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COMPETENCIES OF GLOBAL CIOS IN CLOUD AND IOT BASED ORGANIZATIONS- A STUDY ON IT AND BUSINESS LEADERS

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Abstract— **The job of the chief information officer (CIO) has turned out to be progressively testing and mind-boggling as information communications technology (ICT) has turned out to be a basic framework for most extensive organizations. Be that as it may, there has been an absence of research which has observationally analyzed the job of the CIO in cloud and IoT based organization. There are numerous competency issues faced by CIOs in Cloud and IoT organizations. This paper gives an outline of the various competencies of CIOs in cloud and IoT based organizations. Cloud computing has developed enormously throughout the years. This study will analyze the major challenges in cloud and IOT environments like capital and investment planning, E-Business and E-Governance Skills, change management skills, Project management skills, Leadership skills, Technical Expertise, Policy knowledge, Resource planning etc. The study was conducted in 405 IT and business leaders and their responses were captured. An arrangement of beginning basic competencies was distinguished in the current writing. An online overview of CIOs affirmed the significance of these competencies and recognized different competencies which are viewed as basic. The key discoveries demonstrate that the job of the global CIO has progressed toward becoming progressively business engaged and vital. Delicate aptitudes command the basic competencies. At last, how a CIO leads and deals with his/her ICT staff will incredibly impact how effective a CIO is in the job. Be that as it may, the CIO still needs abnormal state comprehension of key technology learning so close to home information of or access to hard aptitudes is likewise basic in the job.**

Keywords **Watermarking, Haar Wavelet, DWT, PSNR**

I. INTRODUCTION AND BACKGROUND

The job of the chief information officer has turned out to be progressively testing and key as information communications technology (ICT) has turned out to be the basic foundation for most current organizations. The management of ICT in huge organizations is unpredictable and testing. In the most recent decade, organizations have encountered huge change because of globalization and deregulation of business sectors, and acquisitions and mergers of organizations. Accordingly, the manner in which ICT can be conveyed has changed essentially. Thus, it isn't astounding that the job of the Chief Information Officer (CIO) has turned out to be progressively vital and testing (Rockart 2000). ICT is continually changing and advancing and has a tendency to be repetitive regarding spending and venture. Organizations have turned out to be progressively dependent on ICT, and yet there is a desire from senior official management that ICT conveys more quantifiable business esteem for cash. After some time, the job of the CIO in the organization has changed essentially from being to a great extent the technology steward of an organization to being a senior management official who shapes and understand an organization's procedure using ICT (Korn/Ferry International 1998; Broadbrent and Kitzis 2005). Given the inexorably imperative and key job of the CIO in organizations which are intensely dependent on ICT, a superior comprehension of the basic competencies required for the job of the CIO warrants the consideration of business and the scholarly world. This paper examines the degree to which the basic competencies recognized in existing writing are important to the job of the advanced CIO and whether there are different competencies which are basic for the job of the cutting-edge CIO.

In talking about the job of the CIO, it is valuable to initially characterize the terms, job, and competencies, and other related terms for a vocation position, for example, the CIO. A job is the arrangement of obligations or potentially expected

outcomes related to an occupation. Complex positions in an organization, for example, the CIO may incorporate countless, which are now and then alluded to as capacities (McNamara 1997). Commonly, competencies are general portrayals of cutting-edge information, aptitudes, and capacities expected to play out a job in the organization. Competencies are regularly developed after some time through involvement. Competencies can be depicted in wording to such an extent that they can be estimated. Clearly, the advanced CIO has numerous jobs and duties and needs a wide scope of basic competencies to do their key jobs and obligations. The job of CIO has advanced in four unmistakable stages. In the principal occasion, CIOs were viewed as 'celebrated DP (data processing) directors' (Andrews and Carlson 1997). In the second phase of advancement, CIOs were given a role as technocrats. CIOs progressed toward becoming business officials in the third phase of development.

II. LITERATURE REVIEW

a) Capital and investment planning-Capital investment alludes to reserves put resources into a firm or venture to further its business destinations. Capital investment may likewise allude to a company's obtaining of capital resources or settled resources, for example, fabricating plants and hardware that is relied upon to be profitable over numerous years. Wellsprings of capital investment are complex and can incorporate value investors, banks, monetary foundations, funding, and angel investors.

b) E-Governance business skills-The expression "e-government skills" are characterized by Khan et al. (2010) as "The arrangement of skills, learning, and ideas that are required for powerful access, find, work, oversee, comprehend, and assess e-government activities in various stages." E-government competencies are characterized via Career Executive Service Board of Philippines (2010) as "the essential capacity to set an expansive e-government vision and show duty to that vision by 1) articulating the positive effect of e-government on effectiveness, benefit quality, and client administration; and 2) to recognize the potential advantages of e-government and how to accomplish them; and the capabilities of officials to viably create, actualize and oversee e-government projects and activities." Skills and competencies are utilized in this investigation interchangeably. EPAN (European Public Administration Network) (2003) distinguished four arrangements of skills, both specialized and administrative, as basic for e-government: Information Technology (IT), Information Management (IM), Information Society (IS), and refreshed management skills. While the fringes of these ranges of abilities are obscured, they give a valuable system to investigation (Lau, 2003).

c) Change management-Capacity to serve past advancement as the organization's change agent, encouraging flexible change and versatility among people from the establishment; challenge the developed institutional culture and long- held perfect models.

d) Project Management-Capacity to get openings that drive the organization's success; split down and follow up on information; improve high ground in the midst of money related, legitimate, measurement, and centered weights.

e) Leadership- includes self- awareness, self-organization, social care, and social aptitudes. It additionally incorporates the ability to recognize and follow up on contribution from authorities, partners, and IT organization and staff. Ability to manage costs while using resources for hypothesis and future accomplishment; skilled business examinations including hard and fast expense of proprietorship, multi- year methodologies for progress, and rate of return.

Ability to develop a strong understanding of the foundation's odds and issues, internal and external forces, interdependencies, undertakings, organizations, and casting a ballot open. Ability to pass on available and strong IT organizations, including brief assurance of power outages and issues; set up operational requirements; significant specific learning in no short of what one IT zone. The quick changes in technology can be overpowering. Undertakings require somebody who can enable them to explore through and deal with these changes. The CIO's experience and learning of the organization's IT biological community make him or her appropriate to direct the endeavor as it explores the rushes of Digital Transformation sweeping crosswise over ventures. For example, the expansion of cloud advances has empowered different offices, for example, Finance or Marketing, to embrace and execute individual and specially appointed advances like quick books and Salesforce. While this change has moved a portion of the operational capacities from IT, for example, the execution of new advancements, it additionally opens up the IT office to perform more vital errands, for example, finding, starting and proposing developments.

The CIO is in the perfect position to control IT in its new job as trailblazers. Additionally, in light of the fact that different offices by and large don't have the skill in receiving and executing new advances for the venture, the CIO can enable them to deal with these changes and keep on supporting them. At last, the CIO should likewise guarantee the security and amicability of innovations in the undertaking's IT biological community despite the nearness of impromptu and cloud advances.

f) Technical Expertise-Capacity to fabricate a more slim and more drew in IT relationship with the ability to proactively

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conform to new advances and new parts; separate legitimate storage facilities and complete predictable systems. Computerized change is changing each edge of the business, from how organizations source parts to how they manage clients. Each change, both huge and little, make an interest for technology mastery and authority. It's nothing unexpected that technology is driving change inside the CIO job. Is amazing that CIOs don't refer to only a couple of variables driving these changes; they point to a few. Past technology in client connections, CIOs likewise say the utilization of enormous data and investigation, and additionally more technology in the production network, are real impacts. Given these changes in the CIO job and in technology, it's solitary expected that CIOs must change also, adjusting their own and expert skills to meet the present requests and the new business condition.

g) Policy Knowledge-Capacity to develop a persuading vision for building institutional achievement through learning of the foundation's fundamental objective and targets and by using premiums in IT and other institutional resources.
Comprehensively characterized, the CIO is in charge of guaranteeing that the organization's information and innovations investments are on a similar line with vital business goals. To this impact, the CIO position has risen as the key executive for information resources, activities, and policy, yet additionally as a mindful individual for the powerful oversight of organization's design and bolster, and for more current highlights like interior system usage, programming advancement, and information management.

In light of Li and Tann's declarations in their 2013 diary of Business Research "Coordinating business system and CIO attributes: the effect of authoritative exhibitions" featuring the different competencies expected of the chief examining officer (CIO). These competencies depend on the administrative procedure and how they in themselves impact the business execution. However future CIOs will presumably not show quality in these capacities and skills, driving a couple of respondents to comment on the essentialness of knowing one's own characteristics and deficiencies, and dealing with the headway of comparing characteristics among people from the CIO's staff. Another individual cleared up that, "It is essential for the CIO to perceive singular characteristics and weaknesses [and] get people to give equal aptitudes." (Almulla, 2012).

III. SURVEY AND TOOLS USED FOR THE SURVEY

The survey was conducted using an online-methods. The survey attempted to explore the major challenges faced by CIOs in cloud computing and IoT based organizations from various industries. This study was conducted on IT and business leaders/professionals from almost 30 plus countries across the globe. A sample size of 405 was used for this survey. Since the target population is unknown the baseline was of 385 has to be maintained. The sample size of 405 was used in order to have an effective result after excluding the errors. A website named e-mailmeform.com was used to create an online survey. It is a paid services based portal which provides survey setup services. This has security features like one response from one computer and one response from one IP address. These sort of security features would help to avoid duplicate submissions resulting in improved quality responses. A total of 40 questions were asked to the respondents and the results were captured and correlated using the IBM SPSS statistical tool.

IV. SURVEY RESULTS & DISCUSSIONS

Altogether, about 346 male and 59 female respondents were surveyed to explore the major challenges faced by CIOs in cloud computing and IoT based organizations from various industries purely from the healthcare, manufacturing and service line. Thus the totality of the participants equals about 405 in number. The feminine gender has the less valid percent of participation as compared to the male counterparts. We can therefore infer that there is likelihood of more males functioning as IT business leaders than their female counterparts. This singular fact was considered in the distribution of the survey questionnaires.

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	346	85.4	85.4	85.4
Female	59	14.6	14.6	100.0
Total	405	100.0	100.0	

Fig1: Gender

Out of the 405 respondents to the online questionnaire, only 55 people (both males and females) falls within the age range 21 to 25 years of age; eighty-six participants similarly fell within the age bracket of 26 to 30; whereas fifty-two respondents that participated in the online survey falls between age 31 to 35. The number of participants between the age ranges of 36 to 40 is forty-eight while the rest participant, about one-hundred and sixty-four, are all over 40 years of age.

In all, the majority of the respondents are well above forty years of age while the least frequency of the respondents falls between ages 36 and 40.

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	Frequency	Percent	Valid Percent	Cumulative Percent
21-25	55	13.6	13.6	13.6
26-30	86	21.2	21.2	34.8
31-35	52	12.8	12.8	47.7
36-40	48	11.9	11.9	59.5
>40	164	40.5	40.5	100.0
Total	405	100.0	100.0	

Fig2: Age

From the pool of respondents, its a single participant that has his highest form of education as at then being PUC/XII, representing a minute 0.2% of the total respondents. The number of graduate-respondent elevated as high as 127 people in total representing 31.4% of the total respondents. A whooping 192 participants claimed to be holders of a post-graduate degree or qualification (47.4 % of the population) while, about thirty-five of them already has a PhD degree in relevant disciplines. Only forty-seven of the respondents studied a professional course accruing to about 11.6 percent of the total population. The remaining 0.7% of the total respondents, that is only three people, had a different educational background from the listed.

	Frequency	Percent	Valid Percent	Cumulative Percent
PUC/ XII	1	.2	.2	.2
Graduation	127	31.4	31.4	31.6
Post-Graduation	192	47.4	47.4	79.0
Doctorate	35	8.6	8.6	87.7
Professional course	47	11.6	11.6	99.3
other	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig3: Education

According to the population studies, about forty-one team leaders responded to the online survey representing a significant percentage of 10.1 percent. Only eighteen of the participants that responded were junior managers in rank while thirty-one participants were senior officers or managers within their respective organizational domain. The number of respondents that were vice-presidents or general-managers amounted to thirty-five in all whereas a whooping one hundred and eighty-two of the participants were actually chief information officers, chief executive officers and/or chief functional officers- which accounts for almost half percent of the population. The remnant of the 405 respondents occupied other organizational positions not reflected in the listed designations.

	Frequency	Percent	Valid Percent	Cumulative Percent
Team leader	41	10.1	10.1	10.1
Jr. Manager	18	4.4	4.4	14.6
Sr. Manager	31	7.7	7.7	22.2
VP/GM	35	8.6	8.6	30.9
CIO/CEO/CFO	182	44.9	44.9	75.8
Other	98	24.2	24.2	100.0
Total	405	100.0	100.0	

Fig4: Designation

With respect to their overall experience, most of the respondents had less than ten years of experience and exposure concerning the job description of a chief information officer; that is, about 169 respondents had lesser that ten years' experience of the subject matter accounting for 41.7 percent of the total population. In the same vein, ninety-six of the participants had an overall experience and exposure of greater than or equal to ten years, but lesser than 20 years at the same time. Also, ninety-nine of the participants had already an overall experience worth more than twenty years but below thirty years of age. The remainder forty-one respondents already had experiences of the subject matter over accumulated years, typically above thirty years. Thus, the overall percent of respondents with the highest frequency suggests those of years below ten while those with years above thirty had the lowest overall percentage.

1.

	Frequency	Percent	Valid Percent	Cumulative Percent
<10 years	169	41.7	41.7	41.7
10-20 years	96	23.7	23.7	65.4
20-30 years	99	24.4	24.4	89.9
>30 years	41	10.1	10.1	100.0
Total	405	100.0	100.0	

Fig 5: overall experience

Most of the volunteers who responded, about a whooping population numbering about 197 people, only have had between one to five years of experience as a chief information officer (CIO) in their present position which may range from junior manager to senior managers, et cetera.

Only a handful of sixty-three persons who participated in the online survey have only had less than a year of experience as related to the job competencies of a chief information officer in any position they may be holding. Then it was calculated that about seventy-four of the total 405 respondents had only served between five to ten years in the capacity of a chief information officer in any capacity or position. The rest seventy-one respondents have had over ten years of

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experience in their present position with respect to the subject matter.

	Frequency	Percent	Valid Percent	Cumulative Percent
<1 year	63	15.6	15.6	15.6
1-5 years	197	48.6	48.6	64.2
5-10 years	74	18.3	18.3	82.5
>10 years	71	17.5	17.5	100.0
Total	405	100.0	100.0	

Fig 6: Experience in present position

The number of respondents within the telecommunication, service and information technology (IT) industries that participated in the online survey was 226 in number representing a whopping 55.8 percent of the total population.

