ARCHITECTS' MANAGERIAL ABILITIES THAT CORRESPOND WITH SATISFYING CLIENTS ON COMMERCIAL PROJECTS IN ZAMBIA

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Full Length Research

ABSTRACT

Recent research in organizational management, services consulting, and construction has extensively focused on identifying key competencies and their impact on client satisfaction. In the competitive, complex, large-scale, risky, and often adversarial construction project environment, having a skilled workforce is crucial for successful consulting outcomes and client satisfaction. However, the specific relationship between project team competencies and client satisfaction has rarely been examined, especially among professional architects in the construction industry. This study aims to fill that gap by investigating the managerial abilities of architects in Zambia and their correlation with client satisfaction on commercial projects. Through a combined analysis of regression and Pearson correlation on survey data, the study finds a positive relationship between architects' managerial skills and the level of client satisfaction. These findings provide a basis for ongoing professional development and training for architects, aimed at enhancing their performance on commercial projects.

Key words: Architects' Managerial Abilities, Project Team Competencies, Client Satisfaction, Development and Training.

INTRODUCTION

Background of the Study

In the modern practice of building construction with ever changing ways of design and construction delivery, satisfying clients is vividly being seen as a function of interrelated professional competency that collaboratively results in more efficient construction services (Oluwatayo, 2013; Parasonis and Jodko, 2013). Further, Oluwatayo (2013) argues that in the construction industry, the client's wisdom in selecting appropriate professional competencies of architects and related technical personnel determines their level of satisfaction at any particular time, although practically, it is a challenge for clients to select an architect of their choice largely because information about architects is restricted due to restrictive architectural practice code that prohibits the general form of advertisement.

One of the main characteristics of professional services is the difficulty for customers, who do not generally have professional competence, to evaluate service providers and assess service quality (Lovelock and Wirtz, 2010). In particular, architectural services demand is not continuous and each project is unique and complex (Skaates et al., 2003). Architectural projects involve several moments of co-creation with customers, sometimes there is need for changes to the initial proposal, and, usually, there are customised processes that require special abilities (Mcdonald and Madhavaram, 2007). Thus, architectural service processes offer important opportunities to get closer to customers and create important ties with them, which may

improve service quality perceptions and, consequently, brand reputation (Smyth and Kioussi, 2011). Quality management and customer orientation are then part of the success of service firms (Smith, 2010). In contrast, Thong (2014) contends that either undertaking a residential or a commercial/institutional construction project architects ought to build long lasting relationships with clients through efficient managerial skills, professional practices, behaviours and development of requisite skills that may promote a positive performance for enhanced results and guaranteed client satisfaction.

Further, Commercial Construction Projects (CCPs) are characterized with the need for high design knowledge and technical skills; competent human resources and managerial capabilities as well as excessive cost investment (Economic Concepts, 2013; (Othman and Ahmed, A., 2013; Othman, A.A.E., 2014.) Conversely, a study by Othman (2013) on challenges of mega construction projects in developing countries argues that developing countries experience shortage of many of these requirements, which obstruct the development of CCPs. It must be argued that there exist a number of perspectives as to what constitutes a Commercial project. Diverse scholarly literature describes large projects as complex projects, major projects, giant projects and mega projects (Kian et al., 2017). Despite these existing disparities, on what may constitute CCPs, all perspectives agree that CCPs are huge venture projects aimed at supporting governments achieving their social and economic development objectives. Similarly, Ghoddousi et al. 2015) laments that CCPs attract public and political attention due to their substantial impacts on communities, environment and budgets as they are usually owned by governments and executed by large construction firms. CCPs may be seen to be risky undertakings that consume substantial amount of time, cost and requires highly trained design and construction professionals as well as skilled managerial team (Kian et al., 2017).
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Statement of the Problem

The success of commercial projects in Zambia hinges significantly on the managerial abilities of architects, which directly impact client satisfaction. However, there are critical challenges faced by architects in effectively managing these projects, which subsequently affect client satisfaction levels. This statement delineates the core issues undermining the managerial efficacy of architects in Zambia's commercial sector.

There is a notable gap in the integration of advanced project management techniques among architects in Zambia. Many architects lack formal training in modern project management methodologies, such as Agile or Lean, which are pivotal in ensuring project efficiency and client satisfaction. This deficiency often leads to delays, cost overruns, and compromised quality, thus eroding client trust and satisfaction (Chileshe & Kikwasi, 2023). Furthermore, the absence of robust project management frameworks hampers the ability to adapt to dynamic client needs and market conditions, further exacerbating client dissatisfaction.

Secondly, communication barriers pose a significant challenge. Effective communication is a cornerstone of successful project management, ensuring that client expectations are clearly understood and met. However, many architects in Zambia struggle with maintaining transparent and consistent communication channels with their clients. This issue is often

attributed to the lack of soft skills training within the architectural curriculum and professional development programs (Manda & Mutale, 2022). Poor communication can lead to misunderstandings, unmet expectations, and ultimately, client dissatisfaction.

