.0	54.0
3	Less office infrastructure	Count	94	119
		%	44.1	55.9

The major reason reported by the respondents for not accepting any project is '*Less office infrastructure*' (55.9%) followed by '*Shortage of skilled task force*' (54.0%) and least stated reason is '*Inexperience of handling its size/budget*' (16.4%) so it shows that size and budget of the project is not playing any major role in rejecting a project. This also reveals that there is an urgent need to train skilled task force and Para-architecture professional similar to Para-medical professionals in the country to fill-in the gap between the supply and demand of such professionals. This shortage effects the architectural services and ability of local architects to compete successfully in international market.

4.4 Results and Findings Related to Architectural Education

The findings and analysis of important issues related of architectural education identified in the previous chapter i.e. Practitioner's perception about existing architectural education system, specialization required at UG level, reasons for architecture not being a sought after branch, The major shortcoming of existing education system are presented in this part. In addition the subjects required for contemporary practices and their adequacy in existing education system in general and in fresh graduates in particular are discussed as well.

4.4.1 Perception about Existing Architectural Education System

The table 3.3.1 shows the perception of practicing architects about architectural education and their suggestions to improve this system. it is reported that *architectural schools are not addressing the future need of the society* by majority i.e. (55.9%) of the respondent. Where as only 35.5% agreed that it is doing so.

Table 4.4.1: Distribution of Respondents According to their Perception of Architectural Education.

	Perception of Architectural Education	Missing cases	agree	Do not know	Disagree
1	The architectural schools are addressing the future needs of the society / profession	0.9%	30.5%	12.7%	55.9%
2	Fresh graduates have basic professional skills	1.9%	33.3%	1.4%	63.4%
3	Fresh graduate should be given registration immediately after graduation	8.0%	25.8%	7.0%	59.2%
4	My UG (B.Arch.) has adequately equipped Me for practice	3.8%	40.4%	6.1%	49.8%
5	There is a dire need to produce specialist even at UG level	5.6%	70.9%	3.8%	19.7%

In case of *fresh graduates have basic professional skills*, (63.4%) disagree where as (33.3%) have positive response. but when asked *should fresh gradates be given registration immediately after graduation* only (25.8%) are favors, (59.2%) against and (15%) undecided on the issue. When ask to responded on the *need of specialization at UG level* as the demand as well as business environment of country is fast changing and specialization is predicted as good survival strategy (70.9%) of the respondents agree and only (19.7%) disagree

4.4.2 Specializations Required at U.G (B. Arch.) Level

Table 4.4.2: Distribution of Respondents According to their Perception of Specializations Required at UG (B. Arch.) Level.

Specializations	Missing cases (in%)	Rank 1 (in%)	Rank 2 (in%)	Rank 3 (in%)	Rank 4 (in%)	Rank 5 (in%)	Rank 6 (in%)	Rank 7 (in%)	Rank 8 (in%)	Wt. Mean	Over all Rank
Low budget buildings	12.2	15.0	11.7	8.0	4.7	4.7	12.2	3.8	27.7	3.64	6
Marketing /office Management	25.8	8.5	7.5	21.1	12.2	5.2	1.4	15.5	2.8	3.66	5
Energy efficient architecture	3.8	36.2	23.9	1.9	5.2	14.6	7.0	5.6	1.9	5.86	2
Construction management	5.2	53.1	14.6	10.3	11.3	2.3	3.3	--	--	6.63	1
Real estate Consultancy	23.9	8.5	2.3	--	--	7.0	7.5	27.7	23.0	2.13	8
Interior design	12.7	16.0	13.1	11.3	4.7	23.5	11.3	6.1	1.4	4.52	4
Urban design	14.1	19.2	4.2	16.4	22.5	6.1	7.5	1.9	8.0	4.53	3
Landscape design	16.0	9.4	4.2	7.0	16.0	8.9	20.2	11.3	7.0	3.52	7

When asked to specify which specialization are more demanded /required for successful survival they ranked them in the following order Construction management, Energy efficient architecture, Urban design, Interior design, Marketing / Office management, Low budget buildings, Landscape design, Real estate consultancy.

4.4.3 Why Architecture Is Not Sought After Branch

Table 4.4.3: Distribution of Respondents according to their Perception of Why Architecture is not sought After Branch.

Reasons		Missing cases	Agree	Do not know	Disagree	
1	Public is unaware of the profession	Count	5	104	48	56
		%	2.3	48.8	22.5	26.3
2	Longer duration of the course	Count	5	91	20	97
		%	2.3	42.7	9.4	45.5
3	Lower initial salaries, compared to other engineering / management graduates	Count	4	204	—	5
		%	1.9	95.8	—	2.3

As indicated in the above table 4.4.3 (95.8%) of architects reported that the *lower salaries as compared to engineering/ management graduates* is the main reason for architecture being least preferred branch. The other leading factor responsible for the state of affair is *lack of awareness in the society*, 48.8%, whereas only 42.7% were of the opinion that the *longer duration of the course* leads to architecture not sought after branch. One could easily infer from this finding that institute should pay more attention to inculcating the required skills in addition to paying more attention to the right / appropriate placements of their graduates.

4.4.4 Major Short Coming of Existing Architectural Education System

Table 4.4.4: Distribution of Respondents according to their Perception of Major Short Coming of Existing Architectural Education System.

Short Comings Of Existing Architectural Education System		Missing cases	Agree	Do not know	Disagree	
1	Types of subject taught	Count	9	99	4	101
		%	4.2	46.5	1.9	47.4
2	Course content of the subject	Count	9	139	9	56
		%	4.2	65.3	4.2	26.3
3	The way they are being taught	Count	9	175	16	13
		%	4.2	82.2	7.5	6.1
4	In adequate practical inputs	Count	7	195	2	9
		%	3.3	91.5	0.9	4.2

The above table 4.4.4 shows that the major deficiency reported in architecture curriculum was '*In adequate practical inputs*' (91.5%) where as 82.2 % reported that the major flaw is '*In the way the subjects being are taught by the teacher*'. The least reported deficiency was the '*Type of the subjects taught and their contents*'.

4.4.5 Subjects Required for Contemporary Practices and their Adequacy in Fresh Graduates

Table 4.4.5: Distribution of respondents according to what architects need to learn verses adequacy of its knowledge in fresh graduates

	Important skills	An architect needs to receive training in	Fresh graduate have adequate knowledge in
1	Preparation of design brief	82.2%	54.9%
2	Construction management	85.0%	18.8%
3	Budget management	80.3%	17.8%
4	Real estate consultancy	50.2%	10.8%
5	Building economics	78.4%	22.1%
6	Building/ Construction industry	84.0%	20.2%
7	Structural /Mechanical systems	85.9%	27.7%
8	Specification writing	67.6%	18.8%
9	Codes and regulations, Laws and liability	81.7%	21.1%
10	Marketing skills	63.8%	15.0%
11	Communication skills	66.7%	60.1%
12	Energy efficient architecture	77.9%	24.4%
13	Low budget buildings	76.1%	16.9%
14	Managerial skills	74.6%	13.1%
15	Human behavior/client relations	67.6%	27.7%
16	Traditional architecture/ art/ culture	71.4%	50.7%
17	Urban design/ Town planning	54.0%	22.1%
18	Interior design	80.3%	52.6%
19	Landscape design	81.2%	30.5%
20	Preparation of tender/ construction documents	73.7%	12.2%
21	Preparation of working drawing	66.7%	46.9%

It was also found that (85%) architect consider *Construction management* a very important skill whereas only (18.8%) agree that fresh graduate have adequate training in this field. Similarly the *Budget management* (80.3%), *Marketing skills* (63.8%), *Communication skills* (66.7%), *Managerial skills* (74.6%) are reported to be very useful skills for architects but only 17.8% in case of budget management, 15% in marketing skills, 60.1% in communications skills, and 13.1% in managerial skills reported that fresh graduates had them.

While they were asked about their views regarding the importance of *Building / Construction industry* 84.1% said that an architect needs to receive training in it where as only 20.2% reported that its knowledge is adequate in fresh graduates. In case of *real estate consultancy* only 50.3% agree that its knowledge is required in posts globalize society and only 16.4% agreed that fresh graduates have adequate knowledge in this field.

The above table shows that 85.9% of the architects are of the view that *structural / mechanical design* is important ability for architects. Where as only 27.7% agree that fresh graduate have its knowledge. The other Engineering skills required by practicing architects such as *Building economics* (78.4%), *Preparation of tender/ construction documents* (73.7%), *Specification writing* (67.6%), *Preparation of working drawing* (66.7%). Whereas 20.1% for building economics, 12.2% for preparation of tender / construction document and 18.8% for specification writing and 46.9% for preparation of working drawings agreed that fresh graduates have their adequate knowledge. It is also reported that Knowledge of Codes and regulations, Laws and liability, Traditional architecture/ art/ culture, Human behavior/client relations are needed by architects but fresh graduates most of the time not adequately trained in above mentioned areas as well. The most

adequate skills found in fresh graduates was communications skills (60.1%), preparation of design brief (54.9%) and interior design (52.9%) and the least acquired skill (in this category) reported is *Preparation of tender / construction documents*,

In architecture schools, in case of preparation of design brief 82.2% reported that architects need to possess this knowledge whereas only 54.9% fresh graduates have it. In the era of climate change when energy saving is of prime importance the energy efficient architect has rightly found its place in the mind of practicing architects with 77.9% agreed that its knowledge is vital for architects these days whereas only 24.4% possess this knowledge. Regarding low budget building almost three fourth (76.1%) reported that an architect should have its knowledge. Because the resources are limited and requirements are unlimited to fulfill those unlimited requirements in limited resources low budget buildings also found an important place as 76.1% respondents are in favor of fresh graduates having this knowledge whereas only 16.9% respondents feel that fresh graduates have this knowledge.