About twenty-five participants interviewed are currently working in certain manufacturing industries accounting for 25% of the totality of respondents. Forty-seven of the respondents are working in the healthcare sector of the economy whereas thirty-three of the respondents are domiciled in the finance, banking or the insurance companies, with the rest seventy-four of them practicing in other spheres of discipline accruing a whole 18.3 of the percentage of the whole population.

	Frequency	Percent	Valid Percent	Cumulative Percent
IT/Telecommunication/Service	226	55.8	55.8	55.8
Manufacturing	25	6.2	6.2	62.0
Healthcare	47	11.6	11.6	73.6
Finance/Insurance	33	8.1	8.1	81.7
Other	74	18.3	18.3	100.0
Total	405	100.0	100.0	

Fig 7: Industry sector of your present organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	256	62.3	62.3	62.3
	Very Often	106	25.8	25.8	88.1
	Sometimes	43	10.5	10.5	98.5
	Rarely	5	1.2	1.2	99.8
	Never	1	.2	.2	100.0
	Total	411	100.0	100.0	

Fig 8: Do you think that the CIO plays an important role in the organization?

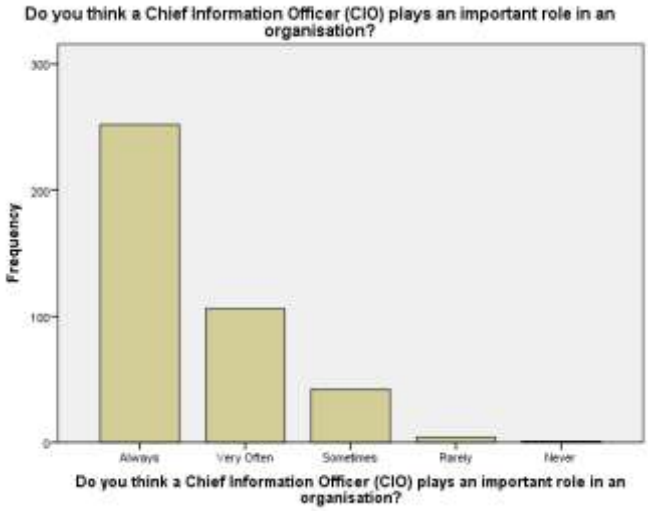

Fig 9

A total number of 405 respondents expressed their opinion on the basic question posed that: Do you think that the CIO plays an important role in the organization? Out these respondents, two-hundred and fifty-six respondents agreed that it is always thy duty and role of the CIO to do so. About 106 respondents representing 25.8 percent of the total respondents strongly agreed with the fact that though not always, but very often, it is the role of a CIO to play an important function in the organization. Meanwhile few respondents, exactly five in numbers posited that it is rarely their role, and only a single candidate of these respondents strongly showed their disagreement stating the CIO role was never important. As much as the number of respondents who agreed and disagreed, a few number of respondents, about forty-three participants in number did appear neutral towards it, stating that they sometimes perform an important role, and sometimes do not.

a. Capital and Investment Planning

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	175	43.2	43.2	43.2
Agree	186	45.9	45.9	89.1
Neutral	35	8.6	8.6	97.8
Disagree	8	2.0	2.0	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

FIG 10: A CIO SHOULD BE ABLE TO ASSESS THE CAPITAL REQUIRED FOR IMPLEMENTING A PARTICULAR TECHNOLOGY

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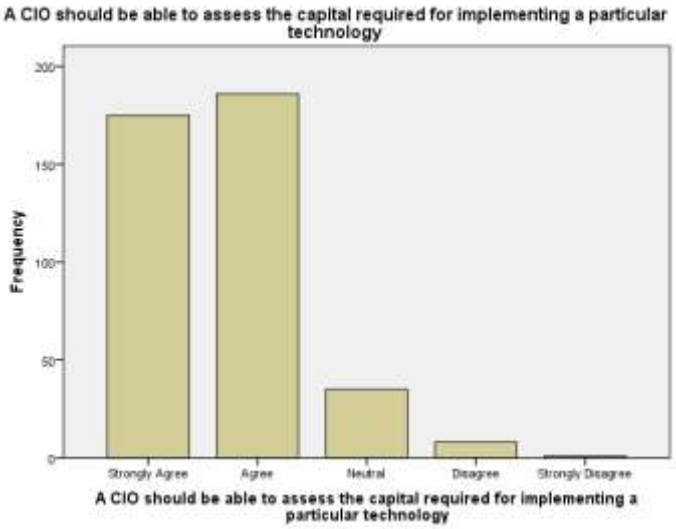

Fig 11:

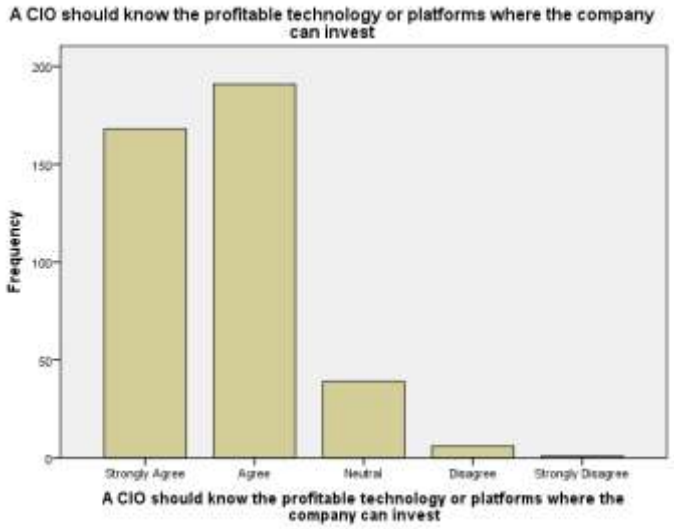

FIG 13

In congruence to Fig. 10 and 11, about 405 people responded to the suggestion stating A CIO SHOULD BE ABLE TO ASSESS THE CAPITAL REQUIRED FOR IMPLEMENTING A PARTICULAR TECHNOLOGY. Out of these respondents, a number of 361 respondents agreed to this suggestion,out of which one-hundred and seventy-five respondents of representing 43.2 of the total respondents did strongly agree. About eight respondents accounting for 2.0 percent of the total respondents expressed their dissension,and only a single respondent strongly did. The remaining percentage of the respondents, which is 8.6 percent was occupied by respondents who were neutral to the suggestion

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	168	41.5	41.5	41.5
Agree	191	47.2	47.2	88.6
Neutral	39	9.6	9.6	98.3
Disagree	6	1.5	1.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 12: A CIO should know the profitable technology or platforms where the company can invest.

In congruence to Fig. 12 and 13, about 405 people responded to the suggestion stating that A CIO should know the profitable technology or platforms where the company can invest. Out of these respondents, a number of 359 respondents agreed to this suggestion,out of which one-hundred and sixty-eight respondents of representing 41.5 of the total respondents did strongly agree. About six respondents accounting for 1.5 percent of the total respondents expressed their dissension,and only a single respondent strongly did. The remaining percentage of the respondents, which is 9.6 percent was occupied by respondents who were neutral to the suggestion

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	202	49.9	49.9	49.9
Agree	171	42.2	42.2	92.1
Neutral	27	6.7	6.7	98.8
Disagree	2	.5	.5	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 14: A CIO should be up to date about the current technology and norms and the costs associated with such technologies

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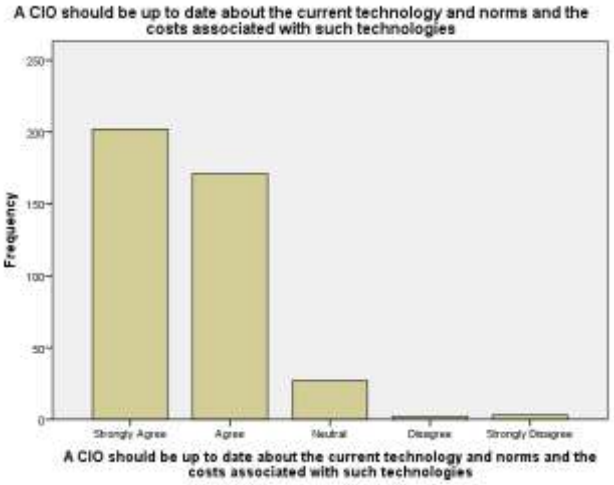

Fig 15:

In congruence to Fig. 14 and 15, about 405 people responded to the suggestion stating that A CIO should be up to date about the current technology and norms and the costs associated with such technologies. Out of these respondents, a number of 373 respondents agreed to this suggestion,out of which two-hundred and two respondents of representing 49.9 of the total respondents did strongly agree. About two respondents accounting for 0.2 percent of the total respondents expressed their dissension,and three of these respondents strongly did. The remaining percentage of the respondents, which is 6.7 percent was occupied by respondents who were neutral to the suggestion

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	179	44.2	44.2	44.2
Agree	182	44.9	44.9	89.1
Neutral	33	8.1	8.1	97.3
Disagree	10	2.5	2.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 16: A CIO should be aware of the business climate of the market and should make investment decisions accordingly

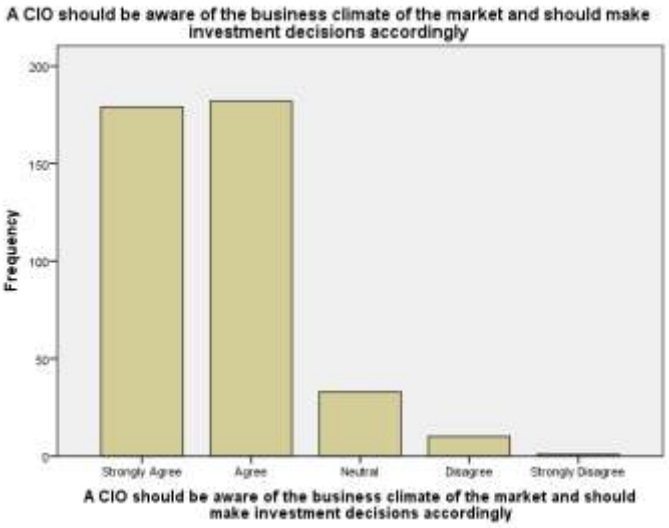

Fig 17

A total number of 405 respondents expressed their opinion on the fact A CIO should be aware of the business climate of the market and should make investment decisions accordingly. Out these respondents, one-hundred and eighty-two respondents agreed, and about 179 respondents representing 44.2 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly ten in numbers disagreed, and only a single candidate of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about thirty-three participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	217	53.6	53.6	53.6
Agree	150	37.0	37.0	90.6
Neutral	31	7.7	7.7	98.3
Disagree	5	1.2	1.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 18: A CIO should be able to make strategies to align both the IT objectives and corporate goals of a company

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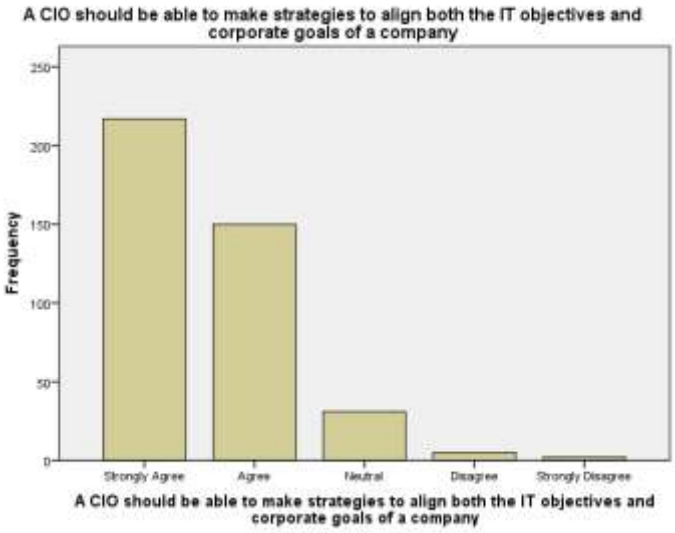

FIG 19

A total number of 405 respondents expressed their opinion on the fact that A CIO should be able to make strategies to align both the IT objectives and corporate goals of a company. Out these respondents, one-hundred and fifty respondents agreed, and about 217 respondents representing 53.6 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly five in numbers disagreed, and only two candidates of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about thirty-one participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	169	41.7	41.7	41.7
Agree	177	43.7	43.7	85.4
Neutral	44	10.9	10.9	96.3
Disagree	13	3.2	3.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 20: A CIO should be ready to take beneficial information and investment decisions of the company

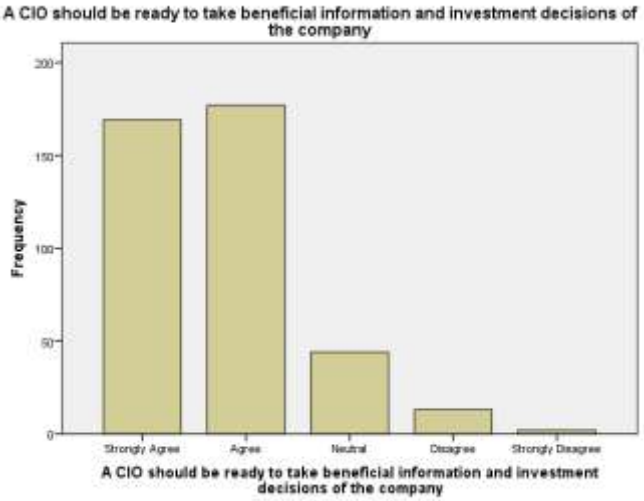

Fig 21:

A total number of 405 respondents expressed their opinion on the fact that A CIO should be ready to take beneficial information and investment decisions of the company. Out these respondents, one-hundred and seventy-seven respondents agreed, and about 169 respondents representing 41.7 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly thirteen in numbers disagreed, and only two candidates of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about forty-four participants in number did appear neutral towards it.

b. E-Business and E-Governance Skills

A total number of 405 respondents expressed their opinion on the fact that A CIO should possess adequate e-commerce and e-governance skills. Out these respondents, one-hundred and ninety-eight respondents agreed, and about 145 respondents representing 35.8 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly five in numbers disagreed, and only two candidates of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about fifty-five participants in number did appear neutral towards it.

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	145	35.8	35.8	35.8
Agree	198	48.9	48.9	84.7
Neutral	55	13.6	13.6	98.3
Disagree	5	1.2	1.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 22: A CIO should possess adequate e-commerce and e-governance skills.