Additionally, the limited use of digital tools and technologies in project management remains a critical issue. Despite the global shift towards digital transformation in the construction industry, many architects in Zambia continue to rely on traditional methods. The slow adoption of Building Information Modeling (BIM) and other project management software impedes the efficiency and accuracy of project planning and execution (Nkhoma et al., 2021). This technological lag not only slows down project timelines but also affects the precision and quality of the deliverables, leading to client dissatisfaction.

Moreover, the economic and regulatory environment in Zambia presents unique challenges that affect the managerial abilities of architects. Economic instability and fluctuating market conditions can lead to unpredictable project costs and timelines, making it difficult for architects to manage client expectations effectively. Additionally, navigating the complex regulatory landscape requires significant managerial expertise and resources, which many architects may lack (Phiri & Chiumya, 2022). These external factors contribute to project delays and increased costs, further affecting client satisfaction.

In conclusion, the managerial abilities of architects in Zambia are pivotal in ensuring client satisfaction on commercial projects. However, challenges such as inadequate training in project management, poor communication, limited adoption of digital tools, and external economic and regulatory pressures significantly undermine these abilities. Addressing these issues through targeted training programs, improved communication strategies, and embracing digital transformation is crucial for enhancing the managerial capabilities of architects and, consequently, client satisfaction in Zambia's commercial sector.

LITERATURE REVIEW

Architects' managerial abilities are essential for ensuring client satisfaction in commercial projects, as demonstrated by numerous empirical studies conducted at the global, regional, and local levels. On a global scale, the use of advanced project management techniques has been shown to significantly enhance project outcomes and client satisfaction. For example, Acar et al. (2021) found that architects who implement methodologies such as Agile and Lean project management experience higher rates of on-time and on-budget project completion. These methodologies are particularly effective because they foster flexibility and responsiveness, which are crucial for meeting the dynamic needs of clients in commercial projects. Agile project management, with its iterative approach and emphasis on collaboration and continuous feedback, allows architects to adapt quickly to changes in client requirements or project scope. This adaptability ensures that the project remains aligned with client expectations throughout its lifecycle, thereby enhancing client satisfaction.

Lean project management, on the other hand, focuses on minimizing waste and optimizing processes to deliver maximum value to the client. By streamlining workflows and eliminating

non-value-adding activities, architects can reduce project delays and costs, leading to more efficient project execution. The study by Acar et al. (2021) found that architects employing Lean techniques were better able to manage resources and timelines, resulting in higher quality deliverables and improved client satisfaction. The ability to deliver projects on time and within budget not only meets client expectations but also builds trust and strengthens client relationships.

Moreover, the integration of these advanced project management techniques fosters a proactive rather than reactive approach to project management. This proactive stance enables architects to anticipate potential issues and implement solutions before they escalate into significant problems. As a result, the likelihood of project disruptions is minimized, contributing to smoother project progression and a higher likelihood of meeting client deadlines and budget constraints. The empirical evidence provided by Acar et al. (2021) underscores the importance of adopting Agile and Lean methodologies in the architectural practice to enhance project outcomes and client satisfaction.

Regionally, in the African context, similar patterns emerge regarding the importance of advanced managerial abilities in achieving client satisfaction in commercial projects. Research conducted by Ofori and Toor (2022) across several African countries, including Ghana and Kenya, underscored the critical role of effective communication and stakeholder management in ensuring successful project outcomes. Their study found that architects who excel in interpersonal and communication skills are significantly better equipped to manage client expectations, resolve conflicts, and align the project vision with client needs. This alignment is crucial for enhancing client satisfaction, as it ensures that the final deliverable meets or exceeds the client's expectations.

Ofori and Toor (2022) emphasized that effective communication is not merely about conveying information but also about understanding client requirements, fostering a collaborative environment, and maintaining transparency throughout the project lifecycle. Architects who are adept in these areas can anticipate and mitigate potential misunderstandings and disputes, which are common in complex commercial projects. By doing so, they build stronger client relationships and trust, which are essential for client satisfaction and project success.

These findings align with the research by Manda and Mutale (2022), which specifically addressed the construction industry in Zambia. Their study identified communication barriers as a significant challenge that undermines project outcomes. Poor communication skills among architects often lead to misunderstandings, unmet expectations, and dissatisfaction among clients. Manda and Mutale (2022) highlighted that many architects in Zambia lack formal training in soft skills, including effective communication and conflict resolution, which are vital for managing client relationships and expectations.

Locally, in Zambia, empirical studies also highlight the impact of managerial abilities on client satisfaction. A comprehensive survey by Chileshe and Kikwasi (2023) involving Zambian commercial projects revealed that architects who are proficient in using digital tools, such as Building Information Modeling (BIM), tend to deliver higher quality projects with fewer delays

and cost overruns. The study emphasized that the adoption of digital technologies enhances precision and efficiency in project management, which directly contributes to client satisfaction. Furthermore, Phiri and Chiumya (2022) explored the challenges posed by Zambia's economic and regulatory environment, finding that architects who are adept at navigating these complexities and maintaining cost-effective practices are more likely to satisfy their clients.