CONCLUSIONS AND RECOMENDATIONS

5.1 IMPORTANCE OF DESIGN AND CREATIVITY

From this study, it is apparent that the design-ability plays a significant role in the practice of architecture as 73.7% architects consider that 'Major Design Decisions' are invariably taken by them. 97.2% consider 'Visual Appearance' and 74.6% reported 'Innovative Detailing' as a significant attributes of their design. Most of them (93.4%) go to the extent that even if paid less, architects should uphold their design standards. So it is evident that the design holds top priority in architect's mind, but on the other hand they have also made it clear that patrons of their services i.e. clients demand 'Cost Efficient Buildings' (88.3%), 'Different Looking Buildings' (81.2%), 'Designs at Very Short Notice' (69.5%) and 'Detailing out Clients Ideas' (61.0%). Out of all the above mentioned clients' demands, only catering to the clients who wish to have different looking buildings requires design ability of an architect to certain extent, but it is also observed that different looking building in client perception is not necessarily a new or original design by the architect, but the one which differ from the buildings of his or her (client's) locality/ city. The rest of the clients' demands i.e. 'Cost Efficient Buildings', 'Designs at Very Short Notice' and 'Detailing out Clients Ideas' indicates that majority of clients do not approach architects for his creative ability but for getting their projects executed as per their own needs and wishes.

At the same time most of the architects also reported that in the post globalized era, in changed business scenario 'Efficiency is more important than creativity' (62.4%) , 'Architects' job is to be good rather than original' (53.5%), and 'Firms that focus entirely on design will become obsolete' (52.6%). This highlights the increased importance of achieving efficiency (of cost, time or energy) in design and to address to National need of creating efficient and good buildings, catering to large segment of society rather than just being original or creative to serve just the elite class who can pay, which now undoubtedly have the paying capacity to hire the worlds' best talent and do so. It is also observed and reported during the study that numerous designs of various types of buildings are readily available on internet/ websites, both architects and clients regularly visit such websites.

So the image of design focused architects seems to be out of date. It can be inferred that design plays an important but not sufficient role in the work of an architect whereas the creativity appears to be very important for an architect but it is not sufficient for successful survival in the competitive world market today. It has also emerged out of the survey that in post globalized era; architects need to possess some additional abilities.

5.2 IMPORTANT SKILLS FOR ARCHITECTURAL PRACTICE

5.2.1 Architects Need to have Managerial Skill / Communication Skill /

Business Ability / Marketing Skill

This survey points out that architects prefer to undertake the following tasks themselves: 'Recruiting staff' (82.6%), 'Conducting the meetings' (75.1%), 'Socializing with clients' (66.2%), 'Coordinating consultants' (58.7%) and 'Monitoring

the progress of the projects' (49.3%). None of the above task requires creative ability/ energy of an architect. The efficient performance of these tasks depends on good managerial skills and communication ability.

Most of architects (93.4%) also reported that 'Speed is increasingly important', they require managerial skills to provide services in time. And this may be the reason that four-fifth (79.8%) do not consider project managers as their competitors because they invariably appoint or collaborate with project managers for smooth and efficient execution of their projects.

Majority of architects (74.6%) reported that 'Managerial skills' are invariably required for successful practice in the competitive era, whereas only 13.1% fresh graduates possess this ability. Most of respondents (66.7%) consider the 'Communication skills' are essential with 60.1% fresh graduates well equip with these skills. 'Business ability'/'Marketing skill' are other important skills required by the architects but inadequately possessed by fresh graduates.

The survey further points out that 47.4% architects agreed with the statement 'Inducements are necessary for getting projects', and majority of practicing architects consider 'Builder/Developer/Promoters' as their major competitor (55.9%), Substantial number (39.9%) of practicing architects are becoming 'Builder / Developer/Promoter' themselves to cope with changing ground realities, which requires good entrepreneurship and business ability. Moreover when asked to rank most important ability for successful practice in post global period, architects across the nation had ranked 'Business Ability' foremost followed by 'Sound Technical Knowledge'.

So it is inferred that 'Managerial skills', 'Communication skills', 'Business ability' and 'Marketing skill' are very vital for successful survival of architects and recommended that due time should be devoted to inculcate them in students.

5.3 ARCHITECTS NEED TO HAVE SPECIAL KNOWLEDGE

5.3.1 Technical Knowledge / Scientific Approach

Vast majority of architects (96.2%) strongly feel that 'Designing Technically Sound Building' is very significant for them. And 90.1% reported that 'Scientific Approach to Design is must for Successful Survival' in the era of technological revolution. They also reported that they recruit their architectural staff based on 'Sound Technical Knowledge' (41.8%) which emerged as second most important criteria for recruiting architectural staff. Majority of practicing architects consider the lack of technical knowledge in fresh graduates, which is inevitably required for successful practice.

So it is inferred that technical knowledge is foremost for successful practice of architecture and recommended that students of architecture must be trained to have scientific approach while taking design decision rather than intuitive ones.

5.3.2 Architects Need to have Knowledge of Laws & Liabilities

Majority of architects involve themselves in legal proceedings for getting 'Statutory approval of drawings' (20.7%) and 'Getting agreements in writing' (54.5%). Most of them consider 'Adherence to building bye laws' (79.3%) very important for their design. This outcome highlights the importance of proper understanding of laws, regulations and codes involved in practice of architecture. 90.6% also consider that 'Accountability will become foremost' (90.6%) as 'Amount of money involved

has increased many folds' (93.4%) and 83.1% of them are of opinion that 'Architect should enter into agreement with his consultants / clients' to avoid any legal complications which might arise out to hold someone accountable for any delay. Large number of architects (87.7%) stressed that proper understanding of 'Laws, regulations and codes' are required by architects but only 21.1 % of the fresh graduates' posses it.

So it is inferred that knowledge of laws, codes and regulations are must for architects and recommended to be given more emphasis in their training.

5.3.3 Architects Need to have Pragmatic Approach

Architects need to have Pragmatic approach is highlighted by the fact that 82.4% respondents stressed that 'Architects should adopt a more pragmatic (practical) approach rather than idealistic approach to compete in the International market' and it is also reported during interviews that only pragmatic approach can help them widening their service base. Because masses can only be served with being practical so as to realistically solve their problems of built environment.

So it is recommended that practical approach should be encouraged over idealistic one as far as possible.

5.4 ARCHITECT NEEDS TO BE SENSITIVE TO NATIONAL AND INTERNATIONAL ISSUES

5.4.1 Indian Architects are Attached to Traditional Indian Architecture

Indian architects are attached to traditional Indian architecture and want to reflect Indian-ness in their designs is an important outcome of this survey/study as 681% architects feel that 'Mindless application of western concepts (planning,

materials) are inappropriate in the Indian context'. Majority of respondents (81.2%) consider that there is a 'Potential threat to regional Indian identity in architecture due to demand of universal architectural style' Therefore this (how to reflect Indian-ness) is a core issue faced by contemporary architectural practices in India. Most of the architects (86.9%) feel that the 'Society must be made aware of traditional architecture wisdom through designs'. The literature studied also highlighted the urgent need to educate the society about the importance of understanding the roots, and not blindly copy west for the sake of satisfying the client who demands 'International Look'. All glass facades do consume lot of energy to keep the inside livable in most climatic zones of India. And wealth of knowledge is hidden/ available in traditional Indian architecture. The need of the hour is to unearth them, thoroughly understand them, use them judiciously and to propagate their benefits through media to educate the society at large. This may prove to be very beneficial to reduce emission of green house gases and to earn the most desired carbon credits.

Hence it recommended that intensive research be carried out to discover the fundamental principles of energy efficiency and sustainability being applied in traditional Indian architecture and the outcome be made an important aspect/part of curriculum at under graduate as well as post-graduate architecture studies.

5.4.2 Architect must be Sensitive to Social Needs

Architect must be sensitive to Social needs is highlighted by the fact that 96.7% architects pay utmost care to 'Client satisfaction', 77.5% architects reported that 'End user's satisfaction' is significant for them and 63.7% said 'Contextual appropriateness' is important. This signifies that architects need to be sensitive to

social needs of satisfying not only their patron's need but also to take care of the end users as well as the onlookers.

5.4.3 Indian Architects are Sensitive to Global Needs

Indian Architects are sensitive to Global needs is highlighted by the response of 88.3% architects who agreed that 'Energy efficiency' is significant for their design. While 58.7% reported 'Energy efficient buildings' are clients' demand. This shows that they feel themselves responsible for creating energy efficient buildings in view of climate change and it is very good sign that society has become receptive to their proposals.

It is recommended that more and more stress should be laid on how to design energy efficient buildings and students must be made aware of global advancements in this field. They must also be made aware of the norms / codes pertaining to the use of energy / energy audits etc.

5.4.4 Architect must have Global Exposure

The survey points out that global exposure is must for architects as 72.3% respondents perceive that 'Tough competition from international design firms' is a critical issue confronting architectural profession consequent upon globalization. Majority of architects consider 'Foreign architects/design firms' (56.3%) and 'Foreign trained Indian architects' (46.5%) as their main competitors. This may be because they have upper hand due to their global exposure. Majority of architects (65.7%) also reported that clients' demand 'High Tech, International style' for their projects for which they need to have knowledge of global trends. Almost half (51.2%) architects also reported that they are 'Exploring opportunity in other cities / countries'

consequent upon signing of global trade treaties to expand their area of operation and avail opportunities lying there. Working in other countries does require global exposure.

So it is inferred that architects having global exposure are better equipped to face the challenges of contemporary practices and it is recommended that as far as possible students be given global exposure through internet.

5.4.5 Status of Indian Clients

This study reveals that majority of Indian clients do not reward creativity. Many of them (48.4%) are quiet interfering in the design process for which majority architects (54.0%) rejects them. Many respondents (67.6%) consider that 'Human behavior/client relations' are needed by architects but only about one fourth, 27.7% of fresh graduates posses this ability.