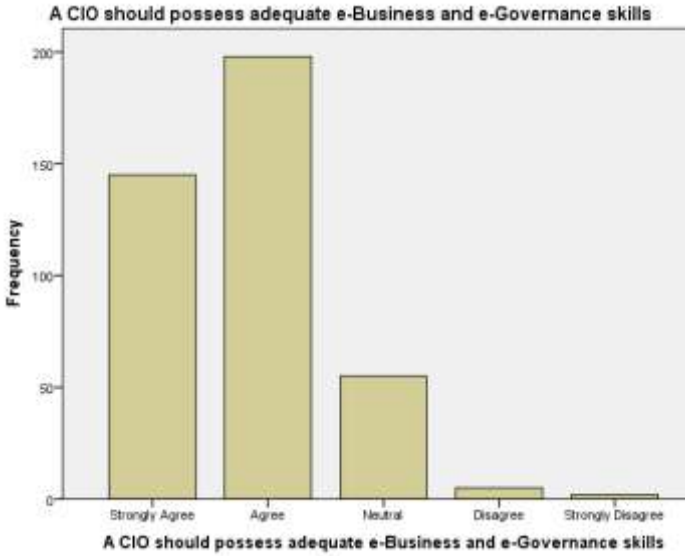

Fig 23:

A total number of 405 respondents expressed their opinion on the fact that CIO should be able to make e-marketing strategies to promote the e-business of the company. Out these respondents, one-hundred and eighty-four respondents agreed, and about 110 respondents representing 27.2 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly nineteen in numbers disagreed, and only two candidates of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about ninety participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	110	27.2	27.2	27.2
Agree	184	45.4	45.4	72.6
Neutral	90	22.2	22.2	94.8
Disagree	19	4.7	4.7	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 24: CIO should be able to make e-marketing strategies to promote the e-business of the company

2.

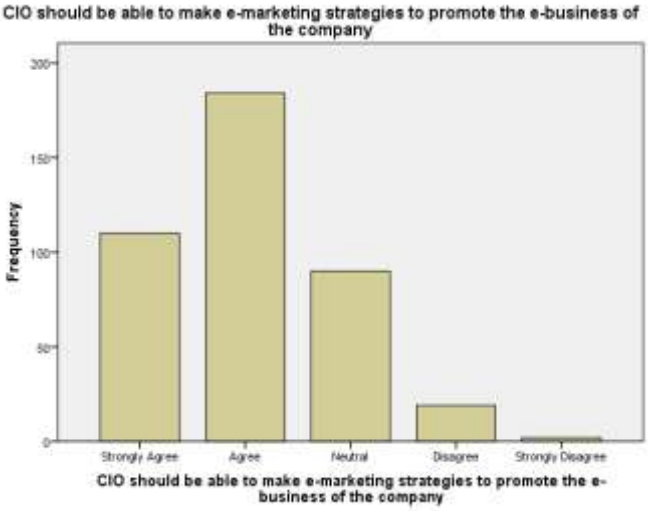

Fig 25:

3.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	133	32.8	32.8	32.8
Agree	222	54.8	54.8	87.7
Neutral	43	10.6	10.6	98.3
Disagree	5	1.2	1.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

4. fig 26: a cio should be aware of the various e-business/ e-commerce practices and trends

A total number of 405 respondents expressed their opinion on the fact that A CIO SHOULD BE AWARE OF THE VARIOUS E-BUSINESS/ E-COMMERCE PRACTICES AND TRENDS. Out these respondents, two-hundred and twenty-two respondents agreed, and about 133 respondents representing 32.8 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly five in numbers disagreed, and only two candidates of these respondents strongly showed their

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disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about forty-three participant in number did appear neutral towards it.

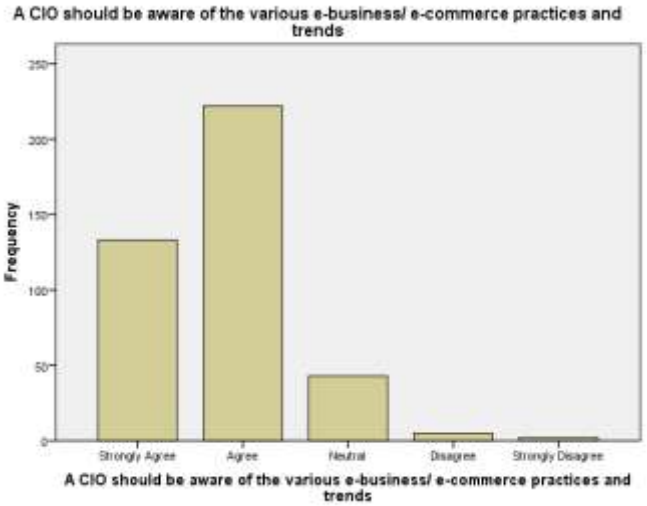

Fig 27:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	130	32.1	32.1	32.1
Agree	189	46.7	46.7	78.8
Neutral	72	17.8	17.8	96.5
Disagree	13	3.2	3.2	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 28: A CIO should favor the development of products suitable foe e-commerce/business

A total number of 405 respondents expressed their opinion on the fact that A CIO should favour the development of products suitable for e-commerce/business. Out these respondents, one-hundred and eighty-nine respondents agreed, and about 130 respondents representing 32.1 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly thirteen in numbers disagreed, and only a single candidate of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about seventy-two participant in number did appear neutral towards it.

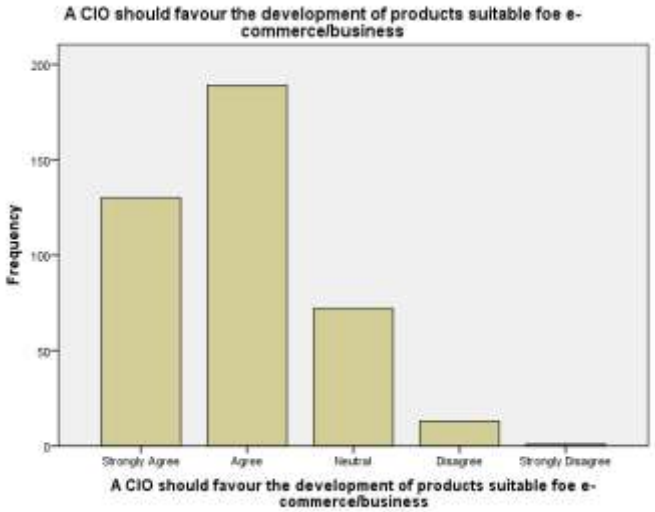

Fig 29:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	141	34.8	34.8	34.8
Agree	205	50.6	50.6	85.4
Neutral	52	12.8	12.8	98.3
Disagree	6	1.5	1.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 30: A CIO should come up with strategies to promote e-governance of the IT related activities of the organization

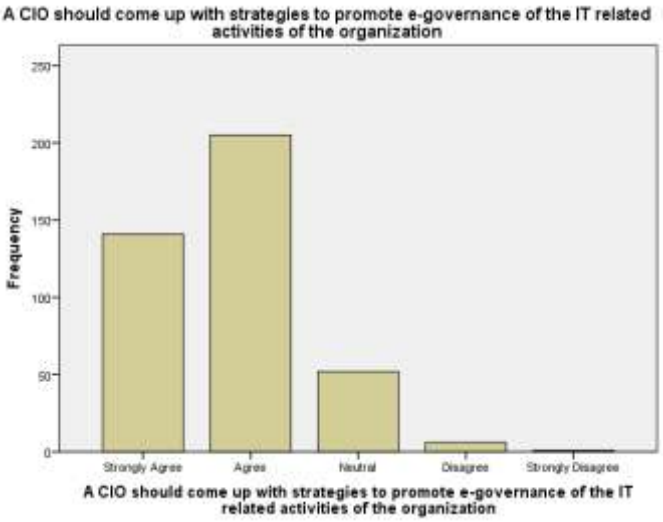

Fig 30:

A total number of 405 respondents expressed their opinion on the fact that A CIO should come up with strategies to promote

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e-governance of the IT related activities of the organization. Out these respondents, two-hundred and five respondents agreed, and about 141 respondents representing 34.8 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly six in numbers disagreed, and only a single candidate of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about fifty-two participant in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	134	33.1	33.1	33.1
Agree	191	47.2	47.2	80.2
Neutral	70	17.3	17.3	97.5
Disagree	9	2.2	2.2	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 31: A CIO should consider e-commerce as a potential avenue for business and revenue generation for the company

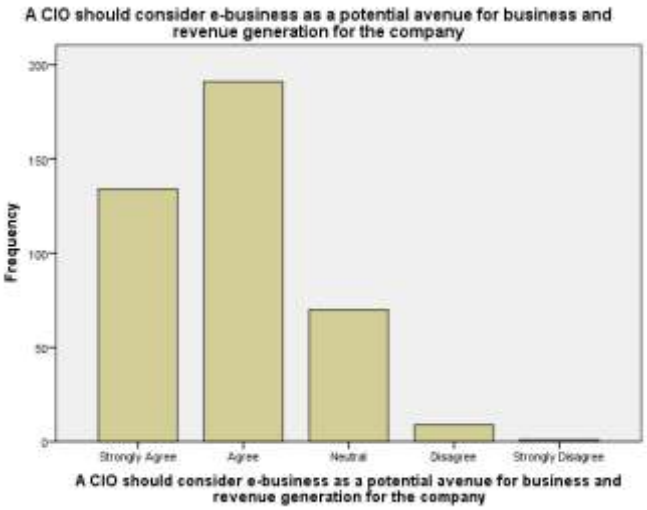

Fig 32:

A total number of 405 respondents expressed their opinion on the fact that A CIO should consider e-commerce as a potential avenue for business and revenue generation for the company. Out these respondents, one-hundred and ninety-one respondents agreed, and about 134 respondents representing 33.1 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly nine in numbers disagreed, and only a single candidate of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about seventy participant in number did appear neutral towards it.

c. Change Management

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	187	46.2	46.2	46.2
Agree	171	42.2	42.2	88.4
Neutral	38	9.4	9.4	97.8
Disagree	5	1.2	1.2	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 33: A CIO should always seek for ways of improving the existing technological platforms of the company

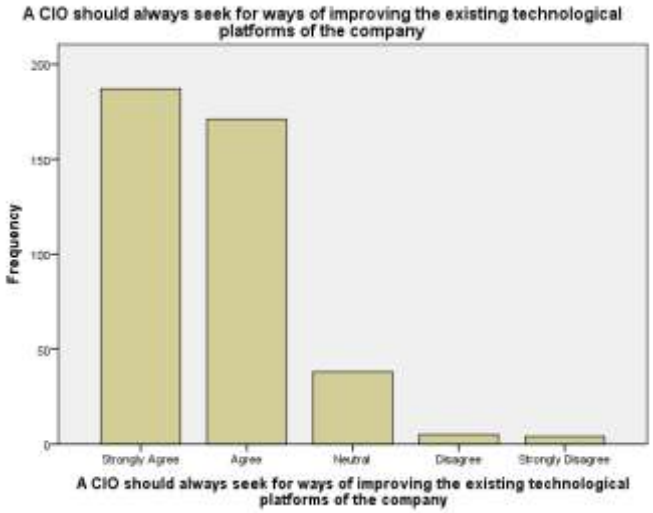

Fig 34:

A total number of 405 respondents expressed their opinion on the fact that A CIO should always seek for ways of improving the existing technological platforms of the company. Out these respondents, one-hundred and seventy-one respondents agreed, and about 187 respondents representing 46.2 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly five in numbers disagreed, and four candidates of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about thirty-eight in number did appear neutral towards it.

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	164	40.5	40.5	40.5
Agree	184	45.4	45.4	85.9
Neutral	43	10.6	10.6	96.5
Disagree	8	2.0	2.0	98.5
Strongly Disagree	6	1.5	1.5	100.0
Total	405	100.0	100.0	

Fig 35: A CIO plays a major role in the smooth transition of a company from one technological platform to the other

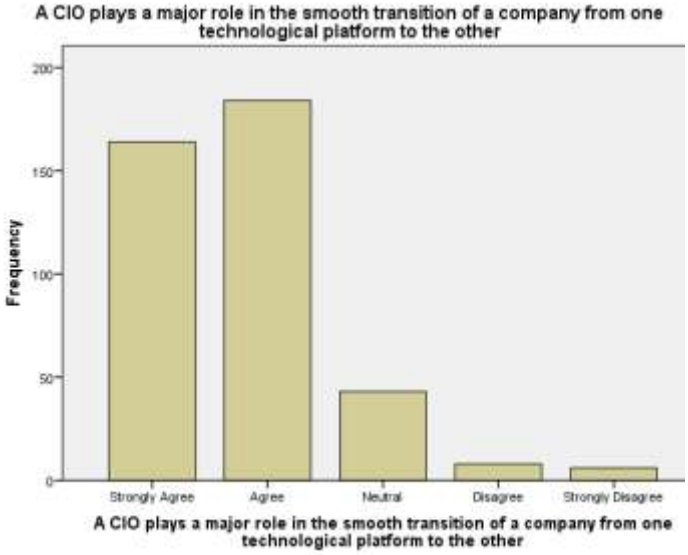

Fig 36:

A total number of 405 respondents expressed their opinion on the fact that A CIO plays a major role in the smooth transition of a company from one technological platform to the other. Out these respondents, one-hundred and eighty-four respondents agreed, and about 164 respondents representing 40.5 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly eight in numbers disagreed, and six candidates of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about forty-three in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	148	36.5	36.5	36.5
Agree	174	43.0	43.0	79.5
Neutral	62	15.3	15.3	94.8
Disagree	18	4.4	4.4	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 37: In case of technology migration, a CIO should be able to direct the entire process smoothly until it is completed

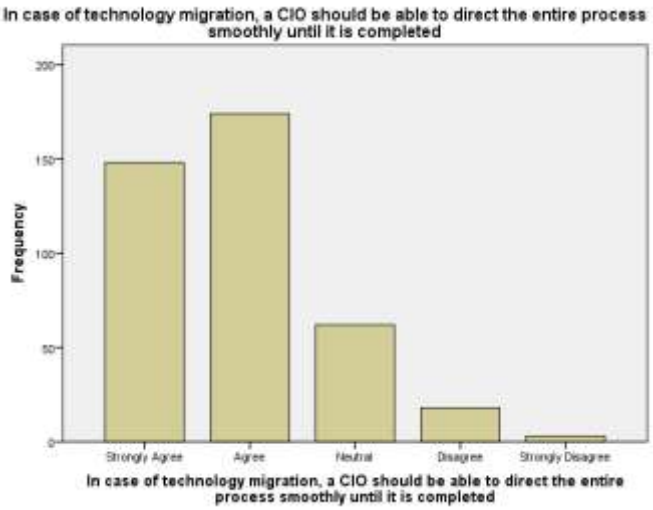

Fig 37:

A total number of 405 respondents expressed their opinion on the fact that In case of technology migration, a CIO should be able to direct the entire process smoothly until it is completed. Out these respondents, one-hundred and seventy-four respondents agreed, and about 148 respondents representing 42.2 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly twenty-one in numbers disagreed, and three of these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about sixty-two in number did appear neutral towards it.