Moreover, the local research by Nkhoma et al. (2021) indicates that while digital transformation in Zambia's construction sector is still in its nascent stages, those architects who leverage these technologies are at a competitive advantage in managing projects more effectively and meeting client expectations. This study also highlighted the need for ongoing professional development to equip architects with the necessary skills to handle contemporary project management challenges.

In summary, the literature consistently shows that architects' managerial abilities, including project management techniques, communication skills, digital tool proficiency, and regulatory navigation, are critical factors in client satisfaction for commercial projects. These findings, supported by empirical studies at global, regional, and local levels, underscore the need for continuous improvement and adaptation in architectural practice to meet evolving client needs and industry standards.

Scholars argue that in many developing countries, project implementation failures can be accounted for by the inability of clients to engage contractors or designers willing and capable to do the work. While others contend that in Sub-Saharan Africa, many large construction projects are given to international consulting engineering firms seeking their capabilities in project management, project conceptualization, preparation work prior to contract stage and supervision of the construction work (Opperman, A.G., 2016; Govender, N., 2017). Despite using foreign construction firms, it is argued that governments in most developing countries including those in Sub-Saharan Africa give construction projects to domestic construction firms willing and able to pursue contracting and consulting works in competition with international firms who are seen to possess the managerial and technical capability to handle major construction projects. This capability gap has left the domestic market door open for international construction firms.

The Zambian construction industry has over the years played a pivotal role in the socio-economic development of the country. Being a labour intensive industry and the inherent emerging competition among firms in the recent past to satisfy client's demands, the construction industry is refocusing efforts on skills development among stakeholders (International Labour Organisation 2014). It may be argued that in the pre and post-independence era after 1964, most construction projects in Zambia such as City Structures, Bridges and Dams were given to local construction companies (Government of Zambia, 2014). Empirical evidence suggests that the availability of sufficient work for local companies after independence had a positive effect of maintaining a highly skilled workforce. Thus, such a vibrant business environment enabled Zambian companies such as Minestone and Wade

Adams to expand their operations within the Sub-region. Over a period of time, the construction industry in Zambia has grown and is adapting to new business models centered at meeting clientele demands either in residential and commercial building projects.

Theoretical Review

The managerial abilities of architects are pivotal in determining the success of commercial projects, particularly in terms of client satisfaction. Effective project management, communication, and stakeholder engagement are essential components that architects must master to meet and exceed client expectations. This literature review explores these aspects from a global, regional, and local perspective, demonstrating the critical role these skills play in the architectural practice. Furthermore, the review integrates the Contrast Theory to provide a theoretical framework for understanding how these managerial abilities can be optimized to improve client satisfaction. Contract Theory, a fundamental concept in economics and organizational management, offers valuable insights into the relationships between parties involved in a contract. It examines how contractual arrangements can be structured to align incentives and ensure that all parties' interests are met. In the context of architectural projects, Contrast Theory helps explain the dynamics between architects and clients, particularly how architects' managerial abilities can be leveraged to fulfill contractual obligations and enhance client satisfaction.

The Contrast Theory

In comparing SERVPERF with the Contrast Theory, scholars argue that the latter theory suggests that when actual product performance falls short of consumer's expectations about the product, and contrasts between the expectation and outcome, that will cause the consumer to exaggerate the disparity (Yi, 1990). Contrast theory maintains that a customer who receives a product less valuable than expected, will magnify the difference between the product received and the product expected (Cardozzo, 1965). This theory predicts that product performance below expectations will be rated poorer than it is in reality (Oliver & DeSarbo, 1988). This means that the contract theory would assume "outcomes deviating from expectations will cause the subject to favourably or unfavourably react to disconfirmation experience in that a negative disconfirmation is believed to result in a poor product evaluation, whereas positive disconfirmation should cause the product to be highly appraised" (Oliver, 1977, p. 81).

There has been observed limitation in the conceptualization of the contrast theory for assuming that there is a relationship between expectation and satisfaction without specifying how disconfirmation of an expectation leads to either satisfaction or dissatisfaction. Further, several studies in the marketing literature argue the contrast theory of customer satisfaction predicts customer reaction instead of reducing dissonance (Haemoon and Kim, 2017). The argument also points to the fact that consumers will magnify the difference between expectation and the performance of the product/service. Thus the theory may not be an ideal framework to measure customer satisfaction.

RESEARCH METHODOLOGY

Research Paradigm

This study will be informed by the positivist paradigm but complemented by a qualitative method of investigation through interviews and methodological triangulation during data collection. Triangulating questionnaires with qualitative data collected through interviews will be necessary so as to provide more insight on the phenomenon under study. The study will use quantitative approach through questionnaires to collect data on managerial abilities that correspond with satisfying clients on commercial projects in Zambia and architects managerial abilities that correspond with satisfying clients on commercial projects in Zambia. The study also will use qualitative approaches through interviews to collect data on how architects ensure provision of services that meet expectation of clients on commercial projects in Zambia. Such qualitative understanding will require the use of semi-structured interviews. Even though the study will use both quantitative and qualitative methods, it is not a mixed method research because mixing of methods was negligible and was only done at data collection.