So it is inferred that knowledge of Human behavior / client relationship is very important for dealing efficiently with various clients and recommended to be made very important aspects of architects training which at present is negligible³⁰.

5.5 SOCIAL WORK ENVIRONMENT OF CONTEMPORARY PRACTICES

It is evident from this study that existing social work environment is not conducive for creativity required for architectural design in India, as only 25.8% reported that they are satisfied with it. The major causes of dissatisfaction are that client is quiet interfering and is not ready to pay for their soft skills i.e. design and innovation etc. The other major cause of dissatisfaction is deep rooted corruption in the system. Large number of respondents consider inducements (47.4 %), political contacts (60.1%) and involvement of brokers (25.4%) have become unavoidable to

get prestigious projects. Most of the respondents (81.2%) also reported that they face lot of hardship due to 'Shortage of skilled task force' and consider it as a critical issue. Majority of them (54.0%) have to reject projects due to this shortage. Architects also reported that their major competitors are 'Foreign Architects / Design Firms' (56.3%), 'Non Registered Practitioners' 41.3% and 'Vastu Consultants' 36.2%.

So it is inferred that architects in India are facing numerous challenges. Neither their social work environment is conducive for creativity required for architectural design nor do many of their clients are ready to suitably reward them. On one hand they had to face corrupt system on the other acute shortage of skilled staff troubles them. In addition they face 'Tough Competition from Foreign Architects/ Design Firms' on one side and from 'Non Registered Practitioners' and 'Vastu Consultants' on the other.

Hence it is recommended that collective efforts are required to educate the society about the importance of good architecture as it involves country's prestige and benefits of taking architects' services (which must help them achieve efficiency of cost, time and energy in contemporary scenario). There is an urgent need to start courses in para architecture fields (similar to para medical fields) to train skilled task force which is so desperately required.

5.6 ARCHITECT ACT / ROLE OF COUNCIL OF ARCHITECTURE

Only 22.1% respondents reported that they are satisfied with Council of Architecture (India) role in regulating the architecture profession and promoting architecture education. In other words the remaining 77.9% are not happy with the

way of working of Council of Architecture (India). The practicing architects interviewed during the study emphasized that a paradigm shift is necessary in the methods/ approach of Council of Architecture (India) for the healthy growth of this profession.

5.7 FUTURISTIC APPROACH

When asked to reflect on the statements 'Larger the firm easier is the survival' and 'Small firms unless specialize will not survive' majority agreed, which clearly indicates that collaborations and ability to work in teams have/will become important for successful practice in future, Those who wish to have individual identity (remain small in size) must specialize to face the challenges posed by globalization. Majority of respondents (52.6%) reported that 'Firms which focus entirely on design will become obsolete'. A large number of respondents (90.6%) stressed that 'Accountability will become foremost' in view of higher amount of money/capital involved in the construction of any building.

The architects also foresee the increased role of computers and reduced manual inputs in designing as well as drafting work. Numerous software's are helping them in visualizing as well as efficiently delivering their services. 77.9% reported that 'Computer is being used as design tool in their offices' and 46.0% ranked 'Computer Skill' as foremost ability at the time of recruitment in fresh graduates (i.e. well versed in using computers as a design, drafting and communication tool).

It is inferred the survival in the future will depend either on the ability to collaborate / work in teams or to specialize in requisite areas. Ability to explore

maximum potential of computers will also be vital. So it is recommended that students must be trained keeping the above inferences in minds.

5.8 LEVEL OF SATISFACTION

This study even though pointed out many hardships being faced by the practicing architects in India but at the end it finds that they are professionally satisfied lot as amazingly 79.8% reported that even if given a chance to start afresh, they still will become an architect again and only 17.4% reported that they are willing to work outside architecture for more money and recognition which indicates that in general architects are satisfied although the aspirations to improve do exists.

5.9 ARCHITECTURE EDUCATION FALL SHORT OF EXPECTATION

Architecture education fall short of expectation as only 30.5% practicing architects considered that the 'Architectural education in India are addressing the future needs of the society' and the profession with 91.5 % pointed out the major drawback/shortcoming is the 'Inadequate practical and technical inputs' in the architectural curriculum. Only 33.3% fresh graduates are reported to have basic professional skills. They (25.8%) even feel that fresh graduates should not be given registration immediately after graduation and have suggested one to two years mandatory practical training before they are allowed to practice.

The study shows that many practicing architects are of the opinion that they do required updated knowledge in area such as 'Business and Finance Management', 'Computerization', 'Project management', 'Clients relations' and 'Marketing' etc. Whereas in architectural schools, a uniform system following an age old syllabus is being taught, which is unable to inculcate the desired abilities/ knowledge in the

fresh graduates to meet the diverse requirements of architectural practice. Right now all architects in essence are trained in design, spending more than 50% time on it, knowing well that vast majority will not be star designers, but somehow we try to inculcate them with the notion if they're not, somehow they are not fit to be called architects. Educators of the country do not consider design a specialization in itself, they consider it what architects do. Yet, in practice most architects end up specializing in areas other than design. So there is dire need to radically change the curriculum reducing the time and energy spend on teaching design in non-scientific way as at present and introducing required specializations at under graduate level as pointed out in chapter- 4 of this study in addition to incorporating the above stated recommendations at the time of framing the curriculum. Continuing education should also be given due importance to meet the challenges of post globalized era.

Hence, the hypothesis 'There exist a Yawning gap between the Contemporary Architectural Practices & its Education in India, and the knowledge structure, skills & abilities required to face the challenges posed by globalization are not adequately addressed/taught in its formal education and needs urgent reorientation' is found to be correct.

To conclude this study the investigator feel it deemed to quote Charles Darwin 'Theory of Evolution' which states the survival of any specie is not dependent on its intelligence or strength but on its ability to adopt to the changing environment / surroundings. This is applicable to all species including architects. This is just a beginning of my quest to know more about architects, architecture and its education in the country.

5.10 BENEFITS OF THE STUDY

The proposed research will benefit the following:

The professional institutes like COA, IIA & AICTE. The findings will help them take appropriate decisions for laying down norms for architecture education and for the healthy development of architecture profession.

- **The academic institutes** – to reorient their course content to address current and future needs of profession and society.
- **The fresh graduates** who are struggling for respectable living within the profession and **the students**– who are preparing themselves for this profession.

5.11 SUGGESTIONS FOR FURTHER RESEARCH

1. To study the existing curriculum in view of the findings of this study and to suggest precise course of action required to be taken to reorient the architecture education in the country.
2. The behavior/perception of Builders Developers Promoters towards architects.
3. How non architects perceived architects and architecture.
4. How architecture can be made a sought after branch.
5. Comparative study of the architectural practices with other countries.
6. Comparative study of the architectural education system with other countries.
7. To study the provision of Architects Act 1972 in view of the findings of this study.
8. How to improve architecture design teaching.

9. To study the traditional Indian architecture to discover the principles of energy efficiency and sustainability involved.

5.12 LIMITATIONS OF THE STUDY

1. Time and cost was the major limitation for this individual research which was carried out under QIP leave of 3-years.
2. Though investigator put all her efforts to collect the most representative sample across the country but the response received out of 1500 questionnaire plus equal number of e-mails send was 213. So the bias may have crept due to non-response of many architects.
3. The sample collected as reported in chapter 4 (Profile of the Respondents) give all the details but it is pointed here that the non-response specially of the firms operating at international level (6.1%) and at city level (6.1%) may have effected the output.
4. The bigger firms having more than 11 architects as categorized for this study also constitute just 2.9% sample (with 77.1% with less than 5 employees and 20% with 6 to 10 employees) may also have impacted the output.
5. The sample constitute 50.7% respondents from north India as the investigator belongs to north and have personally known to many practicing architects of targeted cities. The sample also represent 70.8% firms doing mixed projects (1% doing project exclusively for corporate / MNC sector and 4.2% for public sector). This may also have impacted the output.

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SEMI STRUCTURED QUESTIONNAIRE

What are your views regarding:

Globalization & its effects on architectural practice

Opportunities and Risks of Globalization

What major changes have taken place in:

Organization & Management of Projects

Types and magnitude of projects

Services provided

Your ways of getting the project

Organization & Management of Practices

Ways of managing various tasks/ practice

Changes happening at micro level

Method of procurement

Material used

Construction Technology

Criteria for recruiting architectural staff

Changes in clients as well as society - Expectation and demands

Strategy of survival

Professional Code of conduct

Strength and weakness of Indian Architect & Indian buildings

Level of satisfaction & causes of dissatisfaction (if any)

Adequacy of Architectural Education for successful practice

LIST OF ARCHITECTS INTEVIEWED

Sl. No.	Name	City
1.	Ar. Yatin Pandhya	Ahmedabad
2.	Ar. Anant Raje	Ahmedabad
3.	Ar. G.P. Mathur	Bangalore
4.	Ar. Anmol Rattan	Bhatinda
5.	Ar. Paramjeet Singh	Bhatinda
6.	Ar. Jit Kumar Gupta	Chandigarh
7.	Ar. S.K. Saini	Chandigarh
8.	Ar.S.D. Sharma	Chandigarh
9.	Ar. Sangeet Sharma	Chandigarh
10.	Ar. Namita Satnam Singh	Chandigarh
11.	Ar. Maitri Gupta	Chandigarh
12.	Ar. Sanjeev Kumar	Chandigarh
13.	Ar. Balvinder Saini	Chandigarh
14.	Ar. Rashmi	Chandigarh
15.	Ar. Surinder Bagha	Chanidgarh
16.	Ar. Sanjay Goel	Ludhiana
17.	Ar. Herzi singh	Ludhiana
18.	Ar. Hafeez Contractor	Mumbai
19.	Ar. U.C. Jain	Mumbai
20.	Ar. Abhin Alimchandani	Mumbai
21.	Ar. Akhtar Chauhan	Mumbai
22.	Ar. Divya Kush	New Delhi
23.	Ar. Rajinder Kiri	New Delhi
24.	Ar. V.N. Srivastav	New Delhi
25.	Ar. R. Jaiswal	New Delhi
26.	Ar. K.C. Kambo	Roorkee
27.	Dr. Najamuddin	Roorkee
28.	Ar. Chandrawardhan	Varodara

QUESTIONNAIRE (Pilot Study)

I am conducting a national survey as part of my doctoral research work on "Contemporary Architectural Practices in India". Your response will help me understand the state of architecture practice in India and portray a correct picture of the professional scenario, consequently upon globalization. **Your response will be kept confidential and only summary results will be published.** Thank you for your help.