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	171	42.2	42.2	42.2
Agree	184	45.4	45.4	87.7
Neutral	41	10.1	10.1	97.8
Disagree	7	1.7	1.7	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 38: A CIO should provide a clear picture of why and how a technology change will be brought about

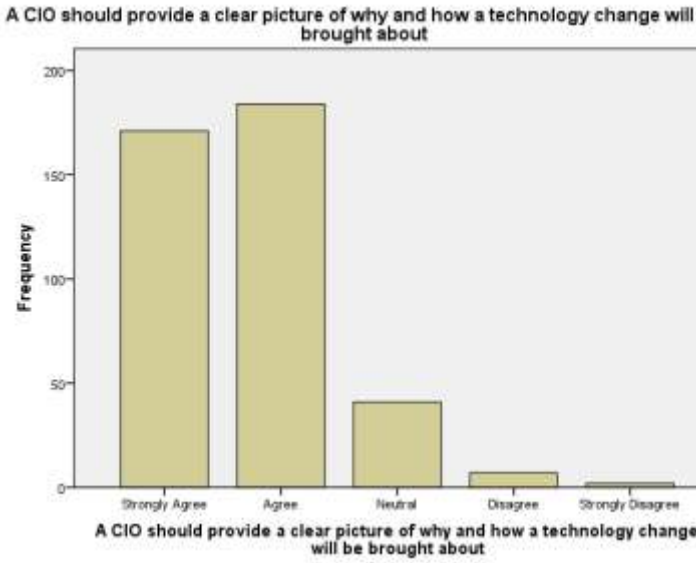

Fig 39:

With respect to Fig, 38 and 39, total number of 405 people responded to the suggested idea stating A CIO should provide a clear picture of why and how a technology change will be brought about.

Exactly one-hundred and seventy-one of these respondents accounting for 42.2 percent of the total respondents, strongly agreed with this idea, and 184 respondents representing 45.4 percent of the total respondents also did agree though not strongly with it. However seven respondents disagreed with the idea and two more respondents strongly showed their own disagreement. Meanwhile exactly forty-one respondents taking up 10.1 percent of the total respondents gave indifference response to the idea

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	170	42.0	42.0	42.0
Agree	181	44.7	44.7	86.7
Neutral	42	10.4	10.4	97.0
Disagree	9	2.2	2.2	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 40: A CIO should be able to recognize the need for change in technology and should be able to educate others about it

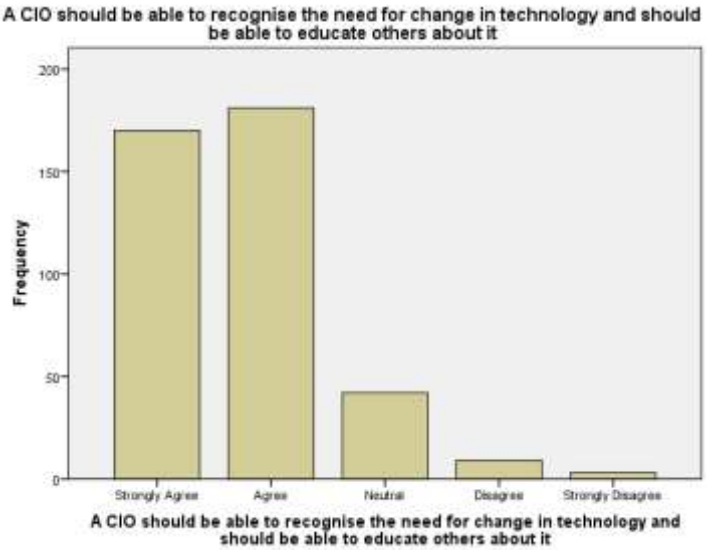

Fig 41:

With respect to Fig, 40 and 41, total number of 405 people responded to the suggested idea stating A CIO should be able to recognize the need for change in technology and should be able to educate others about it

Exactly one-hundred and seventy of these respondents accounting for 42.0 percent of the total respondents, strongly agreed with this idea, and 181 respondents representing 44.7 percent of the total respondents also did agree though not strongly with it. However nine respondents disagreed with the idea and three more respondents strongly showed their own disagreement. Meanwhile exactly forty-two respondents taking up 10.4 percent of the total respondents gave indifference response to the idea

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	161	39.8	39.8	39.8
Agree	172	42.5	42.5	82.2
Neutral	57	14.1	14.1	96.3
Disagree	12	3.0	3.0	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 42: A CIO should be able to clear doubts of the company/ staff regarding the new technology

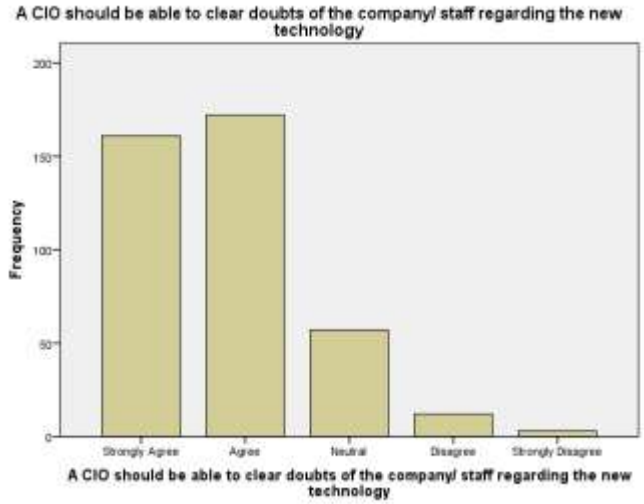

Fig 43:

With respect to Fig, 42 and 43, total number of 405 people responded to the suggested idea stating A CIO should be able to clear doubts of the company/ staff regarding the new technology. Exactly one-hundred and sixty-one of these respondents accounting for 39.8 percent of the total respondents, strongly agreed with this idea, and 172 respondents representing 42.5 percent of the total respondents also did agree though not strongly with it. However twelve respondents disagreed with the idea and three more respondents strongly showed their own disagreement. Meanwhile exactly fifty-seven respondents taking up 14.1 percent of the total respondents gave indifference response to the idea.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	159	39.3	39.3	39.3
Agree	175	43.2	43.2	82.5
Neutral	54	13.3	13.3	95.8
Disagree	11	2.7	2.7	98.5
Strongly Disagree	6	1.5	1.5	100.0
Total	405	100.0	100.0	

Fig 44: A CIO should be able bring in a change in the organizational culture along with the change in technology

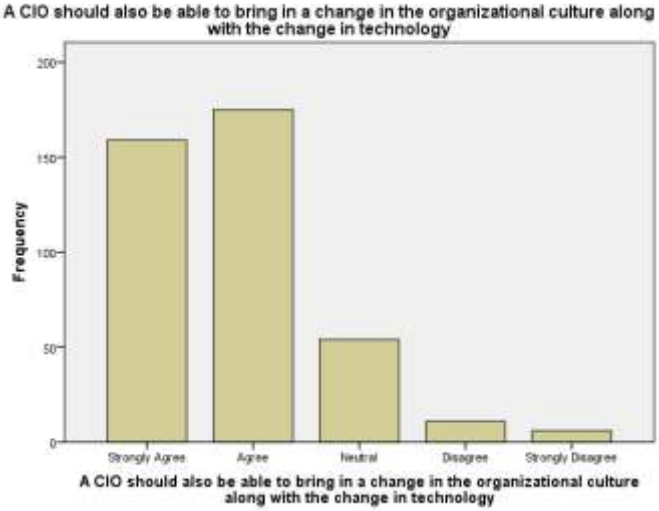

Fig 45:

With respect to Fig, 47 and 48, total number of 405 people responded to the suggested idea stating A CIO should be able bring in a change in the organizational culture along with the change in technology. Exactly one-hundred and fifty-nine of these respondents accounting for 39.3 percent of the total respondents, strongly agreed with this idea, and 175 respondents representing 43.2 percent of the total respondents also did agree though not strongly with it. However eleven respondents disagreed with the idea and six more respondents strongly showed their own disagreement. Meanwhile exactly fifty-four respondents taking up 13.3 percent of the total respondents gave indifference response to the idea.

d. Project Management

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	147	36.3	36.3	36.3
Agree	199	49.1	49.1	85.4
Neutral	45	11.1	11.1	96.5
Disagree	13	3.2	3.2	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 47: A CIO should be able to plan in advance for a particular project

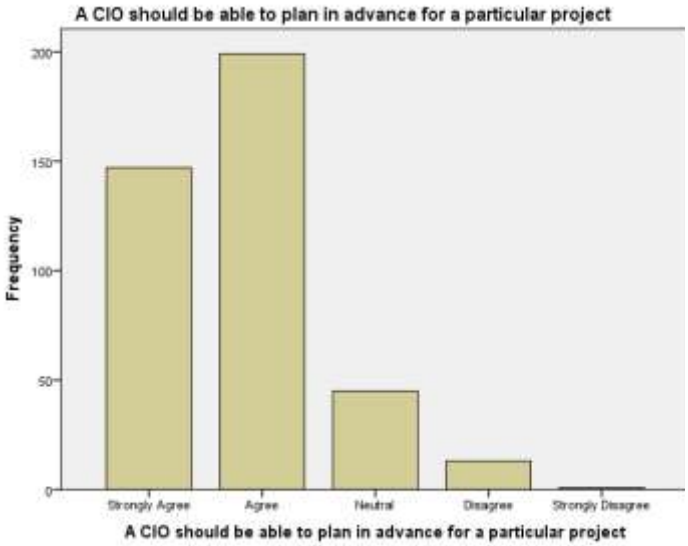

Fig 48:

With respect to Fig, 47 and 48, total number of 405 people responded to the suggested idea stating A CIO should be able to plan in advance for a particular project. Exactly one-hundred and forty-seven of these respondents accounting for 36.3 percent of the total respondents, strongly agreed with this idea, and 199 respondents representing 49.1 percent of the total respondents also did agree though not strongly with it. However thirteen respondents disagreed with the idea and one more respondents strongly showed their own disagreement. Meanwhile exactly forty-five respondents taking up 11.1 percent of the total respondents gave indifference response to the idea.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	129	31.9	31.9	31.9
Agree	198	48.9	48.9	80.7
Neutral	62	15.3	15.3	96.0
Disagree	14	3.5	3.5	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 49: A CIO should be able to take decisions regarding the budget, cost, time-schedule, logistics and procurement of resources required for a particular project

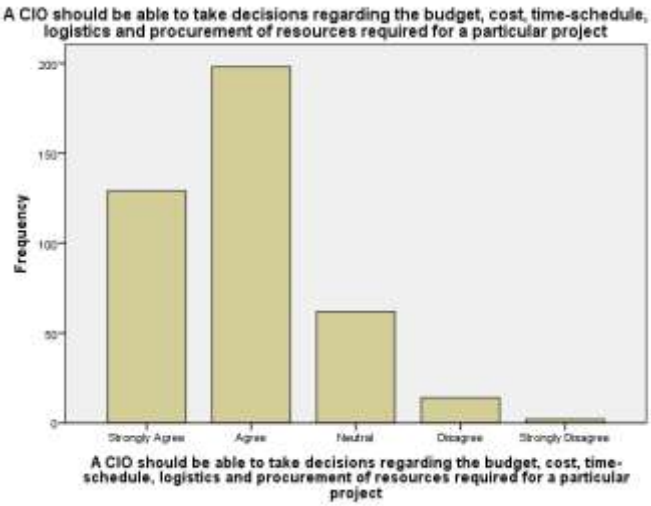

Fig 50:

With respect to Fig, 49 and 50, total number of 405 people responded to the suggested idea stating With respect to Fig, 51 and 52, total number of 405 people responded to the suggested idea stating A CIO should have a clear idea regarding the scope of a particular project and why is it being carried out.. Exactly 163 of these respondents accounting for 40.2 percent of the total respondents, strongly agreed with this idea, and 180 respondents representing 44.4 percent of the total respondents also did agree though not strongly with it.

However fourteen respondents disagreed with the idea and two more respondents strongly showed their own disagreement. Meanwhile exactly sixty-two respondents taking up 15.3 percent of the total respondents gave indifference response to the idea.

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	163	40.2	40.2	40.2
Agree	180	44.4	44.4	84.7
Neutral	49	12.1	12.1	96.8
Disagree	11	2.7	2.7	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 51: A CIO should have a clear idea regarding the scope of a particular project and why is it being carried out.

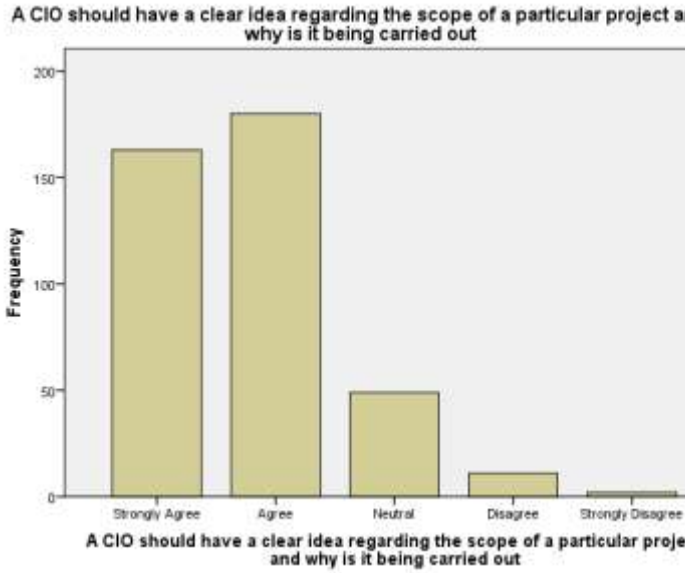

Fig 52:

With respect to Fig, 51 and 52, total number of 405 people responded to the suggested idea stating A CIO should have a clear idea regarding the scope of a particular project and why is it being carried out. Exactly 163 of these respondents accounting for 40.2 percent of the total respondents, strongly agreed with this idea, and 180 respondents representing 44.4 percent of the total respondents also did agree though not strongly with it. However eleven respondents disagreed with the idea and two more respondents strongly showed their own disagreement. Meanwhile exactly forty-nine respondents taking up 12.1 percent of the total respondents gave indifference response to the idea.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	134	33.1	33.1	33.1
Agree	188	46.4	46.4	79.5
Neutral	65	16.0	16.0	95.6
Disagree	16	4.0	4.0	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 54: A CIO should take all possible bottlenecks and risks that might arise during the project into account before going ahead

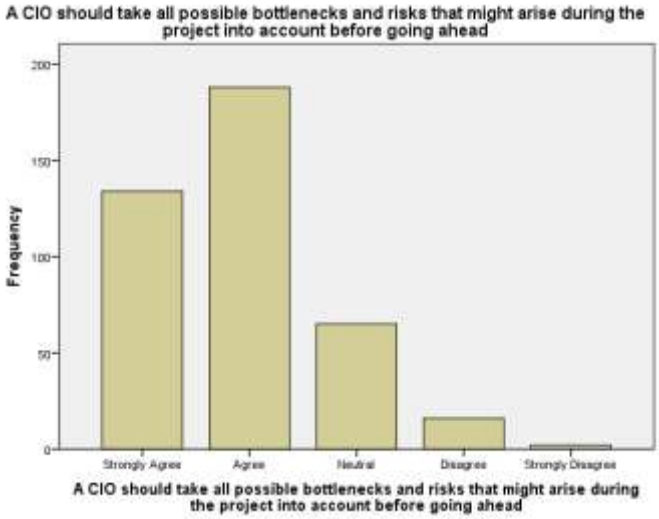

Fig 55:

As showed in Fig. 54 and 55, with the total number of respondents being 405, about one-hundred and thirty-four of the respondents strongly agreed with the notion stating that A CIO should take all possible bottlenecks and risks that might arise during the project into account before going ahead. And 188 respondents representing 46.4 percent of the total respondents did agree also but not very strongly. Total number of respondents who disagreed with this notion was sixteen in number with only two of the remainder respondent who strongly expressed their disagreement. Meanwhile about sixty-five respondents accounting for 16.0 percent of the total respondents neither disagreed nor agreed with notion stated above.