Research Design

This research used a case study approach to gather information from participants on this study. A case study was used because it is an empirical inquiry that investigates a contemporary phenomenon within its real-life context especially when the boundaries between the phenomena are not clearly evident (Yin, 1994; Bell, 2005). Further, the decision to use a case study approach was to ensure that an in-depth understanding of a contemporary phenomenon was achieved by combining data collection techniques such as interviews, observations and questionnaires. Therefore, the choice of this method increased reliability and validity of the answers.

Study Population

The total population of this study comprised 121 architectural firms in Zambia (Lusaka and Copperbelt) that were registered with the Zambia Institute of Architects. However, the units of analysis for the study were the actual clients that these firms had previously provided architectural services to

Sampling Design

This study used probability sampling and specifically simple random sampling to select respondents for the study. The participants were chosen randomly using MS Excels Add-in Software, ToolPak. The code numbers returned in the sample space were matched with individual client names in the sampled group, and those client names selected were requested to be respondents in the study. Thus, a total of 3 clients were randomly elected as participants of the study from client database of each of the 121 registered architectural firms in Zambia (Lusaka and Copperbelt) using firm's individual databases of clients that had provided architectural services to in the past 1 year. This study also used quota sampling to select 10 participants for interviews from sub-groups of Technical Personnel, Architects, Engineers or Quantity Surveyors.

Data Collection

In collection of primary data, various studies use structured questionnaires. For this study, the questionnaire that was used had closed-ended questions. A five point Likert scale was used to measure most of the variables. The scale that was used varied from 1 (strongly disagree) to 5 (strongly agree). Secondary data for this research was obtained from existing literature collected from various sources which including journals, published manuscripts, the Internet, other research findings and paper presentations. It provided a basis upon which questionnaires and interviews were formulated.

Data Analysis

The list below articulates the stages that the researcher followed to record and analyze the data from the questionnaires, interviews and document analysis.

- ➢ Data was collected using questionnaires that would be initially inspected in preparation for coding and entering into the SPSS V 20 programme to produce frequencies and percentages (Cohen et al., 2008; Babbie, 2013).
- ➢ The Likert scales were coded such that: "Strongly Agree" is assigned 1; "Strongly Disagree" is assigned 5. The rest of the scales were assigned values between 1 and 5, accordingly.
- ➢ The study also ensured that all quantitative data is carefully checked for inconsistencies to enable the findings offer a more accurate assessment of the problem under study.
- ➢ The qualitative data was analyzed using content analysis techniques (Mertens, 2010).

RESEARCH RESULTS

Descriptive Results

The aim of this study was to establish the level of client's satisfaction on architects managerial abilities or managerial competencies critical in satisfying clients on commercial projects. Hence, **Error! Reference source not found.**1 shows the actual responses of the respondents on a number of sub variables of architect's managerial abilities competencies.

Table 1: Architect's Managerial Abilities

Level of Clients Satisfaction on Architects Managerial abilities in		Clients Responses					
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Demonstrating knowledge on ethical basis, laws and statutes that regulate the practice of architecture	Frequency	2	12	39	64	33	150
	Percentage	1.3%	8.0%	26.0%	42.7%	22.0%	100%
Demonstrating the ability to monitor and control of projects against its budget and programme	Frequency	2	10	45	72	21	150
	Percentage	1.3%	6.7%	30.0%	48.0%	14.0%	100%

Exhibiting sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities	Frequency	3	8	41	69	29	150
	Percentage	2.0%	5.3%	27.3%	46.0%	19.3%	100%
Demonstrating leadership skills (e.g. Ability to work in teams, ensure coordination and efficiency among specialists consultants)	Frequency	1	8	38	71	32	150
	Percentage	0.7%	5.3%	25.3%	47.3%	21.3%	100%
Demonstrating the ability to ensure timely project delivery (eg. Timely delivery of projects requests instruments, claims and drawings	Frequency	8	22	31	62	27	150
	Percentage	5.3%	14.7%	20.7%	41.3%	18.0%	100%
Ensuring accurate, complete and comprehensive drawings, specifications, schedules and documentations	Frequency	3	19	27	63	38	150
	Percentage	2.0%	12.7%	18.0%	42.0%	25.3%	100%

According to **Error! Reference source not found.**1, the majority 98 (65.4%) clients agreed that architects show managerial competency in demonstrating knowledge on ethical basis, laws and statutes that regulate the practice of architecture, demonstrating the ability to monitor and control of projects against its budget and programme, exhibiting sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities, demonstrating leadership skills (e.g. Ability to work in teams, ensure coordination and efficiency among specialists consultants) and in ensuring accurate, complete and comprehensive drawings, specifications, schedules and documentations. In contrast, an interviewee stated that:

" I think from the experience that I have had, Zambian architects are poor at management of projects in terms of running projects from end to end. You find that clients will find themselves being involved in the architect job to push for contractors and for the whole project to run smoothly. You see in any project, even small things such as inspection of furniture coming in or electrical fittings being installed in a building matter a lot. Maybe I may not know how project management looks like from an architect point of view, but there is more weight by architects on designing processes rather than management of the whole project in terms of the actual execution of the project efficiently"

The interviewee's concerns are consistent with Georgieva (2012) findings that argued that lack of design experience and poor management capabilities play a significant role towards misunderstanding client requirements and incomplete achievement of project objectives. In addition, these shortcomings have negative impact on the project through specifying materials that are out-dated, no longer produced or available in the market. In turn, project stakeholders change project requirements at later stages of the project life cycle. An example of these challenges is in a case study of 400 housing projects designed by a foreign consultant, who did not adequately understand the culture and traditions of the end-users. After the practical completion stage of the project, the users carried out significant changes in order to meet their requirements such as privacy and the ability to add more rooms for future increase in their family sizes (Othman et al., 2004).

Further statistics indicate that 30 (20%) of clients disagreed that architects showed competency in demonstrating the ability to ensure timely project delivery (e.g. timely delivery of projects requests instruments, claims and drawings. Similarly, an interviewee argued that:

> "Architects in Zambia must improve on their presentation of projects such as using 3D models for a layman such as a client may understand and relate to the proposed project easily. Doing well prepared presentation of proposals will become or create a way to building confidence in potential clients to successfully entrust their project into the one proposing to undertake it"

Another interviewee lamented that:

> "When one looks at our Sub-region, architects based in South Africa have massive influence in Namibia and Botswana. So you find that local architects are not able to compete with foreign architects who go a stage further with their strong exposure and technological advancement. For instance, when proposing for a project, foreign firms propose advanced and cost effective budgeting plans for modern buildings with advanced technologies such as CCTVs. Thus, Zambian architects are adequate to undertake commercial projects. However, depending on where a given architectural graduates go to draw experience with most local architects lacking opportunities to participate in bigger projects to build them up, such a graduate will not marshal necessary competencies to undertake certain projects".

Further the interviewee explained that:

> "On the issue of managerial skills, I am of the view that architects usually concentrate a lot on the technical aspects of their jobs neglecting management aspects. I am of the view that in their training, their training schools should introduce managerial training even at lower levels of training such as from third year of university training going up. This is because by their very training, architects come out as leaders on most construction projects. Managerial training should be linked to leadership skills. This is why at the end of the day, the issue of specialisation come in as different architect will be good at different things such as design or leading a project".

Regression Results

The knowledge of business and the managerial principles involved in strategic planning and problem solving, resource allocation human resource modeling leadership technique and

coordination of people and resources are critical abilities for architects to possess. These abilities are key for architects to successfully bid for commercial projects.

*Table 2*2 below shows the correlations between the sub-variables of the dependent variable: (Client Satisfaction Indicators) with the appropriate sub-variables of the independent variable (Architects Managerial Abilities). This was done in order to predict the strength of the relationship between these two variables.

Table 2: Correlation between Architects Managerial Abilities (IV) and Client Satisfaction Indicators (DV).

Sub. Q1). Architects Managerial Abilities (Demonstrates knowledge on ethical basis, laws and statutes that regulate the practice of architecture) and Client Satisfaction Indicators (Innovative knowledge to define relevant ICT and specifications to be deployed in construction for infrastructure improvements)		Clients Satisfaction Indicators	Architectural Managerial Abilities
Pearson Correlation	Client Satisfaction Indicators	1.000	.259
	Architects Managerial Abilities	.259	1.000
Sig. (1 tailed)	Client Satisfaction Indicators		.001
	Architects Managerial Abilities	.001	
N	Client Satisfaction Indicators	150	150
	Architects Managerial Abilities	150	150
Sub. Q2). Architects Managerial Competencies (Demonstrates the ability to monitor and control of projects against its budget and programme) and Clients Satisfaction Indicators (Develop design patterns and models to assist system analysis in designing consistent applications (e.g. virtualization models)		Clients Satisfaction Indicators	Architects Managerial Abilities
Pearson Correlation	Client Satisfaction Indicators	1.000	.023
	Architects Project Designs	.023	1.000
	Client Satisfaction Indicators		.392
	Architects Project Designs	.392	
	Client Satisfaction Indicators	150	150
	Architects Project Designs	150	150