1. Name _____ 2. Age ___ 3. Sex: ___ 4. Qualification _____ 5. Year of graduation _____
 6. Institute from which graduated _____ 7. COA Regd. No. _____
 8. Your firm's name _____ Address _____
 (attached your business card)
 10. Established in _____ 11. Your specialization if any, _____
 12. Geographic region handled by your firm.- City wide () Regional () National () International ()
 13. Primary focus of your firm's projects:
 Corporate/MNC () Public sector () Small scale private () Mixed () Any other _____
 14. You have opted architecture as: First option () Second Option () any other _____

Please respond according to the scale shown in each section and bold/tick the appropriate numeral/s to indicate your answer unless specified.

1. Types and number of projects handled since year 2000.

Provide data in Col. I- Approx. number of projects handled in Col. II – who is the acting as team leader, (A = Architect, E = Engineer, P : Project Manager and D = Any other, specify).

	Col.I	Col.II		Col.I	Col.II
1 Housing projects.....	()	()	7 Institutional/public buildings.....	()	()
2 Industrial buildings.....	()	()	8 Health resorts, Hospitals, Spa.....	()	()
3 Urban renewal / design.....	()	()	9 Hotels, Resorts, amusement parks.....	()	()
4 Interior design.....	()	()	10 Individual houses/ small buildings.....	()	()
5 Landscape design.....	()	()	Any other _____		
6 Offices, malls, multiplex etc	()	()	Total no. of projects _____		(appx.)

2. Services provided

[1] Always, [2] Often, [3] Sometimes, [4] rarely, [5] never

1 Feasibility report	[1] [2] [3] [4] [5]	7 Turn key projects /services	[1] [2] [3] [4] [5]
2 Tender documents	[1] [2] [3] [4] [5]	8 Drawings for statutory approval	[1] [2] [3] [4] [5]
3 Landscape design	[1] [2] [3] [4] [5]	9 Construction drawings	[1] [2] [3] [4] [5]
4 Structural design	[1] [2] [3] [4] [5]	10 Concept design and drawing	[1] [2] [3] [4] [5]
5 Services details,	[1] [2] [3] [4] [5]	11 Estimates/specifications	[1] [2] [3] [4] [5]
6 Interior design	[1] [2] [3] [4] [5]	12 Site supervision	[1] [2] [3] [4] [5]

Any other _____

3. Your ways of getting the project. (Tick whatever is applicable)

- | | | | |
|---------------------------------|-----|--|-----|
| 1 Through personal contacts | () | 7 Updated knowledge of Real estate news | () |
| 2 Reputation as a good designer | () | 8 Regular interaction with building industry | () |
| 3 Family background | () | 9 Updated knowledge of planning reports | () |
| 4 My experience/specialization | () | 10 Joining professional associations, clubs | () |
| 5 Through competitions | () | 11 Internet / call center / media | () |
| 6 Socialization | () | Any other _____ | |

4. Reason for starting your practice (Tick whatever is applicable):

- | | | | | | |
|---|------------------------------------|-----|-----------------|-------------------------------------|-----|
| 1 | Family business/Family support | () | 4 | Won competition/Got a good project | () |
| 2 | Working up to take over a practice | () | 5 | Unable to get satisfaction from job | () |
| 3 | Join hands with friend/partners | () | Any other _____ | | |

5. Ways of managing the following tasks (Tick whatever is applicable):

[1] My self [2] My staff, [3] Consultants, [4] Outsourcing, [5] Client [6] Collectively by

- | | | |
|-----------------|--|-------------------------|
| 1 | Statutory approval of drawings | [1] [2] [3] [4] [5] [6] |
| 2 | Preparation of construction drawings | [1] [2] [3] [4] [6] |
| 3 | Coordinating consultants | [1] [2] [3] [4] [5] [6] |
| 4 | Writing specifications | [1] [2] [3] [4] [6] |
| 5 | Preparation of construction documents | [1] [2] [3] [4] [6] |
| 6 | Site supervision | [1] [2] [3] [6] |
| 7 | Monitoring the progress of the projects | [1] [2] [3] [6] |
| 8 | Conducting the meetings | [1] [2] [3] [6] |
| 9. | Important decision in a project are taken by | [1] [2] [3] [5] [6] |
| 10 | Major design decisions are taken by | [1] [2] [3] [5] [6] |
| 11 | Office publicity / marketing | [1] [2] [3] [4] [6] |
| 12 | Socializing with client | [1] [2] [3] [6] |
| 13 | Recruiting staff | [1] [2] [4] [6] |
| 14 | Participating in competitions | [1] [2] [3] [6] |
| 15. | Getting agreements in writing | [1] [2] [3] [4] [6] |
| Any other _____ | | |

6. Criteria for recruiting architectural staff (Rank them in order of your preference on scale 1 to 10)

- | | | | | | |
|---|------------------|-----|----|---------------------------------------|-----|
| 1 | Design ability | () | 6 | Computer skills | () |
| 2 | Academic record | () | 7 | Demand of salary | () |
| 3 | Integrity | () | 8 | Communication skills | () |
| 4 | Wider skills | () | 9 | Sound technical knowledge | () |
| 5 | Good personality | () | 10 | Possibility of long term associations | () |

7. Significance of the following in designing your buildings.

[1] Very significant, [2] significant, [3] Do not know [4] insignificant, [5] very insignificant

- | | | | | | |
|-----------------|-----------------------|---------------------|----|---------------------------------------|---------------------|
| 1 | Visual appearance | [1] [2] [3] [4] [5] | 9 | Environmental consideration | [1] [2] [3] [4] [5] |
| 2 | Functional efficiency | [1] [2] [3] [4] [5] | 10 | Adherence to building bye laws | [1] [2] [3] [4] [5] |
| 3 | Structural efficiency | [1] [2] [3] [4] [5] | 11 | Efficient Building services | [1] [2] [3] [4] [5] |
| 4 | Cost efficiency | [1] [2] [3] [4] [5] | 12 | Construction technology | [1] [2] [3] [4] [5] |
| 5 | Energy efficiency | [1] [2] [3] [4] [5] | 13 | Use of latest / appropriate materials | [1] [2] [3] [4] [5] |
| 6 | Innovative detailing | [1] [2] [3] [4] [5] | 14 | Public recognition | [1] [2] [3] [4] [5] |
| 7 | Client satisfaction | [1] [2] [3] [4] [5] | 15 | End user's satisfaction | [1] [2] [3] [4] [5] |
| 8 | Space optimization | [1] [2] [3] [4] [5] | 16 | Contextual appropriateness | [1] [2] [3] [4] [5] |
| Any other _____ | | | | | |

8. Majority of your client demands:

[1] Strongly agree, [2] agree, [3] Do not know, [4] disagree, [5] Strongly disagree

1	Design only or sanction plans	[1] [2] [3] [4] [5]	8	Façade treatment / elevations	[1] [2] [3] [4] [5]
2	Turn key projects	[1] [2] [3] [4] [5]	9	Comprehensive arch. Services	[1] [2] [3] [4] [5]
3	Detailing out their ideas	[1] [2] [3] [4] [5]	10	Designs at very short notice	[1] [2] [3] [4] [5]
4	Cost efficient building	[1] [2] [3] [4] [5]	11	Energy efficient building	[1] [2] [3] [4] [5]
5	Landscape Design	[1] [2] [3] [4] [5]	12	High Tech, International style	[1] [2] [3] [4] [5]
6	Interior Design	[1] [2] [3] [4] [5]	13	Traditional looking buildings	[1] [2] [3] [4] [5]
7	Different looking buildings	[1] [2] [3] [4] [5]	Any other _____		

9. Your opinion on the following statements:

[1] Strongly agree, [2] agree, [3] do not know, [4] disagree, [5] Strongly disagree