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	134	33.1	33.1	33.1
Agree	207	51.1	51.1	84.2
Neutral	54	13.3	13.3	97.5
Disagree	9	2.2	2.2	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 56: A CIO should take steps for smooth integration of various departments working on a project

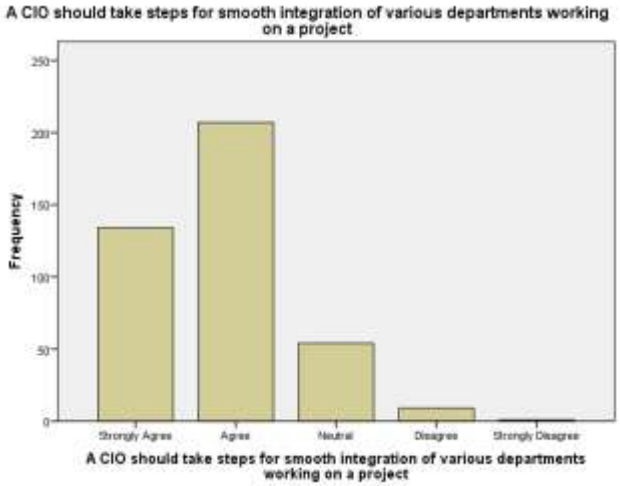

Fig 57:

As showed in Fig. 56 and 57, with the total number of respondents being 405, about one-hundred and thirty-four of the respondents strongly agreed with the notion stating that A CIO should take steps for smooth integration of various departments working on a project. And 207 respondents representing 51.1 percent of the total respondents did agree also but not very strongly. Total number of respondents who disagreed with this notion was nine in number with only one of the remainder respondent who strongly expressed their disagreement. Meanwhile about sixty-four respondents accounting for 13.3 percent of the total respondents neither disagreed nor agreed with notion stated above.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	141	34.8	34.8	34.8
Agree	193	47.7	47.7	82.5
Neutral	62	15.3	15.3	97.8
Disagree	7	1.7	1.7	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 58: A CIO should give due consideration to the governance, compliance and ethical aspects before starting a project

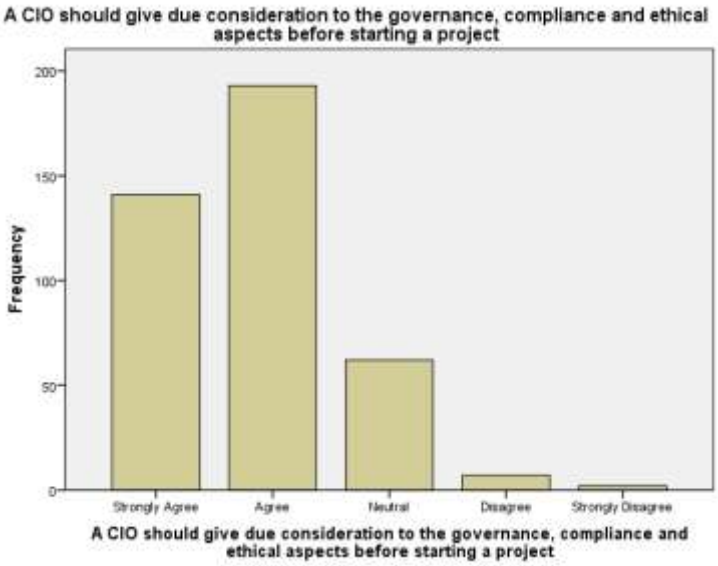

Fig 59:

As showed in Fig. 58 and 59, with the total number of respondents being 405, about one-hundred and forty-one of the respondents strongly agreed with the notion stating that A CIO should give due consideration to the governance, compliance and ethical aspects before starting a project. And 193 respondents representing 47.7 percent of the total respondents did agree also but not very strongly. Total number of respondents who disagreed with this notion was seven in number with two of the remainder respondent who strongly expressed their disagreement. Meanwhile about sixty-two respondents accounting for 15.3 percent of the total respondents neither disagreed nor agreed with notion stated above.

e. Leadership

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	256	63.2	63.2	63.2
Agree	111	27.4	27.4	90.6
Neutral	31	7.7	7.7	98.3
Disagree	7	1.7	1.7	100.0
Total	405	100.0	100.0	

Fig 60: A CIO should be honest and trustworthy and should never resort to unethical practices

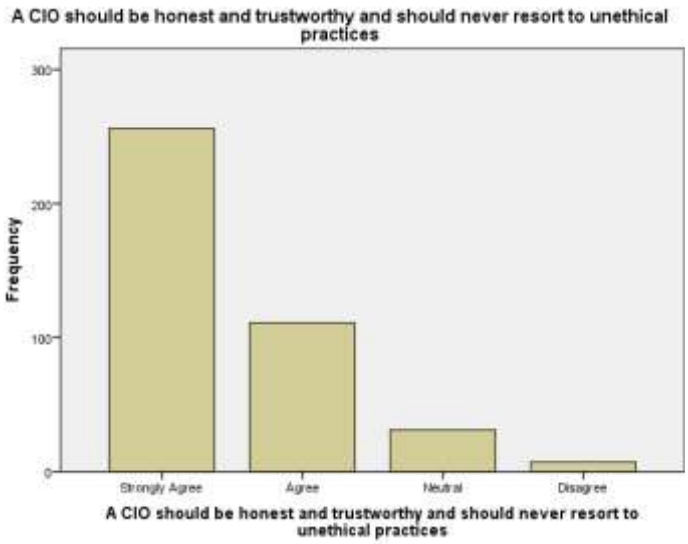

Fig 61:

As showed in Fig. 60 and 61, with the total number of respondents being 405, about 256 of the respondents strongly agreed with the notion stating that A CIO should be honest and trustworthy and should never resort to unethical practices. And 111 respondents representing 27.4 percent of the total respondents did agree also but not very strongly. Total number of respondents who disagreed with this notion was seven in number. Meanwhile about thirty-one respondents accounting for 7.7 percent of the total respondents neither disagree nor agree with notion stated above.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	221	54.6	54.6	54.6
Agree	134	33.1	33.1	87.7
Neutral	39	9.6	9.6	97.3
Disagree	10	2.5	2.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 62: A CIO should be aware of his own strength and weaknesses and the contributions he can make

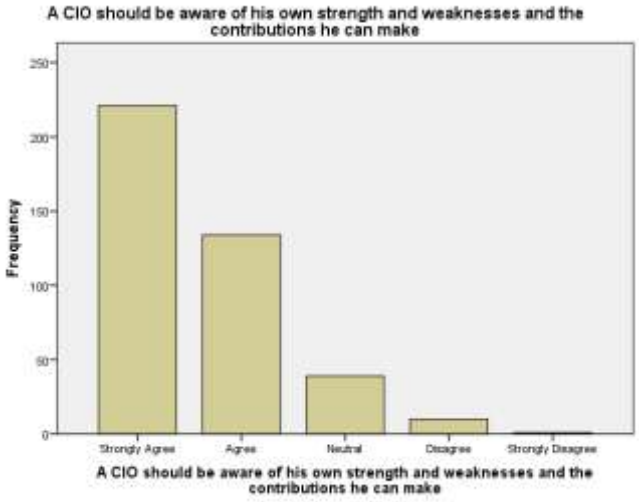

Fig 63:

As showed in Fig. 62 and 63, with the total number of respondents being 405, about 221 of the respondents strongly agreed with the notion stating that A CIO should be aware of his own strength and weaknesses and the contributions he can make. And 134 respondents representing 33.1 percent of the total respondents did agree also but not very strongly. Total number of respondents who disagreed with this notion was eleven in number and only one of these respondents did strongly disagree. Meanwhile about thirty-nine respondents accounting for 9.6 percent of the total respondents neither disagree nor agree with notion stated above.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	211	52.1	52.1	52.1
Agree	154	38.0	38.0	90.1
Neutral	30	7.4	7.4	97.5
Disagree	8	2.0	2.0	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 64: A CIO should have a clear picture the long term benefits and sustenance of the technology of the company

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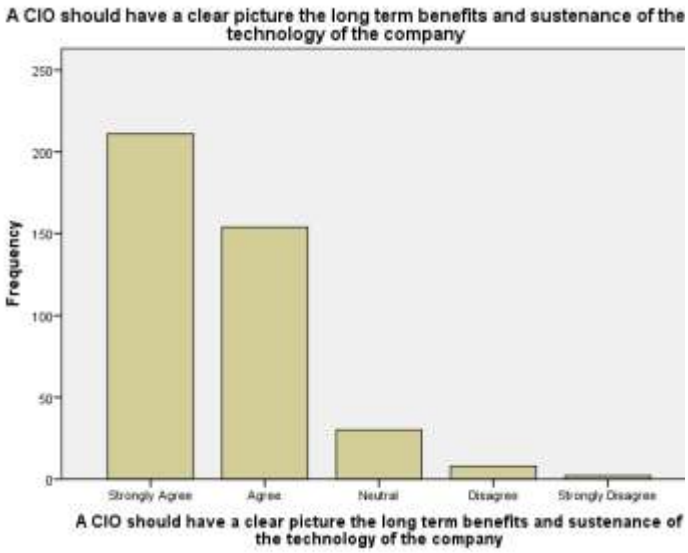

Fig 65:

As showed in Fig. 64 and 65, with the total number of respondents being 405, about 211 of the respondents strongly agreed with the notion stating that A CIO should have a clear picture the long term benefits and sustenance of the technology of the company. And 154 respondents representing 38.0 percent of the total respondents did agree also but not very strongly. Total number of respondents who disagreed with this notion was eight in number and two of these respondents did strongly disagree. Meanwhile thirty respondents accounting 7.4 percent of the total respondents neither disagree nor agree with notion stated above.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	208	51.4	51.4	51.4
Agree	150	37.0	37.0	88.4
Neutral	37	9.1	9.1	97.5
Disagree	6	1.5	1.5	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 66: The CIO should be confident enough to take tough and strategic technological decisions for the company

With the respect to the data computed in Fig 66 and 67, the total number of respondents to the notion stating that The CIO should be confident enough to take tough and strategic technological decisions for the company, were 405. About two-hundred and eight of these respondents taking up 51.4 percent of the total respondents strongly agreed with this notion, and about 150 respondents, representing a whopping 37.0 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about six persons in number and representing 1.5 percent of the total respondents, disagreed with the notion, while four more respondents strongly disagreed. However a few number of respondents, which are exactly thirty-seven in number and accounting for 9.1 percent of the total respondents, neither agree nor disagree with the stated notion.

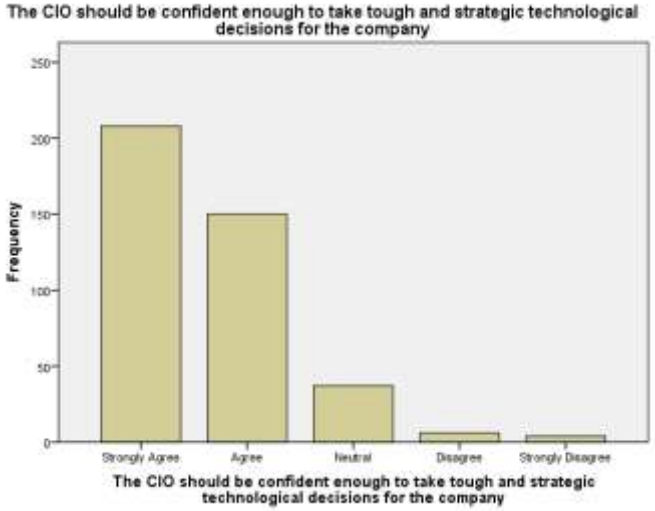

Fig 67:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	221	54.6	54.6	54.6
Agree	143	35.3	35.3	89.9
Neutral	29	7.2	7.2	97.0
Disagree	10	2.5	2.5	99.5
Strongly Disagree	2	5	5	100.0
Total	405	100.0	100.0	

Fig 68: The CIO should be able to communicate his views and plans effectively to his subordinates and colleagues

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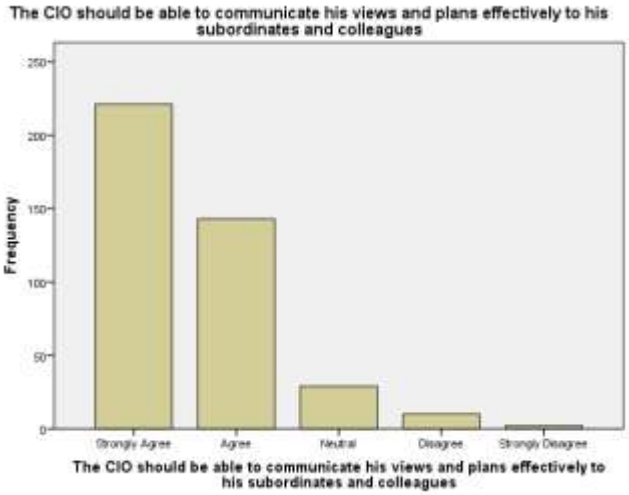

Fig 69:

With the respect to the data computed in Fig 68 and 69, the total number of respondents to the notion stating that The CIO should be able to communicate his views and plans effectively to his subordinates and colleagues, were 405. About two-hundred and twenty one of these respondents taking up 54.6 percent of the total respondents strongly agreed with this notion, and about 143 respondents, representing a whopping 35.3 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about ten persons in number and representing 2.5 percent of the total respondents, disagreed with the notion, while two more respondents strongly disagreed. However a few number of respondents, which are exactly twenty-nine in number and accounting for 7.2 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	209	51.6	51.6	51.6
Agree	141	34.8	34.8	86.4
Neutral	41	10.1	10.1	96.5
Disagree	9	2.2	2.2	98.8
Strongly Disagree	5	1.2	1.2	100.0
Total	405	100.0	100.0	

Fig 70: A CIO should be a team player and should take his team into confidence before making plans