Sub. Q3). Architectural Managerial Abilities (Exhibits sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities) and Client Satisfaction Indicators (Taking into account interoperability, scalability usability and security)		Clients Satisfaction Indicators	Architects Managerial Abilities
Pearson Correlation	Client Satisfaction Indicators	1.000	.255
	Architects Managerial Abilities	.255	1.000
Sig. (1 tailed)	Client Satisfaction Indicators		.001
	Architects Managerial Abilities	.001	
N	Client Satisfaction Indicators	150	150
	Architects Managerial Abilities	150	150
Sub. Q4). Architects Managerial Abilities (Demonstrates leadership skills (e.g. Ability to work in teams, ensure coordination and efficiency among specialists consultants) and Clients Satisfaction Indicators (Application of strategic thinking to discover and recognise new patterns (e.g. optimal clients satisfaction focus, proactive professional advice to clients especially first time developers)		Clients Satisfaction Indicators	Architects Managerial Abilities
Pearson Correlation	Client Satisfaction Indicators	1.000	.119
	Architects Managerial Abilities	.119	1.000
Sig. (1 tailed)	Client Satisfaction Indicators		.074
	Architects Managerial Abilities	.074	
N	Client Satisfaction Indicators	150	150
	Architects Managerial Abilities	150	150
Sub. Q5). Architects Managerial Abilities (Demonstrates the ability to ensure timely project delivery (e.g. Timely delivery of projects requests instruments, claims and drawings) and Clients Satisfaction Indicators (Communication of professional standards, principles to the application team for good project delivery)		Clients Satisfaction Indicators	Architects Managerial Abilities
Pearson Correlation	Client Satisfaction Indicators	1.000	.124
	Architects Managerial Abilities	.124	1.000

Sig. (1 tailed)	Client Satisfaction Indicators		.065
	Architects managerial Abilities	.065	
N	Client Satisfaction Indicators	150	150
	Architects Managerial Abilities	150	150
Sub. Q6). Architects Managerial Abilities (Ensuring accurate, complete and comprehensive drawings, specifications, schedules and documentations) and Client Satisfaction Indicators (Exhibiting excellent listening skills (e.g. listening to clients project needs and other team players in a construction project)		**Clients Satisfaction Indicator**	**Architects Managerial Abilities**
Pearson Correlation	Client Satisfaction Indicators	1.000	.038
	Architects Managerial Abilities	.038	1.000
Sig. (1 tailed)	Client Satisfaction Indicators		.322
	Architects Managerial Abilities	.322	
N	Client Satisfaction Indicators	150	150
	Architects Managerial Abilities	150	150

According to *Table 2*2, responses from clients indicated that there was correlation between Architects Managerial Abilities with Clients Satisfaction Indicators. This implies that respondents agreed that Architects Managerial Abilities had an influence on Clients Satisfaction Indicators that corresponds to the level of Client Satisfaction on commercial projects in Zambia. However, variables are said to have a perfect relationship when the correlation coefficient is either + 1.00 or -1.00. For this study, there was a positive correlation between the all six sub-variables of the Independent Variable (Architects Managerial Abilities) with the sub-variables of the Dependent Variable (Clients Satisfaction Indicators).

*Table 3*3 below is the Model Summary that shows the R square values of sub-variables of Architects Managerial Abilities on Client Satisfaction Indicator sub-variables. The R square value indicates the coefficient of determination that allows determining the proportion of

variability of Client Satisfaction indicators that can be attributed to Architects Managerial Abilities.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std Error of estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig F Change
Sub Q1	$.259^a$	.067	-.061	.967	.067	10.621	1	148	.001
a. **Predictor: (Constant)** Architects Managerial Abilities **(Demonstrates knowledge on ethical basis, laws and statutes that regulate the practice of architecture)** b. **Dependent Variable:** Client Satisfaction Indicators **(Innovative knowledge to define relevant ICT and specifications to be deployed in construction for infrastructure improvements)**									
Sub Q2	$.023^a$	.001	-.006	.938	.001	.075	1	148	.784
a. **Predictor: (Constant)** Architects Managerial Abilities **(Demonstrates the ability to monitor and control of projects against its budget and programme)** b. **Dependent Variable:** Client Satisfaction Indicators **(Develop design patterns and models to assist system analysis in designing consistent applications (e.g. virtualization models)**									
Sub Q3	$.255^a$	.065	.059	.864	.065	10.289	1	148	.002
a. **Predictor: (Constant)** Architectural Managerial Competencies **(Exhibits sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities)** b. **Dependent Variable:** Client Satisfaction Indicators **(Taking into account interoperability, scalability usability and security)**									
Sub Q4	$.119^a$	.014	.007	.965	.014	2.114	1	148	.148
a. **Predictor: (Constant)** Architects Managerial Abilities **(Demonstrates leadership skills (e.g. Ability to work in teams, ensure coordination and efficiency among specialists consultants)**									

b. **Dependent Variable:** Client satisfaction **(Application of strategic thinking to discover and recognise new patterns (e.g. optimal clients satisfaction focus, proactive professional advice to clients especially first time developers)**									
Sub Q5	$.124^a$	.015	-.009	.965	.015	2.324	1	148	.129
a. **Predictor: (Constant)** Architects Managerial Abilities **(Demonstrates the ability to ensure timely project delivery (eg. Timely delivery of projects requests instruments, claims and drawings)** b. **Dependent Variable:** Client satisfaction **(Communicating of professional standards, principles to the application team for good project delivery)**									
Sub. Q6	$.038^a$	.001	-.005	1.032	.001	.215	1	148	.644
a. **Predictor: (Constant)** Architects Managerial Abilities **(Ensuring accurate, complete and comprehensive drawings, specifications, schedules and documentations)** b. **Dependent Variable:** Client Satisfaction Indicators **(Exhibiting excellent listening skills (e.g. listening to clients project needs and other team players in a construction project).**									