1	Architects should adopt a more pragmatic (practical) approach rather than idealistic approach to compete in the International market	[1] [2] [3] [4] [5]
2	Architects do not get fee as per COA scale of charges	[1] [2] [3] [4] [5]
3	Architect still is and will remain a team leader	[1] [2] [3] [4] [5]
4	Mindless application of western concepts (planning, materials) are in appropriate in the Indian context	[1] [2] [3] [4] [5]
5	Society must be made aware of traditional architecture wisdom through our designs	[1] [2] [3] [4] [5]
6	Only stable practice can achieve note worthy architecture	[1] [2] [3] [4] [5]
7	Larger the firm easier is the survival	[1] [2] [3] [4] [5]
8	Small firms unless specialize will not survive	[1] [2] [3] [4] [5]
9	Architect still is professional advisor (has judicial function) between the client & contractor	[1] [2] [3] [4] [5]
10	Architects should uphold their design standards regardless of the fee involved.	[1] [2] [3] [4] [5]
11	Inducements are necessary for getting projects.....	[1] [2] [3] [4] [5]
12	Making the guilds/forum will be beneficial for the profession.	[1] [2] [3] [4] [5]
13	Computer is being used as design tool in my office	[1] [2] [3] [4] [5]
14	Firms that focus entirely on design will become obsolete	[1] [2] [3] [4] [5]
15	Efficiency is more important than creativity in the design for any project	[1] [2] [3] [4] [5]
16	Political contacts are important for getting prestigious projects	[1] [2] [3] [4] [5]
17	Getting projects through broker are becoming common for Mega projects	[1] [2] [3] [4] [5]
18	Location of the office contributes to the success of practice	[1] [2] [3] [4] [5]
19	Client in general is crazy after foreign architects / design firms	[1] [2] [3] [4] [5]
20	I would be willing to work outside architecture for more money, recognition.	[1] [2] [3] [4] [5]
21	If starting over. I would become an architect again.	[1] [2] [3] [4] [5]
22	Indian client in general is very interfering in the design process	[1] [2] [3] [4] [5]
23	Client change the design at will, without architect's approval	[1] [2] [3] [4] [5]
24	Client rewards architects creativity and ready to pay as per COA scale of charges	[1] [2] [3] [4] [5]
25	I am satisfied with the social work environment for architectural practice	[1] [2] [3] [4] [5]
26	Most architects adhere to strict professional codes of ethics	[1] [2] [3] [4] [5]
27	Architect should enter into agreement with his consultants / clients	[1] [2] [3] [4] [5]
28	There should be no bar on the advertisement methods for architects	[1] [2] [3] [4] [5]
29	There should be no bar on the tender bids for architects	[1] [2] [3] [4] [5]
30	COA role in regulating the architecture profession and promoting architecture education is	[1] [2] [3] [4] [5]

- satisfactory
- 31 It is always possible to distinguish a building designed by an architect [1] [2] [3] [4] [5]
- 32 It is difficult to find more than 30 minute of uninterrupted time in a working day. [1] [2] [3] [4] [5]
- 33 Setting a workable time schedule for projects is a top priority for me / my firm [1] [2] [3] [4] [5]
- 34 Architect job is to be good rather than original [1] [2] [3] [4] [5]

10. Your opinion on “Why majority of contemporary Indian building & architectural practices are not up to Global standard”.

[1] Strongly agree, [2] agree, [3] do not know, [4] disagree, [5] strongly disagree

(a) Indian buildings:

- | | | | | | |
|---|----------------------|---------------------|---|---|---------------------|
| 1 | Low Design fees | [1] [2] [3] [4] [5] | 5 | Designer’s ability | [1] [2] [3] [4] [5] |
| 2 | Low budget | [1] [2] [3] [4] [5] | 6 | Quality of personnel involved | [1] [2] [3] [4] [5] |
| 3 | Limited project time | [1] [2] [3] [4] [5] | 7 | Out dated Technology | [1] [2] [3] [4] [5] |
| 4 | Client awareness | [1] [2] [3] [4] [5] | 8 | Prestigious projects not given on merit | [1] [2] [3] [4] [5] |

Any other _____

(b) Indian architectural practices:

- | | | | | | |
|---|-------------------------------|-----------------|----|--|-----------------|
| 1 | Rigid pedagogic Education | [1][2][3][4][5] | 9 | Inexperience of handling mega projects | [1][2][3][4][5] |
| 2 | Inadequate global exposure | [1][2][3][4][5] | 10 | Inability to work as team | [1][2][3][4][5] |
| 3 | Designer’s ability | [1][2][3][4][5] | 11 | Lack professionalism | [1][2][3][4][5] |
| 4 | Sense of insecurity | [1][2][3][4][5] | 12 | Out dated technical knowledge | [1][2][3][4][5] |
| 5 | Insufficient Infrastructure | [1][2][3][4][5] | 13 | Shortage of skilled task force | [1][2][3][4][5] |
| 6 | Lack of publicity / marketing | [1][2][3][4][5] | 14 | Inability to cope with const. industry | [1][2][3][4][5] |
| 7 | Lack of continuing education | [1][2][3][4][5] | 15 | Low fee (prevent quality /expansion) | [1][2][3][4][5] |
| 8 | Poor management | [1][2][3][4][5] | 16 | Lack of entrepreneurship | [1][2][3][4][5] |

Any other _____

11. Critical issues confronting architectural profession, consequent upon Globalization are:

[1] Strongly agree, [2] agree, [3] do not know, [4] disagree, [5] strongly disagree,

- | | | |
|----|---|---------------------|
| 1 | Tough competition from international design firms | [1] [2] [3] [4] [5] |
| 2 | Need to constantly update the latest in construction industry | [1] [2] [3] [4] [5] |
| 3 | Need to constantly update the latest in architectural styles | [1] [2] [3] [4] [5] |
| 4 | Scientific approach to design is must for successful survival | [1] [2] [3] [4] [5] |
| 5 | Speed is increasingly important | [1] [2] [3] [4] [5] |
| 6 | Type and magnitude of the projects has drastically changed | [1] [2] [3] [4] [5] |
| 7 | Increased demand of quality architecture | [1] [2] [3] [4] [5] |
| 8 | Commercial viability must for every project | [1] [2] [3] [4] [5] |
| 9 | Amount of money involved has increased many folds | [1] [2] [3] [4] [5] |
| 10 | Accountability will become foremost | [1] [2] [3] [4] [5] |
| 11 | Possibility of architecture outsourcing | [1] [2] [3] [4] [5] |
| 12 | Absence of mid level skilled personnel | [1] [2] [3] [4] [5] |
| 13 | Potential threat to regional Indian identity in architecture due to demand of universal architectural style | [1] [2] [3] [4] [5] |

Any other _____

12. Rank the following abilities required for successful practice consequent upon globalization
(On scale of 1 to 4) Integrity () Business ability() Design ability() Technical know how().

13. Your major competitors (Doing bulk of architectural work in your city)

[1] Strongly agree, [2] agree, [3] do not know, [4] disagree, [5] strongly disagree,

- | | | | | | |
|---|------------------------------|---------------------|-----------------|-----------------------------------|---------------------|
| 1 | Non-registered practitioners | [1] [2] [3] [4] [5] | 5 | Foreign architects/design firms | [1] [2] [3] [4] [5] |
| 2 | Project Managers | [1] [2] [3] [4] [5] | 6 | Builder/developer/promoters | [1] [2] [3] [4] [5] |
| 3 | Vastu consultants | [1] [2] [3] [4] [5] | 7 | Foreign trained Indian architects | [1] [2] [3] [4] [5] |
| 4 | Urban designer/town planners | [1] [2] [3] [4] [5] | Any other _____ | | |

14. Your own survival strategy (Tick whatever is applicable)

- | | | | | | |
|---|---|-----|-----------------|---|-----|
| 1 | By upgrading office infrastructure | () | 7 | Collaborating with Foreign architectural firms | () |
| 2 | Upgrading my own capabilities | () | 8 | Becoming Franchise of bigger/multinational firms | () |
| 3 | Hiring people with different specialization | () | 9 | Exploring opportunity in other cities/countries | () |
| 4 | Hiring young computer trained staff | () | 10 | Exploring new approaches to architectural practices | () |
| 5 | Sub contracting architectural work | () | 11 | Becoming a builder/developer/promoter/myself | () |
| 6 | Collaborating with Indian architectural firms | () | Any other _____ | | |

15a. Reasons for not accepting any clients (Tick whatever is applicable):

- | | | | | | |
|---|---|-----|-----------------|------------------|-----|
| 1 | Incompatibility with your office philosophy | () | 3 | Very interfering | () |
| 2 | unsatisfactory payment | () | Any other _____ | | |

b. Reasons for not accepting a project:

- | | | | | | |
|---|--|-----|-----------------|----------------------------|-----|
| 1 | Inexperience in handling its size/budget | () | 3 | Less office infrastructure | () |
| 2 | Shortage of skilled task force | () | Any other _____ | | |

16. Your opinion on the architectural education,

[1] Strongly agree, [2] agree, [3] do not know, [4] disagree, [5] strongly disagree.

- | | | |
|----|--|---------------------|
| 1 | The architectural schools in India are addressing the future needs of the society/profession | [1] [2] [3] [4] [5] |
| 2 | Fresh graduates have basic professional skills..... | [1] [2] [3] [4] [5] |
| 4 | My UG (B.Arch.) has adequately equipped me for practice..... | [1] [2] [3] [4] [5] |
| 5 | All efforts must be made to admit interested students in architecture..... | [1] [2] [3] [4] [5] |
| 6 | There is a dire need to produce specialist even at UG level | [1] [2] [3] [4] [5] |
| 7 | Fresh graduate should be given registration immediately after graduation..... | [1] [2] [3] [4] [5] |
| 8 | Suggest duration of B.Arch _____ years. After +2 () After matric () | |
| 9 | Duration of practical training _____ years? In between the course () After graduation () | |
| 10 | Your willingness to associate yourself with education. | |
| | (i) In teaching () (ii) In Updating Syllabus () (iii) In imparting practical training () | |

17. Suggest specialization at UG (B. Arch.) level. Rank them in order of preference.

- | | | | | | |
|---|-------------------------------|-----|---|-------------------------|-----|
| 1 | Low budget buildings | () | 5 | Real estate consultancy | () |
| 2 | Marketing / office management | () | 6 | Interior design | () |
| 3 | Energy efficient architecture | () | 7 | Urban design | () |
| 4 | Construction management | () | 8 | Landscape design | () |

Any other _____

18. Your opinion on ‘Why new admission to the schools of architecture has dropped to a dangerous low’

[1] Strongly agree, [2] agree, [3] do not know, [4] disagree, [5] strongly disagree,

- | | | |
|---|--|---------------------|
| 1 | Public is unaware of the profession | [1] [2] [3] [4] [5] |
| 2 | Longer duration of the course | [1] [2] [3] [4] [5] |
| 3 | Lower initial salaries, compared to other engineering / management graduates | [1] [2] [3] [4] [5] |
| 4 | Any other _____ | |

19. Your opinion on ‘Why fresh graduates find it tough to survive in their own practices’. They lack in:

[1] Strongly agree, [2] agree, [3] do not know, [4] disagree, [5] strongly disagree.