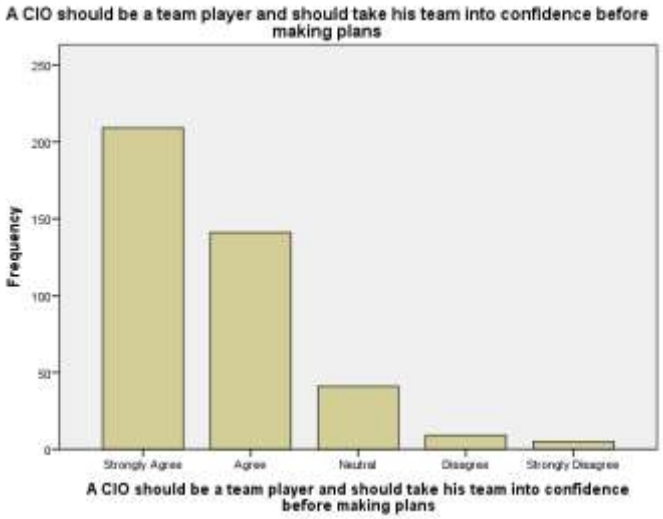

Fig 71:

With the respect to the data computed in Fig 70 and 71, the total number of respondents to the notion stating A CIO should be a team player and should take his team into confidence before making plans, were 405. About two-hundred and nine of these respondents taking up 51.6 percent of the total respondents strongly agreed with this notion, and about 141 respondents, representing a whopping 34.8 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about nine persons in number and representing 2.2 percent of the total respondents, disagreed with the notion, while five more respondents strongly disagreed. However a few number of respondents, which are exactly forty-one in number and accounting for 10.1 percent of the total respondents, neither agree nor disagree with the stated notion.

f. Technical Expertise

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	187	46.2	46.2	46.2
Agree	167	41.2	41.2	87.4
Neutral	48	11.9	11.9	99.3
Disagree	1	.2	.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 72: A CIO should have sound knowledge of information technology and its application in business

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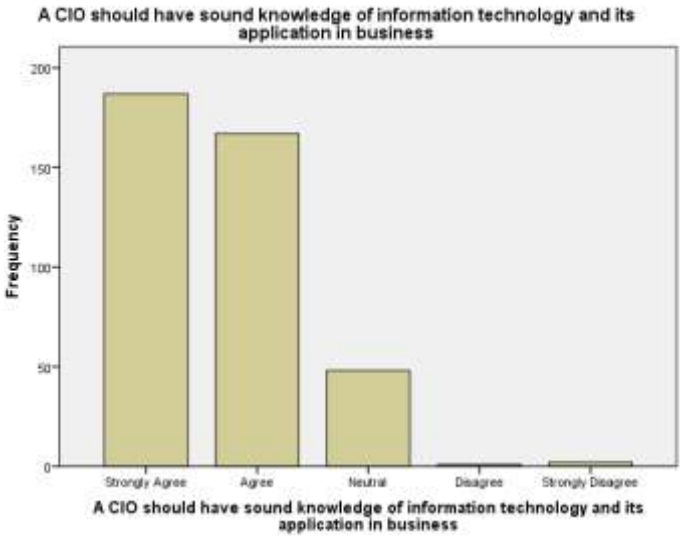

Fig 73:

With the respect to the data computed in Fig 72 and 73, the total number of respondents to the notion stating A CIO should have sound knowledge of information technology and its application in business, were 405. About one-hundred and eighty-seven of these respondents taking up 46.2 percent of the total respondents strongly agreed with this notion, and about 167 respondents, representing a whopping 41.2 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, one one person in number and representing 0.2 percent of the total respondents, disagreed with the notion, while two more respondents strongly disagreed. However a few number of respondents, which are exactly forty-eight in number and accounting for 11.9 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	142	35.1	35.1	35.1
Agree	192	47.4	47.4	82.5
Neutral	57	14.1	14.1	96.5
Disagree	10	2.5	2.5	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 74: A CIO should be well experienced in various domains of IT and related fields

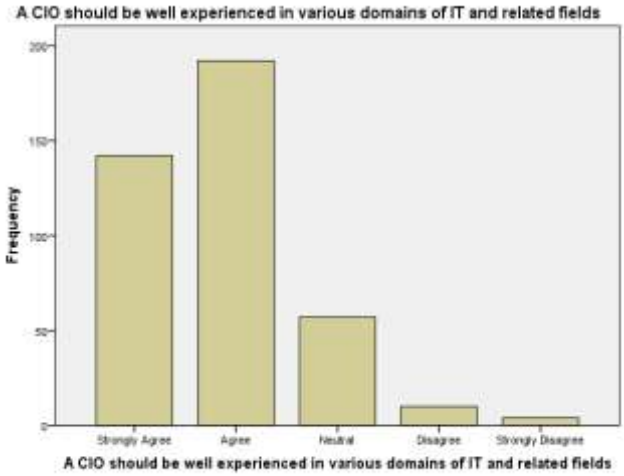

Fig 75:

With the respect to the data computed in Fig 74 and 75, the total number of respondents to the notion stating that A CIO should be well experienced in various domains of IT and related fields, were 405. About one-hundred and forty-two of these respondents taking up 35.1 percent of the total respondents strongly agreed with this notion, and about 192 respondents, representing a whopping 47.4 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, ten in number and representing 2.5 percent of the total respondents, disagreed with the notion, while four more respondents strongly disagreed. However a few number of respondents, which are exactly fifty-seven in number and accounting for 14.1 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	120	29.6	29.6	29.6
Agree	186	45.9	45.9	75.6
Neutral	68	16.8	16.8	92.3
Disagree	27	6.7	6.7	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 76: Before investing in a novel technology, a CIO should ensure he is entirely familiar with the technology

With the respect to the data computed in Fig 76 and 77, the total number of respondents to the notion stating that before investing in a novel technology, a CIO should ensure he is entirely familiar with the technology, were 405. About one-hundred and twenty of these respondents taking up 29.6 percent of the total respondents strongly agreed with this notion, and about 186 respondents, representing a whopping 45.9 percent of the total respondents also agreed with the

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notion albeit not strongly. A very handful of respondents, twenty-seven in number and representing 6.7 percent of the total respondents, disagreed with the notion, while four more respondents strongly disagreed. However a few number of respondents, which are exactly sixty-eight in number and accounting for 16.8 percent of the total respondents, neither agree nor disagree with the stated notion.

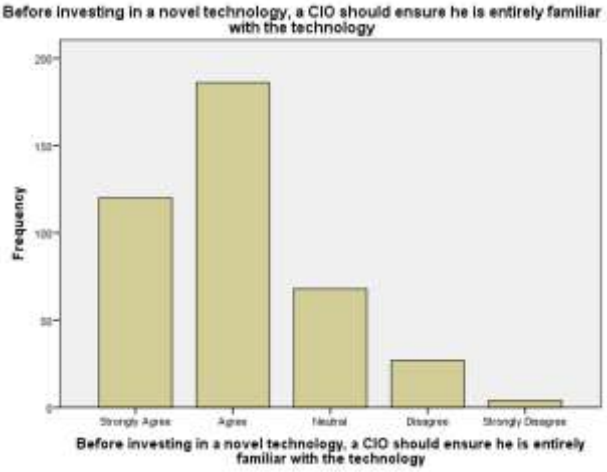

Fig 77:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	94	23.2	23.2	23.2
Agree	146	36.0	36.0	59.3
Neutral	100	24.7	24.7	84.0
Disagree	55	13.6	13.6	97.5
Strongly Disagree	10	2.5	2.5	100.0
Total	405	100.0	100.0	

Fig 78: A CIO should have a firsthand working experience of the technology adopted in the company

With the respect to the data computed in Fig 78 and 79, the total number of respondents to the notion stating that A CIO should have a firsthand working experience of the technology adopted in the company, were 405. About ninety-four of these respondents taking up 23.2 percent of the total respondents strongly agreed with this notion, and about 146 respondents, representing a whopping 36.0 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, fifty-five in number and representing 2.5 percent of the total respondents, disagreed with the notion, while ten more respondents strongly disagreed. However a few number of respondents, which are exactly a hundred in number and accounting for 27.4 percent of the total respondents, neither agree nor disagree with the stated notion.

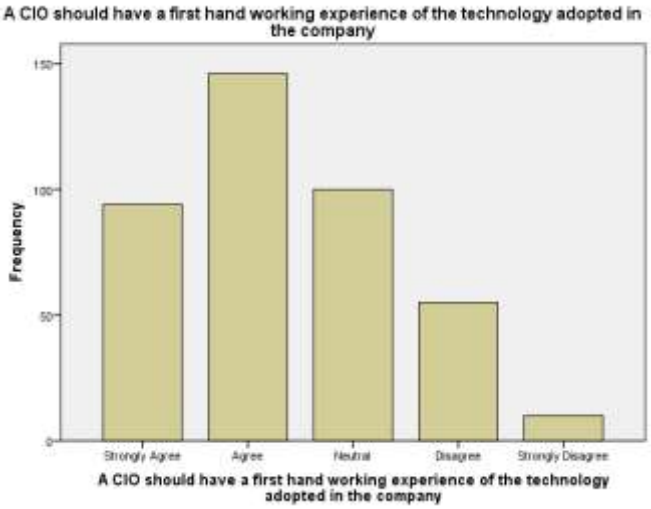

Fig 79:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	114	28.1	28.1	28.1
Agree	192	47.4	47.4	75.6
Neutral	76	18.8	18.8	94.3
Disagree	18	4.4	4.4	98.8
Strongly Disagree	5	1.2	1.2	100.0
Total	405	100.0	100.0	

Fig 80: A CIO should be able to provide technical inputs for improvement of existing technology

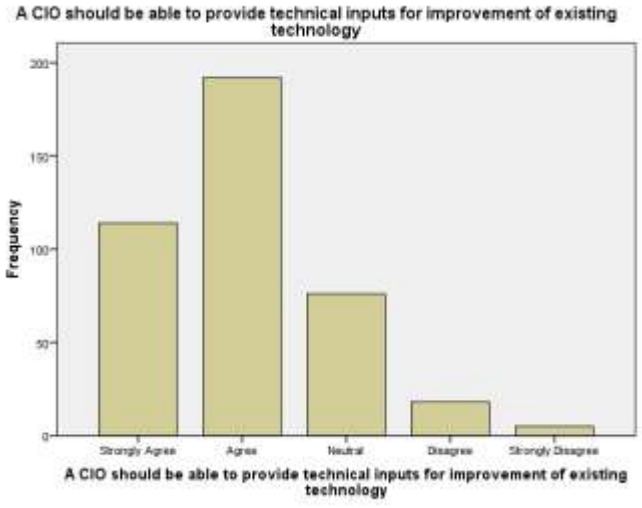

Fig 81:

In accordance with the data collected in Fig. 80 and 81, the total number of respondents who made known their opinion on

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the suggestion stating A CIO should be able to provide technical inputs for improvement of existing technology were 306 in all. About 114 of these respondents accounting for 28.1 percent of the total respondents, strongly agreed with the suggestion, while about 192 respondents taking up 47.4 percent of the total respondents, did agree with the suggestion though not very strongly. However about eighteen of the remainder respondents showed their disagreement with suggestion and only five persons of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are seventy-six in number, accounting for the remaining 18.8 percent of the total respondents.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	107	26.4	26.4	26.4
Agree	159	39.3	39.3	65.7
Neutral	81	20.0	20.0	85.7
Disagree	45	11.1	11.1	96.8
Strongly Disagree	13	3.2	3.2	100.0
Total	405	100.0	100.0	

Fig 82: A CIO should himself be aware of troubleshooting and other mechanisms to be used in cases of emergencies

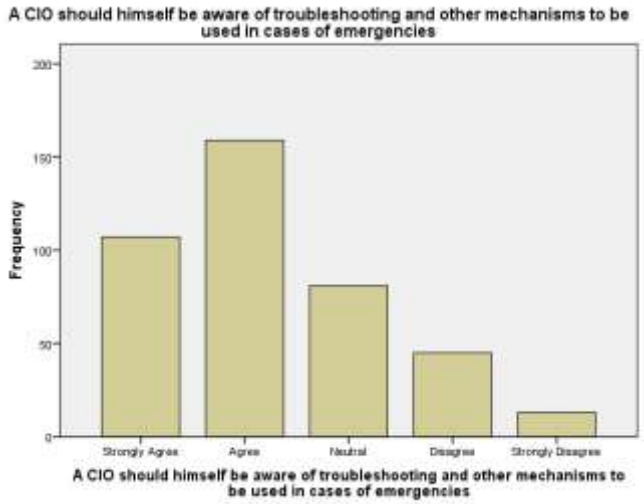

Fig 83:

In accord with the data collected in Fig. 82 and 83, the total number of respondents who made known their opinion on the suggestion stating A CIO should himself be aware of troubleshooting and other mechanisms to be used in cases of emergencies were 266 in all. About 107 of these respondents accounting for 26.4 percent of the total respondents, strongly agreed with the suggestion, while about 159 respondents taking up 39.3 percent of the total respondents, did agree with the suggestion though not very strongly. However about forty-five of the remainder respondents showed their disagreement with suggestion and only thirteen persons of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are eighty-one in number, accounting for the remaining 20.0 percent of the total respondents.

g. Policy Knowledge

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	125	30.9	30.9	30.9
Agree	179	44.2	44.2	75.1
Neutral	70	17.3	17.3	92.3
Disagree	25	6.2	6.2	98.5
Strongly Disagree	6	1.5	1.5	100.0
Total	405	100.0	100.0	

Fig 84: A CIO should keep himself updated with regard to technology by taking regular certifications, training, etc

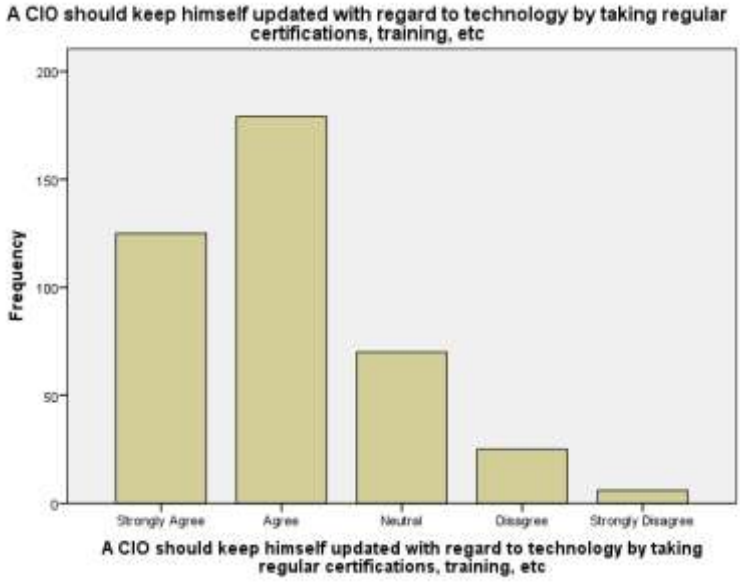

Fig 85:

In accordance with the data collected in Fig. 84 and 85, the total number of respondents who made known their opinion on the suggestion stating A CIO should keep himself updated with regard to technology by taking regular certifications, training, etc, were 304 in all. About 125 of these respondents accounting for 30.9 percent of the total respondents, strongly agreed with the suggestion, while about 179 respondents