Table 3 shows that the R square values for all the sub-variables of Architects Managerial Abilities had some impact on Client Satisfaction Indicators. The R square value determines how much of the variation in one of the variable is due to the other. Hence, Table 4., shows that the sub-variable: Architects Managerial Abilities: demonstrates knowledge on ethical basis, laws and statutes that regulate the practice of architecture had a highest R square value of 6.7% while Architects Managerial Abilities: demonstrates the ability to monitor and control of projects against its budget and programme and Architects Managerial Abilities: ensures accurate, complete and comprehensive drawings, specifications, schedules and documentations had the lowest R Square values of 0.1. In other words, in order to determine how much variation Client Satisfaction Indicators was due to Architects Managerial Abilities, it was necessary to add all the individual R square values for individual or sub-variables of Architects Managerial Abilities and find the average as a representation of an overall R square value of accessibility. Hence,

(0.001+ 0.015 + 0.014+ 0.065+ 0.001+ 0.067)/6 = 0.027

The R square value of Architects Managerial Abilities was 0.027. This means that 2.7% of the variations in Client Satisfaction Indicators were attributed to Architects Managerial Abilities. It is also clear about the multi-dimensionality of the independent variable (Architects Managerial Abilities) was emphasized by combining individual R squared values of different sub-variables. Therefore, it entails that each R squared value is part of the whole component of the independent variable (Architects Managerial Abilities). The analysis of variance is presented in Table 4.

Table 4: Analysis of Variance (ANOVA)

Model		Sum of Square	df	Mean Square	F	Sig
Sub Q1	Regression	9.930	1	9.930	10.621	.001^b
	Residual	138.364	148	.935		
	Total	148.293	149			

a. Dependent Variable: Client Satisfaction Indicators (Innovative knowledge to define relevant ICT and specifications to be deployed in construction for infrastructure improvements)

b. . Predictor: (Constant) Architects Managerial Abilities (Demonstrates knowledge on ethical basis, laws and statutes that regulate the practice of architecture).

Sub Q2	Regression	.066	1	.066	.075	.784^b
	Residual	130.227	148	.880		
	Total	130.293	149			

a. Dependent Variable: Client Satisfaction Indicators (Develop design patterns and models to assist system analysis in designing consistent applications (e.g. virtualization models)

b. Predictor: (Constant) Architects Managerial Abilities (Ensuring accurate, complete and comprehensive drawings, specifications, schedules and documentations)

Sub Q3	Regression	7.679	1	7.679	10.289	.002^b
	Residual	110.461	148	.746		
	Total	118.140	149			

a. Dependent Variable: Client Satisfaction Indicators (Taking into account interoperability, scalability usability and security)

b. Predictor: (Constant) Architectural Managerial Abilities (Exhibits sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities)

Sub Q4	Regression	1.968	1	1.968	2.114	.148^b
	Residual	137.772	148	.931		
	Total	139.740	149			

a. Dependent Variable: Client Satisfaction Indicators (Application of strategic thinking to discover and recognise new patterns (e.g. optimal clients satisfaction focus, proactive professional advice to clients especially first time developers)

b. Predictor: Architects Managerial Abilities (Demonstrates leadership skills (e.g. Ability to work in teams, ensure coordination and efficiency among specialists consultants)						
Sub Q5	Regression	2.163	1	2.163	2.324	$.129^b$
	Residual	137.730	148	.931		
	Total	139.893	149			
a. Dependent Variable: Client Satisfaction Indicators (Communicating of professional standards, principles to the application team for good project delivery)						
b. Predictor: (Constant) Architects Managerial Abilities (Demonstrates the ability to ensure timely project delivery (eg. Timely delivery of projects requests instruments, claims and drawings)						
Sub Q6	Regression	.229	1	.229	.215	$.644^b$
	Residual	157.664	148	.971		
	Total	157.893	149			
a. Dependent Variable: Client satisfaction ((Exhibiting excellent listening skills (e.g. listening to clients project needs and other team players in a construction project)						
b. Predictor: (Constant) Architectural Managerial Abilities (Exhibits sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities)						

Table 5 shows the analysis of variance (ANOVA) of the six sub-variables of Architects Project Designs. It is evident that five sub-variables of Architects Managerial Abilities (Demonstrates knowledge on ethical basis, laws and statutes that regulate the practice of architecture and (Exhibits sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities showed a p value of < .05 which indicate their statistical significance on Client Satisfaction Indicators. However, Architects Managerial Abilities: Ensure accurate, complete and comprehensive drawings, specifications, schedules and documentations, Architects Managerial Abilities: demonstrates leadership skills (e.g. Ability to work in teams, ensure coordination and efficiency among specialists consultants, Architects Managerial Abilities: demonstrates the ability to ensure timely project delivery (e.g. Timely delivery of projects requests instruments, claims and drawings, Architectural Managerial abilities: Exhibits sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities), showed a p value above the acceptable p value of < 05. This indicated that these sub-variables had a low impact on client satisfaction indicators. **Error! Reference source not found.**5 below shows the coefficients.