- | | | | | | |
|-----------------|--------------------|---------------------|---|---------------------|---------------------|
| 1 | Design ability | [1] [2] [3] [4] [5] | 5 | Commitment | [1] [2] [3] [4] [5] |
| 2 | Ability to get fee | [1] [2] [3] [4] [5] | 6 | Practical exposure | [1] [2] [3] [4] [5] |
| 3 | Drawing skills | [1] [2] [3] [4] [5] | 7 | Technical knowledge | [1] [2] [3] [4] [5] |
| 4 | Personality | [1] [2] [3] [4] [5] | 8 | Managerial skills | [1] [2] [3] [4] [5] |
| Any other _____ | | | | | |

20. Your opinion on ‘The major short coming of existing architectural education system’ on the basis of your own experience as student as well as employer.

[1] Strongly agree, [2] agree, [3] do not know, [4] disagree, [5] strongly disagree,

- | | | | | | |
|-----------------|-------------------------------|---------------------|---|-------------------------------|---------------------|
| 1 | Types of subject taught | [1] [2] [3] [4] [5] | 3 | The way they are being taught | [1] [2] [3] [4] [5] |
| 2 | Course content of the subject | [1] [2] [3] [4] [5] | 4 | In adequate practical inputs | [1] [2] [3] [4] [5] |
| Any other _____ | | | | | |

21. This section asks questions about what architecture schools teach. On the left side we ask about the importance of these subjects in architectural practice and on the right we ask about the adequacy of knowledge in fresh graduates.

[1] Strongly agree, [2] agree, [3] don't know, [4] disagree, [5] strongly disagree

	An architect needs to receive training in	Subjects	Fresh graduate have adequate knowledge in
1	[1] [2] [3] [4] [5]	Preparation of design brief	[1] [2] [3] [4] [5]
2	[1] [2] [3] [4] [5]	Construction management	[1] [2] [3] [4] [5]
3	[1] [2] [3] [4] [5]	Budget management	[1] [2] [3] [4] [5]
4	[1] [2] [3] [4] [5]	Real estate consultancy	[1] [2] [3] [4] [5]
5	[1] [2] [3] [4] [5]	Building economics	[1] [2] [3] [4] [5]
6	[1] [2] [3] [4] [5]	Building/ Construction industry	[1] [2] [3] [4] [5]
7	[1] [2] [3] [4] [5]	Structural /Mechanical systems	[1] [2] [3] [4] [5]
8	[1] [2] [3] [4] [5]	Specification writing	[1] [2] [3] [4] [5]
9	[1] [2] [3] [4] [5]	Codes & regulations, Laws & liability	[1] [2] [3] [4] [5]
10	[1] [2] [3] [4] [5]	Marketing skills	[1] [2] [3] [4] [5]
11	[1] [2] [3] [4] [5]	Communication skills	[1] [2] [3] [4] [5]
12	[1] [2] [3] [4] [5]	Energy efficient architecture	[1] [2] [3] [4] [5]
13	[1] [2] [3] [4] [5]	Low budget buildings	[1] [2] [3] [4] [5]
14	[1] [2] [3] [4] [5]	Managerial skills	[1] [2] [3] [4] [5]
15	[1] [2] [3] [4] [5]	Human behavior/client relations	[1] [2] [3] [4] [5]

[1] Strongly agree, [2] agree, [3] don't know, [4] disagree, [5] strongly disagree

16	[1] [2] [3] [4] [5]	Traditional architecture/ art/ culture	[1] [2] [3] [4] [5]
17	[1] [2] [3] [4] [5]	Urban design/ Town planning	[1] [2] [3] [4] [5]
18	[1] [2] [3] [4] [5]	Interior design	[1] [2] [3] [4] [5]
19	[1] [2] [3] [4] [5]	Landscape design	[1] [2] [3] [4] [5]
20	[1] [2] [3] [4] [5]	Preparation of tender/ construction documents	[1] [2] [3] [4] [5]
21	[1] [2] [3] [4] [5]	Preparation of working drawing	[1] [2] [3] [4] [5]

22. Kindly give the following information

1. Annual turn over Now _____ (appx.) A decade ago _____ (appx.)
2. Business handled in terms of value of buildings _____ (appx.) _____ (appx.)
3. How busy you feel (a) (b) (c) (a) (b) (c)
[(a) very busy (b) fairly busy (c) not busy]
4. You charge your fee % wise () square feet bases () lump-sum () Any other _____
5. Total no. of employees in your firm _____

	Nos.	Experience			Nos.
		< 5	5-10 yrs	> 10 years	
Architects	_____	_____	_____	_____	Surveyors _____
Engineers	_____	_____	_____	_____	Admn. Staff _____
Managers	_____	_____	_____	_____	Consultants _____
Drafts man	_____	_____	_____	_____	Student trainee _____
Any other	_____	_____	_____	_____	_____

Is there anything else I should investigate in order to get correct picture of the profession. Please feel free to express your opinion. It will further help me in this endeavor. Thanks for your cooperation

Please return this questionnaire in the enclosed pre-addressed envelop, in case the envelop is not there return this to

Ar. Prabhjot Kaur (Research Scholar)
 C/o Dr. Pushplata (Associate Professor)
 Department of Architecture and Planning
 Indian Institute of Technology, Roorkee
 Roorkee – 247667 (U.A.)

Email- pkaurdap@iitr.ernet.in, pkaurdap@google.com, pushpfap@iitr.ernet.in
 Phone: 09719329088, 01332-285143

QUESTIONNAIRE

I am conducting a national survey as part of my doctoral research work on “Contemporary Architectural Practices in India”. Your response will help me understand the state of architecture practice in India and portray a correct picture of the professional scenario, consequently upon globalization. **Your response will be kept confidential and only summary results will be published.** Thank you for your help.

1. Name _____ 2. Age _____ 3. Sex: M/F _____
4. Qualification _____ 5. Year of passing _____ 6. Institute/City _____
7. You have opted architecture as: (a) First option, (b) Second Option, (c) Any other _____
8. Firm's name _____ 9. City _____
10. Geographic region handled by your firm: (a) City wide, (b) Regional, (c) National, (d) International, _____
11. Primary focus of your projects:
 (a) Corporate/MNC, (b) Public/Govt. sector (c) Small scale private (d) Mixed (e) Any other _____

Please respond according to the scale shown in each section and bold/tick the appropriate numeral/s to indicate your answer unless specified.

1. Types and number of projects handled since year 2000.

Provide data in Col. I- Approx. number of projects handled in Col. II – who is the acting as team leader, (A = Architect, E = Engineer, P : Project Manager and D = Any other, specify).

	Col. I	Col. II		Col. I	Col. II
1 Housing projects	()	()	7 Institutional/public buildings,	()	()
2 Industrial buildings	()	()	8 Health resorts, Hospitals, Spa	()	()
3 Urban renewal / design	()	()	9 Hotels, Resorts, amusement parks	()	()
4 Interior design	()	()	10 Individual houses/ small buildings,	()	()
5 Landscape design	()	()	Any other _____		
6. Offices, malls, multiplex etc	()	()	Total no. of projects _____		(approx.)

2. Services provided

[1] Always, [2] Often, [3] Sometimes, [4] Rarely, [5] Never

1 Feasibility report	[1] [2] [3] [4] [5]	6 Design and statutory approval	[1] [2] [3] [4] [5]
2 Tender documents	[1] [2] [3] [4] [5]	7 Construction drawings	[1] [2] [3] [4] [5]
3 Structural design	[1] [2] [3] [4] [5]	8 Estimates/specifications	[1] [2] [3] [4] [5]
4 Services details,	[1] [2] [3] [4] [5]	9 Site supervision	[1] [2] [3] [4] [5]
5 Turn key projects	[1] [2] [3] [4] [5]	Any other _____	

3. Your ways of getting the project. (Tick whatever is applicable):

- | | | | |
|-------------------------------|-----|--|-----|
| 1 Through personal contacts | () | 6 Updated knowledge of Real estate news | () |
| 2 Reputation as good designer | () | 7 Regular interaction with building industry | () |
| 3 Family background | () | 8 Updated knowledge of planning reports | () |
| 4 Experience/specialization | () | 9 Internet / call center / media | () |
| 5 Through competitions | () | Any other _____ | |

4. Ways of managing the following tasks (Tick whatever is applicable):

[1] My self [2] My staff, [3] Consultants, [4] Outsourcing, [5] Client [6] Collectively by

- | | |
|--|-------------------------|
| 1 Statutory approval of drawings | [1] [2] [3] [4] [5] [6] |
| 2 Preparation of construction drawings | [1] [2] [3] [4] [6] |

3	Coordinating consultants	[1] [2] [3] [4] [5] [6]
4	Writing specifications	[1] [2] [3] [4] [6]
5	Preparation of construction documents	[1] [2] [3] [4] [6]
6	Site supervision	[1] [2] [3] [6]
7	Monitoring the progress of the projects	[1] [2] [3] [6]
8	Conducting the meetings	[1] [2] [3] [6]
9.	Important decision in a project are taken by	[1] [2] [3] [5] [6]
10	Major design decisions are taken by	[1] [2] [3] [5] [6]
11	Office publicity / marketing	[1] [2] [3] [4] [6]
12	Socializing with client	[1] [2] [3] [6]
13	Recruiting staff	[1] [2] [4] [6]
14	Participating in competitions	[1] [2] [3] [6]
15.	Getting agreements in writing	[1] [2] [3] [4] [6]
	Any other _____	

5. Criteria for recruiting architectural staff (Rank them in order of your preference on scale 1 to 10)

1	Design ability.....	()	6	Computer skills	()
2	Academic record.....	()	7	Demand of salary	()
3	Integrity.....	()	8	Communication skills	()
4	Wider skills.....	()	9	Sound technical knowledge	()
5	Good personality.....	()	10	Possibility of long term associations	()

6. Significance of the following in designing your buildings.

[1] Very significant, [2] Significant, [3] Do not know [4] Insignificant, [5] Very Insignificant

1	Visual appearance	[1] [2] [3] [4] [5]	7	Adherence to building bye laws	[1] [2] [3] [4] [5]
2	Functional efficiency	[1] [2] [3] [4] [5]	8	Technically sound building	[1] [2] [3] [4] [5]
3	Cost efficiency	[1] [2] [3] [4] [5]	9	Use of latest / appropriate materials	[1] [2] [3] [4] [5]
4	Energy efficiency	[1] [2] [3] [4] [5]	10	Public recognition	[1] [2] [3] [4] [5]
5	Innovative detailing	[1] [2] [3] [4] [5]	11	End user's satisfaction	[1] [2] [3] [4] [5]
6	Client satisfaction	[1] [2] [3] [4] [5]	12	Contextual appropriateness	[1] [2] [3] [4] [5]

Any other _____

7. Majority of your client demands:

[1] Strongly Agree, [2] Agree, [3] Do not know, [4] Disagree, [5] Strongly Disagree.