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taking up 44.2 percent of the total respondents, did agree with the suggestion though not very strongly. However about twenty-five of the remainder respondents showed their disagreement with suggestion and only six persons of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are seventy in number, accounting for the remaining 17.3 percent of the total respondents.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	199	49.1	49.1	49.1
Agree	166	41.0	41.0	90.1
Neutral	32	7.9	7.9	98.0
Disagree	6	1.5	1.5	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 86: A CIO should have a sound knowledge of the policies and guidelines of the company

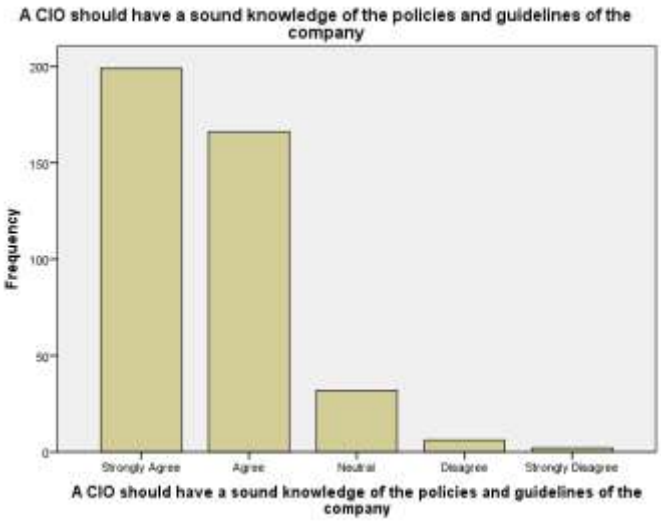

Fig 87:

In line with the data collected in Fig. 86 and 87, the total number of respondents who made known their opinion on the suggestion stating A CIO should ensure that the staff of the company are educated about the policy guidelines, SLAs, etc., were 365 in all. About 199 of these respondents accounting for 49.1 percent of the total respondents, strongly agreed with the suggestion, while about 166 respondents taking up 41.0 percent of the total respondents, did agree with the suggestion though not very strongly. However about six of the remainder respondents showed their disagreement with suggestion and only two person of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are thirty-two in number, accounting for the remaining 7.9 percent of the total respondents.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	143	35.3	35.3	35.3
Agree	196	48.4	48.4	83.7
Neutral	55	13.6	13.6	97.3
Disagree	10	2.5	2.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 88: A CIO should ensure that the staff of the company are educated about the policy guidelines, SLAs, etc.

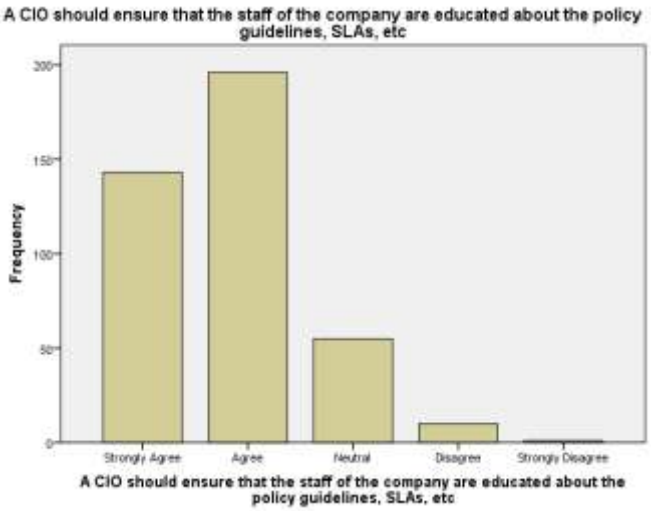

Fig 89:

In agreement with the data computed in Fig. 88 and 89, the total number of respondents who made known their opinion on the suggestion stating A CIO should ensure that the staff of the company are educated about the policy guidelines, SLAs, etc., were 339 in all. About 143 of these respondents accounting for 35.3 percent of the total respondents, strongly agreed with the suggestion, while about 196 respondents taking up 48.4 percent of the total respondents, did agree with the suggestion though not very strongly. However about ten of the remainder respondents showed their disagreement with suggestion and only a single person of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are fifty-five in number, accounting for the remaining 13.6 percent of the total respondents.

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In consonance with the data computed in Fig. 90 and 91, the total number of respondents who made known their opinion on the suggestion stating A CIO should be aware of all the SLAs and compliance requirements before going ahead with a project, were 342 in all. About 136 of these respondents accounting for 33.6 percent of the total respondents, strongly agreed with the suggestion, while about 206 respondents taking up 50.9 percent of the total respondents, did agree with the suggestion though not very strongly. However about nine respondents showed their disagreement with suggestion and only a single person of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are fifty-three in number, accounting for the remaining 13.1 percent of the total respondents.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	136	33.6	33.6	33.6
Agree	206	50.9	50.9	84.4
Neutral	53	13.1	13.1	97.5
Disagree	9	2.2	2.2	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 90: A CIO should be aware of all the SLAs and compliance requirements before going ahead with a project

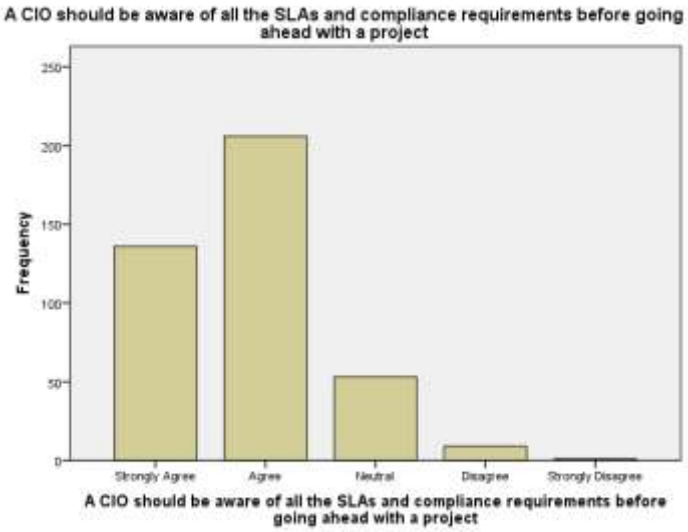

Fig 91:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	133	32.8	32.8	32.8
Agree	190	46.9	46.9	79.8
Neutral	62	15.3	15.3	95.1
Disagree	16	4.0	4.0	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 92: A CIO should ensure that the employees comply with the policy guidelines SLAs, etc.

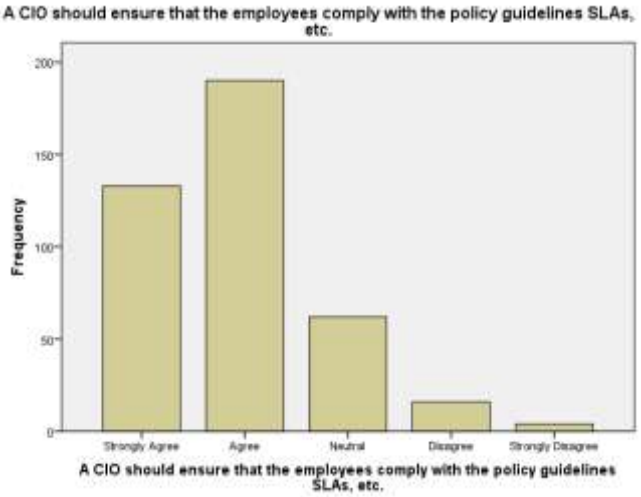

Fig 93:

In consonance with the data computed in Fig. 92 and 93, the total number of respondents who made known their opinion on the suggestion stating A CIO should ensure that the employees comply with the policy guidelines SLAs, etc., were 323 in all. About 133 of these respondents accounting for 32.8 percent of the total respondents, strongly agreed with the suggestion, while about 190 respondents taking up 46.9 percent of the total respondents, did agree with the suggestion though not very strongly. However about sixteen respondents showed their disagreement with suggestion and four of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are sixty-two in number, accounting for the remaining 15.3 percent of the total respondents.

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	154	38.0	38.0	38.0
Agree	200	49.4	49.4	87.4
Neutral	42	10.4	10.4	97.8
Disagree	7	1.7	1.7	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 94: A CIO should have a clear idea regarding the need to comply with policies and guidelines

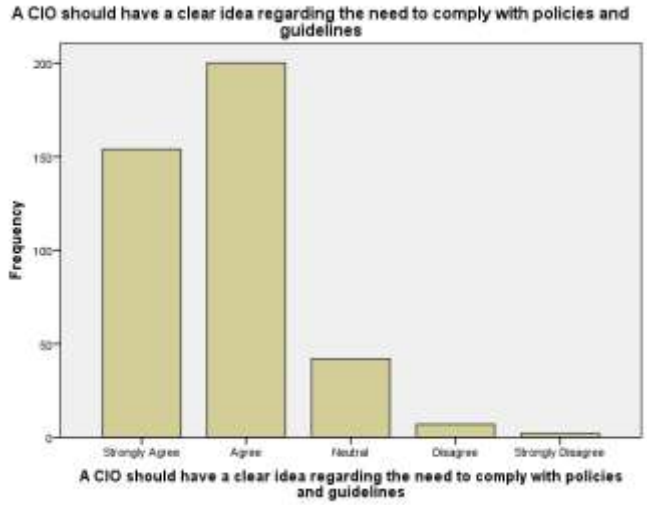

Fig 95:

In congruence with the Fig. 94 and 95, where the total number of respondents were 405, exactly 154 respondents, representing thirty-eight percent of the total respondents strongly agreed with notion stating that A CIO should have a clear idea regarding the need to comply with policies and guidelines. Also 200 respondents accounting for forty-nine percent of the total respondents did agree albeit not strongly with this idea. However few numbers of respondents summing up to two in number expressed their dissension and seven of these respondents strongly expressed their disagreement with the suggestion. Meanwhile the remaining forty-two respondents representing 10.4 percent of the total respondents neither agree nor disagree with stated suggestion above.

h. Resource Planning

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	142	35.1	35.1	35.1
Agree	202	49.9	49.9	84.9
Neutral	53	13.1	13.1	98.0
Disagree	6	1.5	1.5	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 96: A CIO should be aware of the resources to be deployed in a project

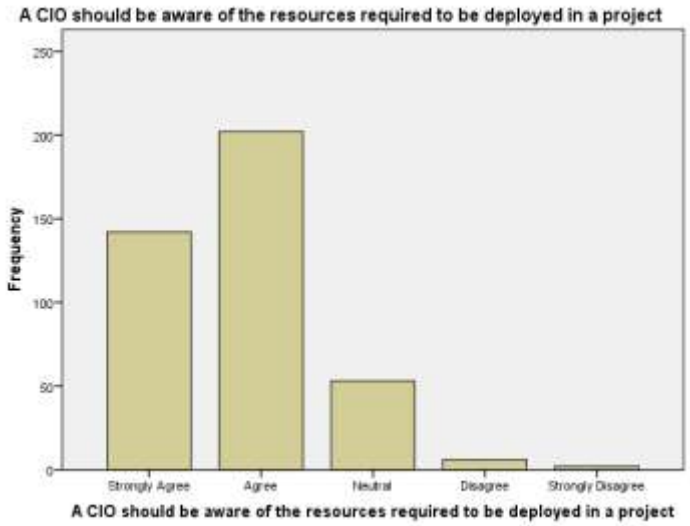

Fig 97:

In congruence with the Fig. 96 and 97, where the total number of respondents was 405, exactly 142 respondents, representing 35.1 percent of the total respondents strongly agreed with notion stating that A CIO should be aware of the resources to be deployed in a project. Also 202 respondents accounting for 49.9 percent of the total respondents did agree albeit not strongly with this idea. However few numbers of respondents summing up to two in number expressed their dissension and six of these respondents strongly expressed their disagreement with the suggestion. Meanwhile the remaining fifty-three respondents representing 13.1 percent of the total respondents neither agree nor disagree with stated suggestion above.

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	124	30.6	30.6	30.6
Agree	196	48.4	48.4	79.0
Neutral	63	15.6	15.6	94.6
Disagree	20	4.9	4.9	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 98: A CIO should plan in advance how the available resources will be employed in a particular project

In line with the data computed in Fig. 98 and 99, the total number of respondents who made known their opinion on the suggestion stating that A CIO should plan in advance how the available resources will be employed in a particular project, were 320 in all. About 124 of these respondents accounting for 30.6 percent of the total respondents, strongly agreed with the suggestion, while about 196 respondents taking up 48.4 percent of the total respondents, did agree with the suggestion though not strongly. However about 20 respondents showed their disagreement with suggestion and two of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are 63 in number, accounting for the remaining 15.6 percent of the total respondents.

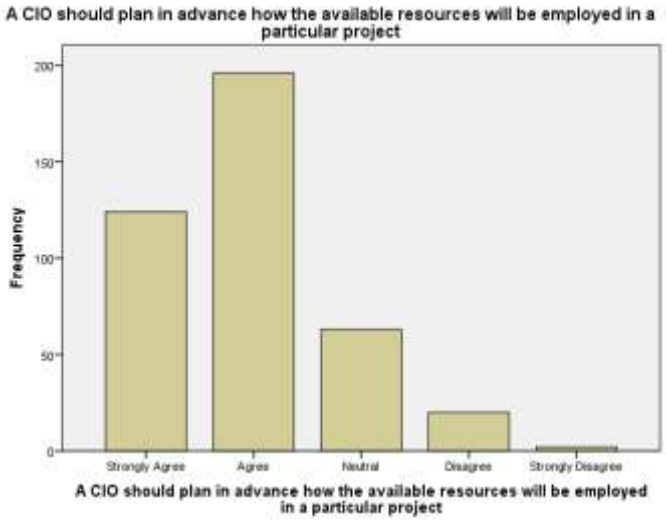

Fig 99:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	131	32.3	32.3	32.3
Agree	197	48.6	48.6	81.0
Neutral	59	14.6	14.6	95.6
Disagree	15	3.7	3.7	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 100: A CIO should give due consideration to all types of resources, i.e, human, monetary, technical, etc to be deployed

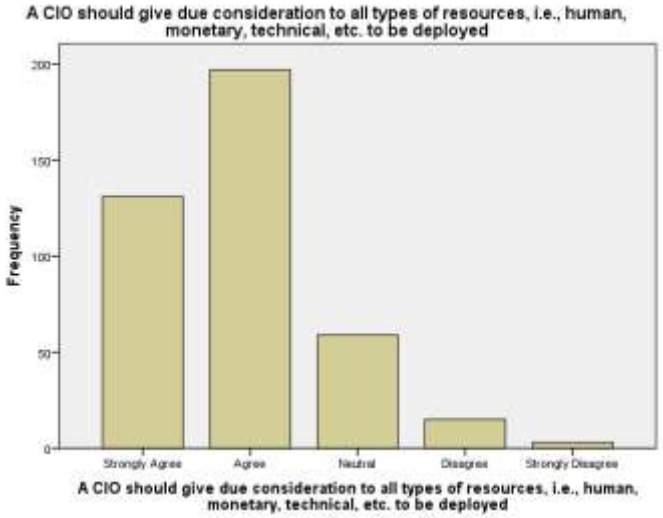

Fig 101:

In line with the data computed in Fig. 100 and 101, the total number of respondents who made known their opinion on the suggestion stating that A CIO should give due consideration to all types of resources, i.e, human, monetary, technical, etc to be deployed, were 318 in all. About 131 of these respondents accounting for 32.3 percent of the total respondents, strongly agreed with the suggestion, while about 197 respondents taking up 48.6 percent of the total respondents, did agree with the suggestion though not strongly. However about 15 respondents showed their disagreement with suggestion and three of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are 59 in number, accounting for the remaining 14.6 percent of the total respondents.