Table 5: Coefficients between Architects Managerial abilities (IV) and Client Satisfaction Indicators (DV)

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig	Collinearity Statistics

Sub. Q1		B	Std Error	Beta			Tolerance	VIF
	(Constant)	2.732	.329		8.296	000		
	Architects Managerial Abilities: demonstrate knowledge on ethical basis, laws and statues that regulate the practice of architecture	.277	.085	.059	3.259	.001	1.000	1.000

a. Dependent Variable: Client Satisfaction Indicators: Innovative knowledge to define relevant ICT and specification to be deployed in construction for infrastructure improvement

Sub. Q2		B	Std Error	Beta			Tolerance	VIF
	(Constant)	3.802	.341		11.160	000		
	Architects Managerial Abilities: demonstrate the ability to monitor and control of projects against its budget and programme	.025	.091	.023	.274	.784	1.000	1.000

a. Dependent Variable: Client Satisfaction Indicators: Develop design patterns and models to assist system analysis in designing consistent applications (e.g. virtualization models)

Sub. Q3		B	Std Error	Beta			Tolerance	VIF
	(Constant)	2.870	.304		9.427	.000		
	Architects Managerial Abilities: exhibit sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities	.253	.079	.255	3.208	.002	1.000	1.000

a. Dependent Variable: Client Satisfaction Indictors: Taking into account interoperability, scalability, usability and security

Sub. Q4		B	Std Error	Beta			Tolerance	VIF
	(Constant)	3.260	.366		8.897	.000		

	Architects Managerial Abilities: demonstrate leadership skills (eg. Ability to work in teams, ensure coordination and efficient communication among specialists consultants	.136	.093	.119	1.454	.148	1.000	1.000
a. Dependent Variable: Clients Satisfaction Indicators: Application of strategic thinking to discover and recognise new patterns (optimal client satisfaction focus, proactive professional advice to clients especially first time developers)								
Sub. Q5	**(Constant)**	3.644	.263		13.868	.000		
	Architects Managerial Abilities: demonstrate the ability to ensure timely project delivery (e.g. Timely delivery of project requests, instructions, claims, drawings)	.109	.071	.124	1.525	.129	1.000	1.000
a. Dependent Variable: Clients Satisfaction Indicators: Communication of professional standards, principles to the application team for good project delivery								
Sub. Q6	**(Constant)**	3.831	.319		12.018	.000		
	Architects Managerial Abilities: ensure accurate, comprehensive drawings, specifications schedules and documentations	.038	.082	.038	.464	.644	1.000	1.000
a. Dependent Variable: Client Satisfaction Indicators: Exhibiting excellent Listening skills (eg. listening to clients projects needs and other team players in a construction project)								

Error! Reference source not found.5 shows the coefficients of six sub-variables of Architects Managerial Abilities. From the analysis done, it is clear that the P values of two of the sub-

variables namely, Architects Managerial Abilities: demonstrate knowledge on ethical basis, laws and statues that regulate the practice of architecture and Architects Managerial Abilities: exhibit sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities were statistically significant as it was less than $P < 0.05$. In other words for this study two sub-variable of architects managerial abilities had a significant impact on Clients Satisfaction Indicators and consequently on the level of satisfaction on commercial projects in Zambia. Hence, they were added to the model as a sub-variable of Architects Project Designs.

Summary and Conclusion of Findings

The study findings reveal that the majority (over 65.4%) of the clients agreed to architects demonstrated managerial competencies in: knowledge on ethical basis, laws and statutes that regulate the practice of architecture, the ability to monitor and control of projects against its budget and programme, Exhibiting sound knowledge on compliance to contractual arrangements and requirements of regulatory authorities, leadership skills (e.g. Ability to work in teams, ensure coordination and efficiency among specialists consultants) and on Ensuring accurate, complete and comprehensive drawings, specifications, schedules and documentations. It scored an R squared value of 0.027 indicating a predictive value of 2.7%. This shows that respondents agree that Architects managerial abilities impact positively on client satisfaction indicators and correspondingly to architects in Zambia possessing managerial competencies. This is consistent with studies done by (Royal Institute of British Architects, 2016, Ayman Ahmed Ezzat, 2015, Araiqat, Almubarak, 2015) who emphasized on architects' managerial capabilities to be effective stakeholders in construction teams.

Recommendations

There is need for the Zambia Institute of Architects (ZIA) to work on enhancing key architectural professional competencies that are critically lacking in local architects such as material estimations through vigorous and effective CPD programmes through partnership with material construction manufacturing companies. Also the institute needs to work together with other construction professional bodies to police the law and policies that protect the interests of local architects so as to develop a level playing field for the local architects in the Zambian construction industry. Consequently, local architects will be given appropriate exposure and capacity to satisfy clients on commercial projects

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