1	Detailing out their ideas	[1] [2] [3] [4] [5]	6	Designs at very short notice	[1] [2] [3] [4] [5]
2	Cost efficient building	[1] [2] [3] [4] [5]	7	Energy efficient building	[1] [2] [3] [4] [5]
3	Landscape Design	[1] [2] [3] [4] [5]	8	High Tech, International style	[1] [2] [3] [4] [5]
4	Interior Design	[1] [2] [3] [4] [5]	9	Traditional looking buildings	[1] [2] [3] [4] [5]
5	Different looking buildings	[1] [2] [3] [4] [5]		Any other _____	

8. Kind of services preferred by the client:

[1] Strongly Agree, [2] Agree, [3] Do not know, [4] Disagree, [5] Strongly Disagree.

1	Design only or sanction plans	[1] [2] [3] [4] [5]	3	Comprehensive arch. Services	[1] [2] [3] [4] [5]
2	Turn key projects	[1] [2] [3] [4] [5]		Any other _____	

9. Your opinion on the following statements:

- [1] Strongly Agree, [2] Agree, [3] Do not know, [4] Disagree, [5] Strongly Disagree.
- 1 Architects should adopt a more pragmatic (practical) approach rather than idealistic approach to compete in the International market [1] [2] [3] [4] [5]
 - 2 Architects do not get fee as per COA scale of charges [1] [2] [3] [4] [5]
 - 3 Architect still is and will remain a team leader [1] [2] [3] [4] [5]
 - 4 Mindless application of western concepts (planning, materials) are in appropriate in the Indian context [1] [2] [3] [4] [5]
 - 5 Society must be made aware of traditional architecture wisdom through our designs [1] [2] [3] [4] [5]
 - 6 Larger the firm easier is the survival [1] [2] [3] [4] [5]
 - 7 Small firms unless specialize will not survive [1] [2] [3] [4] [5]
 - 8 Architect still is professional advisor (has judicial function) between the client & contractor [1] [2] [3] [4] [5]
 - 9 Architects should uphold their design standards regardless of the fee involved, [1] [2] [3] [4] [5]
 - 10 Inducements are necessary for getting projects..... [1] [2] [3] [4] [5]
 - 11 Computer is being used as design tool in my office [1] [2] [3] [4] [5]
 - 12 Firms that focus entirely on design will become obsolete [1] [2] [3] [4] [5]
 - 13 Efficiency is more important than creativity in the design for any project [1] [2] [3] [4] [5]
 - 14 Political contacts are important for getting prestigious projects [1] [2] [3] [4] [5]
 - 15 Getting projects through broker are becoming common for Mega projects [1] [2] [3] [4] [5]
 - 16 Client in general is fascinated for foreign architects / design firms [1] [2] [3] [4] [5]
 - 17 I would be willing to work outside architecture for more money, recognition. [1] [2] [3] [4] [5]
 - 18 If starting over. I would become an architect again. [1] [2] [3] [4] [5]
 - 19 Indian client in general is very interfering in the design process [1] [2] [3] [4] [5]
 - 20 Client change the design at will, without architect's approval [1] [2] [3] [4] [5]
 - 21 Client rewards architects creativity and ready to pay as per COA scale of charges [1] [2] [3] [4] [5]
 - 22 I am satisfied with the social work environment for architectural practice [1] [2] [3] [4] [5]
 - 23 Most architects adhere to strict professional codes of ethics [1] [2] [3] [4] [5]
 - 24 Architect should enter into agreement with his consultants / clients [1] [2] [3] [4] [5]
 - 25 There should be no bar on the advertisement methods for architects [1] [2] [3] [4] [5]
 - 26 There should be no bar on the tender bids for architects [1] [2] [3] [4] [5]
 - 27 COA role in regulating the architecture profession and promoting architecture education is satisfactory [1] [2] [3] [4] [5]
 - 28 It is difficult to find more than 30 minute of uninterrupted time in a working day. [1] [2] [3] [4] [5]
 - 29 Setting a workable time schedule for projects is a top priority for me / my firm [1] [2] [3] [4] [5]
 - 30 Architect job is to be good rather than original [1] [2] [3] [4] [5]

10. Critical issues confronting architectural profession, consequent upon Globalization are:

- [1] Strongly Agree, [2] Agree, [3] Don't Know, [4] Disagree, [5] Strongly Disagree.
- 1 Tough competition from international design firms [1] [2] [3] [4] [5]
 - 2 Need to constantly update the latest in construction industry [1] [2] [3] [4] [5]
 - 3 Need to constantly update the latest in architectural styles [1] [2] [3] [4] [5]
 - 4 Scientific approach to design is must for successful survival [1] [2] [3] [4] [5]
 - 5 Speed is increasingly important [1] [2] [3] [4] [5]
 - 6 Type and magnitude of the projects has drastically changed [1] [2] [3] [4] [5]
 - 7 Commercial viability must for every project [1] [2] [3] [4] [5]
 - 8 Amount of money involved has increased many folds [1] [2] [3] [4] [5]

- 9 Accountability will become foremost [1] [2] [3] [4] [5]
- 10 Absence of mid level skilled personnel [1] [2] [3] [4] [5]
- 11 Potential threat to regional Indian identity in architecture due to demand of universal architectural style [1] [2] [3] [4] [5]
- Any other _____

11. Rank the following abilities required for successful practice consequent upon globalization

(On scale of 1 to 4) Integrity () Business ability () Design ability () Technical know-how ()

12. Your major competitors (Doing bulk of architectural work in your city)

[1] Strongly agree, [2] agree, [3] do not know, [4] disagree, [5] strongly disagree,

- | | | | |
|--------------------------------|---------------------|-------------------------------------|---------------------|
| 1 Non-registered practitioners | [1] [2] [3] [4] [5] | 5 Foreign architects/design firms | [1] [2] [3] [4] [5] |
| 2 Project Managers | [1] [2] [3] [4] [5] | 6 Builder/developer/promoters | [1] [2] [3] [4] [5] |
| 3 Vastu consultants | [1] [2] [3] [4] [5] | 7 Foreign trained Indian architects | [1] [2] [3] [4] [5] |
| 4 Urban designer/town planners | [1] [2] [3] [4] [5] | Any other _____ | |

13. Your own survival strategy (Tick whatever is applicable)

- | | | | |
|---|-----|--|-----|
| 1 By upgrading office infrastructure | () | 7 Collaborating with Foreign architectural firms | () |
| 2 Upgrading my own capabilities | () | 8 Becoming Franchise of bigger/multinational firms | () |
| 3 Hiring people with different specialization | () | 9 Exploring opportunity in other cities/countries | () |
| 4 Hiring young computer trained staff | () | 10 Exploring new approaches to architectural practices | () |
| 5 Sub contracting architectural work | () | 11 Becoming a builder/developer/promoter/myself | () |
| 6 Collaborating with Indian architectural firms | () | Any other _____ | |

14. a. Reasons for not accepting any clients (Tick whatever is applicable):

- | | | | |
|---|-----|-------------------------|-----|
| 1 Incompatibility with your office philosophy | () | 3 Very interfering..... | () |
| 2 unsatisfactory payment | () | Any other _____ | |

b. Reasons for not accepting a project:

- | | | | |
|---|-----|-----------------------------------|-----|
| 1 Inexperience in handling its size/budget. | () | 3 Less office infrastructure..... | () |
| 2 Shortage of skilled task force..... | () | Any other _____ | |

15. Your opinion on the architectural education,

[1] Strongly Agree, [2] Agree, [3] Don't Know, [4] Disagree, [5] Strongly Disagree.

- | | |
|--|---------------------|
| 1 The architectural schools in India are addressing the future needs of the society/profession | [1] [2] [3] [4] [5] |
| 2 Fresh graduates have basic professional skills..... | [1] [2] [3] [4] [5] |
| 3 My UG (B.Arch.) has adequately equipped me for practice..... | [1] [2] [3] [4] [5] |
| 4 There is a dire need to produce specialist even at UG level | [1] [2] [3] [4] [5] |
| 5 Fresh graduate should be given registration immediately after graduation..... | [1] [2] [3] [4] [5] |

If you disagree with the above statement, suggest duration in years (.....)