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	118	29.1	29.1	29.1
Agree	214	52.8	52.8	82.0
Neutral	58	14.3	14.3	96.3
Disagree	14	3.5	3.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 102: A CIO should be able to optimally utilize the resources to achieve objectives of the project/company

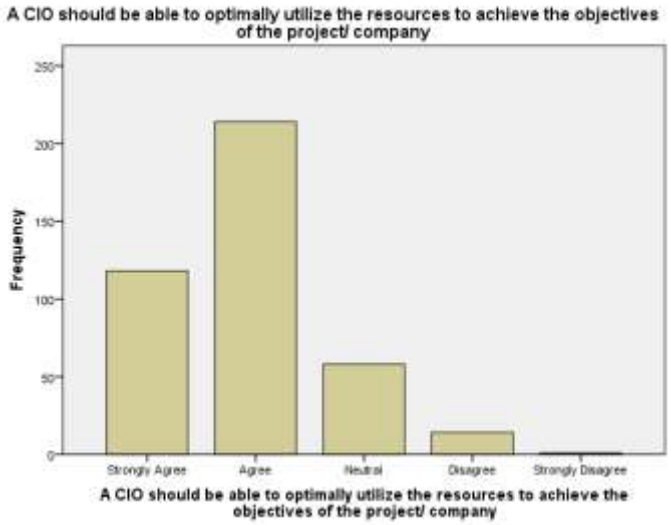

Fig 103

In phase with the data computed in Fig. 104 and 105, the total number of respondents who made known their opinion on the suggestion stating that In times of resource constraints, a CIO should ensure that the progress of the project is not hampered, were 331 in all. About 208 of these respondents accounting for 51.4 percent of the total respondents, strongly agreed with the suggestion, while about 123 respondents taking up 30.4 percent of the total respondents, did agree with the suggestion though not strongly. However about 13 respondents showed their disagreement with suggestion and two of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are 59 in number, accounting for the remaining 14.6 percent of the total respondents.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	123	30.4	30.4	30.4
Agree	208	51.4	51.4	81.7
Neutral	59	14.6	14.6	96.3
Disagree	13	3.2	3.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 104: In times of resource constraints, a CIO should ensure that the progress of the project is not hampered

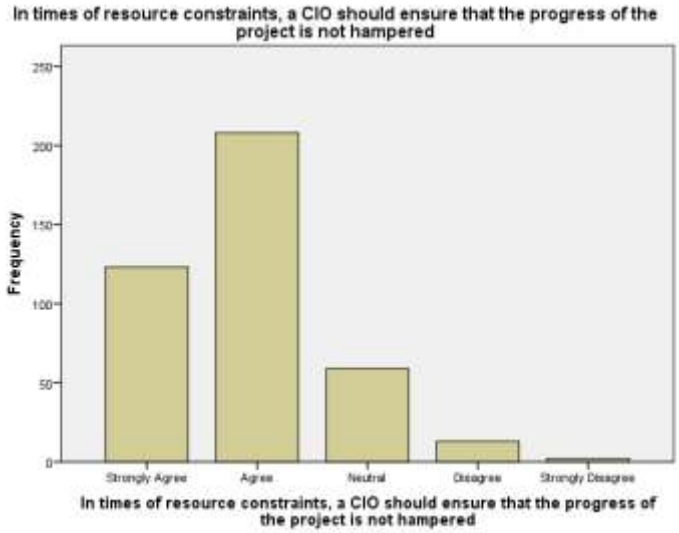

Fig 105:

In phase with the data computed in Fig. 104 and 105, the total number of respondents who made known their opinion on the suggestion stating that in times of resource constraints, a CIO should ensure that the progress of the project is not hampered, were 331 in all. About 208 of these respondents accounting for 51.4 percent of the total respondents, strongly agreed with the suggestion, while about 123 respondents taking up 30.4 percent of the total respondents, did agree with the suggestion though not strongly. However about 13 respondents showed their disagreement with suggestion and two of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are 59 in number, accounting for the remaining 14.6 percent of the total respondents.

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	130	32.1	32.1	32.1
Agree	206	50.9	50.9	83.0
Neutral	57	14.1	14.1	97.0
Disagree	11	2.7	2.7	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 106: A CIO should be able to procure good quality resources at reasonable costs.

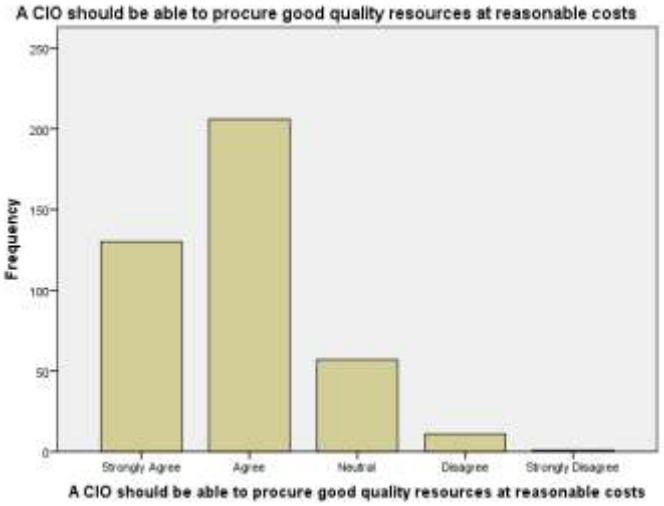

Fig 107:

In phase with the data computed in Fig. 106 and 107, the total number of respondents who made known their opinion on the suggestion stating a CIO should be able to procure good quality resources at reasonable costs, were 336 in all. About 130 of these respondents accounting for 32.1 percent of the total respondents, strongly agreed with the suggestion, while about 206 respondents taking up 50.9 percent of the total respondents, did agree with the suggestion though not strongly. However about 11 respondents showed their disagreement with suggestion and one of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are 57 in number, accounting for the remaining 14.1 percent of the total respondents.

V. CONCLUSION AND RECOMMENDATIONS

As technology progressively turns into an essential driver of business transformation and development, the time of business-driven, technology-empowered organizations is slowing down. Forward-looking organizations and their CIOs can rather receive a technology-driven, business-empowered mentality to drive transformation, development, and income. CIOs can likewise advocate a technology familiarity program that instructs C-suite and business work leaders on the capability of new advancements, approaches to organize and convey technology arrangements, and the more extensive guide of technology needs to be expected to understand the organizations vision.

The results of this study states that the role of a CIO is very important for any technological firm. The capital and investment planning competency analysis of the CIO states that the CIO should have competency to assess the capital required for any new technologies. The CIO should have good knowledge of investing in any profitable technologies or platforms. Considering these facts the CIO should be constant explorer of profitable technologies are services available in the market. The CIO should have a fair understanding of the cost of such technologies and should make the investment decisions based on the business climate. It can be even based on market demand, competitor handling, innovative products and service etc. In order to be successful a CIO should make strategies to align the IT objectives of the organization with the corporate goals of the company.

The study regarding the E-Business and E-Governance competency skills of a CIO states that a CIO should a fair understanding of the ecommerce and e-governance, the CIO should also know the e-marketing strategies to promote the business of the company. This skills can vary in different companies. Some companies would have dedicated teams for this, in such scenarios the CIO should know how to effectively use the teams for the benefit of the company. In the ecommerce and e-business era a CIO should be aware of the various e-business/e-commerce practices and trends available in the market and the CIO should also promote their organization to develop suitable e-commerce/business solutions or products. In the innovative market the CIO should come up with strategies to promote e-governance of the IT related activities of the organization and the CIO should consider e-commerce and e-business as a major parameter for driving the business of the organization to the next level.

The Analysis of the change management skills of a CIO states that a CIO should always see for ways to improve the existing technologies and platforms of the company. Considering this fact a CIO can be called as a chief technology change officer too

In the current market all the organizations are transforming on a daily basis so the CIO has to play a major role in the smooth transition of a company from one technology to another with no major impact to the business The CIO has to act as a key person to direct the changes processes smoothly until it is completed. A CIO should also have the talents to understand

and need for a change then foresee why and how a technology change can be brought in to the business. The CIO should be able to clear doubts of the staff or executives regarding the changes in new technology and the CIO should have the necessary talents to bring cultural change to an organization.

The project management competencies of a CIO is very important in any organization. The CIO should be able to take project management decisions along with budget, cost, time schedule, logistics and procurement of resources required for a project. The CIO should also have a clear scope of a particular project why it is being carried out and he should have the necessary skills to handle the possible bottleneck and risks associated with a project. The CIO should also be able to take necessary steps for smooth integration of various departments working on a project and he should be able to give due consideration to governance, compliance and ethical aspects before starting a project.

The analysis of the importance of leadership skills of a CIO states that the CIO should be trustworthy and should be well aware of his strengths and weakness and the contributions what he can offer to the organization. The CIO should also have a clear picture of the long term benefits and sustenance of the technology the CIO should be confident enough to take tough and strategic technological decisions of the company. The CIO should be a good team player and should be able to communicate his view and plans effectively to his subordinates.

The analysis of technical expertise skills of a CIO states that the knowledge of various IT domains is an added advantage for any CIOs. This would be an important factor for organizations operating with one key technical person operating and CIO and CTO. In such scenarios a CIO with good working knowledge on technology is important. Such combined designations would be able to provide technical direction and inputs to the teams working under him or her and the CIO should also be able to know about the troubleshooting methodologies required to fix issues in their infrastructure. A CIO who is acting as CTO should also be focusing on continual technology learning by attending various trainings and certifications in IT industry

A CIO being the key person of IT should have adequate knowledge of the company polices and guidelines. He should also be able to educate his team about the various policies including the IT policies of the company so that his team is prepared to manage the situations effectively. The CIO should be well aware of the policies, SLA, contracts and should ensure that the IT tower adheres to such policies and agreements. This is also an important factor for the statutory obligations of the company. The analysis on the resource planning states that CIO should have the competencies to plan the resources, use them effectively , optimize their workloads in the projects, then hire the best talents at the best cost.

In this paper, we have given the proof which recognizes and affirms basic competencies required for the job of a global CIO based on the quantitative and subjective reactions of 405 respondents. The proof displayed in the dialog segment demonstrates that the global CIO job has turned out to be progressively key and business centered. The consequences of this investigation additionally demonstrate that the CIO job is predominately that of a business strategist who plans the ICT technique to acknowledge business methodology and objectives through the practical leadership of the ICT aggregate in an organization/organization. The delicate aptitudes rule the basic competency set for the CIO. Be that as it may, the CIO likewise needs an abnormal state comprehension of key technology and administration learning, in this manner, having proficient technology and administration aptitude in their immediate reports is basic for conveying and dealing with the ICT frameworks and foundation for an organization. In this way, the CIO needs face to face or through his immediate reports approach the hard abilities with the end goal to work successfully and settle on educated choices about technology. The aftereffects of our investigation additionally bolster the current view that the CIO job has turned out to be more vital and, progressively, the CIO in expansive organizations with noteworthy ICT framework will turn out to be a piece of the official administration group and ought to sit on the official administration board. The characterizing or recognizing competencies for the best IT leaders are those that consolidate to convey leadership for IS/IT and the business as opposed to specific useful abilities. Particular IS and IT competencies are basic yet the particular authoritative and IT setting for the CIO is the basic segment.

VI. ACKNOWLEDGEMENT

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VII. REFERENCES

[1] Aazam, M., Khan, I., Alsaffar, A. A., & Huh, E. N. (2014). Cloud of Things: Integrating Internet of Things and cloud computing and the issues involved in Applied Sciences and Technology (IBCAST), 2014. 11th International Bhurban Conference on IEEE (pp. 414- 419).

[2] Velusamy Kaushik, Deepthi Venkitaramanan, Shriram K. Vasudevan, Prakash Periasamy, and Balachandran Arumugam (2013). "Internet of things in cloud." Journal of Engineering and Applied Sciences 8, no. 9 (2013): 304-13.

[3] Millard, Christopher (2013). Cloud Computing Law. Oxford University Press. ISBN 978-0-19-967168-7.

[4] Singh, et al (2015). "Data Flow Management and Compliance in Cloud Computing". IEEE Cloud Computing. 2 (4):2432. doi:10.1109/MCC.2015.69

[5] Netto, M.; Calheiros, R.; Rodrigues, E.; Cunha, R.; Buyya, R. (2018). "HPC Cloud for Scientific and Business Applications: Taxonomy, Vision, and Research Challenges". ACM Computing Surveys. 51 (1): 8:18:29. doi:10.1145/3150224

[6] Marston, Sean; Li, Zhi; Bandyopadhyay, Subhajyoti; Zhang, Juheng; Ghalsasi, Anand (2011). "Cloud computing The business perspective". Decision Support Systems. 51 (1): 176 189. doi:10.1016/j.dss.2010.12.006

[7] Rochwerger, B.; Breitgand, D.; Levy, E.; Galis, A.; Nagin, K.; Llorente, I. M.; Montero, R.; Wolfsthal, Y.; Elmroth, E.; Caceres, J.; Ben-Yehuda, M.; Emmerich, W.; Galan, F. "The Reservoir model and architecture for open federated cloud computing". IBM Journal of Research and Development. 53 (4):4:1 4:11. doi:10.1147/JRD.2009.5429058

[8] Baburajan, Rajani (2011-08-24). "The Rising Cloud Storage Market Opportunity Strengthens Vendors". It.tmcnet.com. Retrieved 2018-10-21.

[9] Hailu, A. (2012). Factors influencing cloud-computing technology adoption in developing countries (Doctoral dissertation, Capella University).

[10] Gubbi, J., Buyya, R., Marusic, S., &Palaniswami, M. (2013). Internet of Things (IoT): A vision, architectural elements, and future directions. Future generation computer systems, 29(7), 1645-1660.

[11] Varbanov, R. (2011). Challenges and risks in companies' transition to cloud computing.

[12] Parwekar, P. (2011, September). From internet of things towards cloud of things. In Computer and Communication Technology (ICCCT), 2011 2nd International Conference on(pp. 329-333). IEEE

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