6 Your willingness to associate yourself with education.

- (i) In teaching () (ii) In Updating Syllabus () (iii) In imparting practical training ()

16. Suggest specialization at UG (B. Arch.) level. Rank them in order of preference.

- | | | | |
|---------------------------------------|-----|--------------------------------|-----|
| 1 Low budget buildings..... | () | 5 Real estate consultancy..... | () |
| 2 Marketing / office management. | () | 6 Interior design..... | () |
| 3 Energy efficient architecture..... | () | 7 Urban design..... | () |
| 4 Construction management..... | () | 8 Landscape design | () |

Any other _____

17. Your opinion on ‘Why architecture is not a sought after profession/branch’.

- [1] Strongly Agree, [2] Agree, [3] Don't Know, [4] Disagree, [5] Strongly Disagree.
- 1 Public is unaware of the profession [1] [2] [3] [4] [5]
 - 2 Longer duration of the course [1] [2] [3] [4] [5]
 - 3 Lower initial salaries, compared to other engineering / management graduates [1] [2] [3] [4] [5]
- Any other _____

18. Your opinion on ‘The major short coming of existing architectural education system’ on the basis of your own experience as student as well as employer.

- [1] Strongly Agree, [2] Agree, [3] Don't Know, [4] Disagree, [5] Strongly Disagree.
- 1 Types of subject taught [1] [2] [3] [4] [5] 3 The way they are being taught [1] [2] [3] [4] [5]
 - 2 Course content of the subject [1] [2] [3] [4] [5] 4 In adequate practical inputs [1] [2] [3] [4] [5]
- Any other _____

19. This section asks questions about what architecture schools teach. On the left side we ask about the importance of these subjects in architectural practice and on the right we ask about the adequacy of knowledge in fresh graduates.

[1] Strongly Agree, [2] Agree, [3] Don't Know, [4] Disagree, [5] Strongly Disagree.

	Subjects	
An architect needs to receive training in		Fresh graduate have adequate knowledge in
1 [1] [2] [3] [4] [5]	Preparation of design brief	[1] [2] [3] [4] [5]
2 [1] [2] [3] [4] [5]	Construction management	[1] [2] [3] [4] [5]
3 [1] [2] [3] [4] [5]	Budget management	[1] [2] [3] [4] [5]
4 [1] [2] [3] [4] [5]	Real estate consultancy	[1] [2] [3] [4] [5]
5 [1] [2] [3] [4] [5]	Building economics	[1] [2] [3] [4] [5]
6 [1] [2] [3] [4] [5]	Building/ Construction industry	[1] [2] [3] [4] [5]
7 [1] [2] [3] [4] [5]	Structural /Mechanical systems	[1] [2] [3] [4] [5]
8 [1] [2] [3] [4] [5]	Specification writing	[1] [2] [3] [4] [5]
9 [1] [2] [3] [4] [5]	Codes & regulations, Laws & liability	[1] [2] [3] [4] [5]
10 [1] [2] [3] [4] [5]	Marketing skills	[1] [2] [3] [4] [5]
11 [1] [2] [3] [4] [5]	Communication skills	[1] [2] [3] [4] [5]
12 [1] [2] [3] [4] [5]	Energy efficient architecture	[1] [2] [3] [4] [5]
13 [1] [2] [3] [4] [5]	Low budget buildings	[1] [2] [3] [4] [5]
14 [1] [2] [3] [4] [5]	Managerial skills	[1] [2] [3] [4] [5]
15 [1] [2] [3] [4] [5]	Human behavior/client relations	[1] [2] [3] [4] [5]
16 [1] [2] [3] [4] [5]	Traditional architecture/ art/ culture	[1] [2] [3] [4] [5]
17 [1] [2] [3] [4] [5]	Urban design/ Town planning	[1] [2] [3] [4] [5]
18 [1] [2] [3] [4] [5]	Interior design	[1] [2] [3] [4] [5]
19 [1] [2] [3] [4] [5]	Landscape design	[1] [2] [3] [4] [5]
20 [1] [2] [3] [4] [5]	Preparation of tender/ construction documents	[1] [2] [3] [4] [5]
21 [1] [2] [3] [4] [5]	Preparation of working drawing	[1] [2] [3] [4] [5]

20. Reference data: Tick the appropriate. Ignore the question/s not applicable to you.

- 1. Your preferred way of charging fee: (a) % wise, (b) Sq feet bases, (c) Lump-sum, (d) Any other _____
- 2. Annual turn over: _____, 6. Business handled in terms of value of buildings: _____
- 3. No. of employees: Total _____ Architects _____ Engineers _____ Other Professionals. _____
- 4. No of Architects with experience: Less than 5 yrs _____ 5 to 10 yrs _____ More than 10 yrs _____

Is there anything else I should investigate in order to get correct picture of the profession. Please feel free to express your opinion on the issues raised. It will further help me in this endeavor. Thanks for your cooperation.

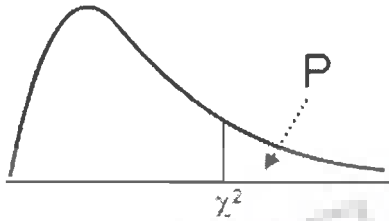


Please return this questionnaire in the enclosed pre-addressed envelop, in case the envelop is not there return this to

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Table Values of the Chi-square distribution



DF	0.20	0.10	0.05	0.025	0.02	0.01	0.005	0.002	0.001
1	1.642	2.706	3.841	5.024	5.412	6.635	7.879	9.550	10.828
2	3.219	4.605	5.991	7.378	7.824	9.210	10.597	12.429	13.816
3	4.642	6.251	7.815	9.348	9.837	11.345	12.838	14.796	16.266
4	5.989	7.779	9.488	11.143	11.668	13.277	14.860	16.924	18.467
5	7.289	9.236	11.070	12.833	13.388	15.086	16.750	18.907	20.515
6	8.558	10.645	12.592	14.449	15.033	16.812	18.548	20.791	22.458
7	9.803	12.017	14.067	16.013	16.622	18.475	20.278	22.601	24.322
8	11.030	13.362	15.507	17.535	18.168	20.090	21.955	24.352	26.124
9	12.242	14.684	16.919	19.023	19.679	21.666	23.589	26.056	27.877
10	13.442	15.987	18.307	20.483	21.161	23.209	25.188	27.722	29.588
11	14.631	17.275	19.675	21.920	22.618	24.725	26.757	29.354	31.264
12	15.812	18.549	21.026	23.337	24.054	26.217	28.300	30.957	32.909
13	16.985	19.812	22.362	24.736	25.472	27.688	29.819	32.535	34.528
14	18.151	21.064	23.685	26.119	26.873	29.141	31.319	34.091	36.123
15	19.311	22.307	24.996	27.488	28.259	30.578	32.801	35.628	37.697
16	20.465	23.542	26.296	28.845	29.633	32.000	34.267	37.146	39.252

17	21.615	24.769	27.587	30.191	30.995	33.409	35.718	38.648	40.790
18	22.760	25.989	28.869	31.526	32.346	34.805	37.156	40.136	42.312
19	23.900	27.204	30.144	32.852	33.687	36.191	38.582	41.610	43.820
20	25.038	28.412	31.410	34.170	35.020	37.566	39.997	43.072	45.315
21	26.171	29.615	32.671	35.479	36.343	38.932	41.401	44.522	46.797
22	27.301	30.813	33.924	36.781	37.659	40.289	42.796	45.962	48.268
23	28.429	32.007	35.172	38.076	38.968	41.638	44.181	47.391	49.728
24	29.553	33.196	36.415	39.364	40.270	42.980	45.559	48.812	51.179
25	30.675	34.382	37.652	40.646	41.566	44.314	46.928	50.223	52.620
26	31.795	35.563	38.885	41.923	42.856	45.642	48.290	51.627	54.052
27	32.912	36.741	40.113	43.195	44.140	46.963	49.645	53.023	55.476
28	34.027	37.916	41.337	44.461	45.419	48.278	50.993	54.411	56.892
29	35.139	39.087	42.557	45.722	46.693	49.588	52.336	55.792	58.301
30	36.250	40.256	43.773	46.979	47.962	50.892	53.672	57.167	59.703
31	37.359	41.422	44.985	48.232	49.226	52.191	55.003	58.536	61.098
32	38.466	42.585	46.194	49.480	50.487	53.486	56.328	59.899	62.487
33	39.572	43.745	47.400	50.725	51.743	54.776	57.648	61.256	63.870
34	40.676	44.903	48.602	51.966	52.995	56.061	58.964	62.608	65.247
35	41.778	46.059	49.802	53.203	54.244	57.342	60.275	63.955	66.619
36	42.879	47.212	50.998	54.437	55.489	58.619	61.581	65.296	67.985
37	43.978	48.363	52.192	55.668	56.730	59.893	62.883	66.633	69.346
38	45.076	49.513	53.384	56.896	57.969	61.162	64.181	67.966	70.703
39	46.173	50.660	54.572	58.120	59.204	62.428	65.476	69.294	72.055

40	47.269	51.805	55.758	59.342	60.436	63.691	66.766	70.618	73.402
41	48.363	52.949	56.942	60.561	61.665	64.950	68.053	71.938	74.745
42	49.456	54.090	58.124	61.777	62.892	66.206	69.336	73.254	76.084
43	50.548	55.230	59.304	62.990	64.116	67.459	70.616	74.566	77.419
44	51.639	56.369	60.481	64.201	65.337	68.710	71.893	75.874	78.750
45	52.729	57.505	61.656	65.410	66.555	69.957	73.166	77.179	80.077
46	53.818	58.641	62.830	66.617	67.771	71.201	74.437	78.481	81.400
47	54.906	59.774	64.001	67.821	68.985	72.443	75.704	79.780	82.720
48	55.993	60.907	65.171	69.023	70.197	73.683	76.969	81.075	84.037
49	57.079	62.038	66.339	70.222	71.406	74.919	78.231	82.367	85.351
50	58.164	63.167	67.505	71.420	72.613	76.154	79.490	83.657	86.661

