Change in the Role and Competencies of Global CIO's in Cloud and IoT Based Organizations- A Study on it and Business Leaders

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Abstract: ***Cloud computing and IOT has changed the path organizations crosswise over businesses work. This survey paper explored the role of the worldwide CIOs in regards to their key work limits and their fundamental capacities and competencies which are required all together for a CIO to achieve unrivalled various levelled execution without bounds of business condition in cloud and IoT based organizations. The revelations of this survey will offer understanding to five (business strategy, IT strategy, change agent, IT functional leader, Technology advocate) key work areas and the essential competencies which we acknowledge are principal to the role of the worldwide CIO in the present and future business condition. The revelations will furthermore demonstrate that the worldwide CIO role is twisting up logically and is key to driving improvement, various levelled change, and innovative change. Thusly, the worldwide CIO ought to be a visionary fundamental pioneer with famous social capacities and business perception and the ability to collaborate equitably over the focal business limits and with key business accessories. The role of the Chief Information Officer (CIO) has ended up being continuously trying and awesome as information correspondences advancement has ended up being basic for general organizations. To date, there has been little research which has precisely investigated the roles and the fundamental competencies of the worldwide CIO. An online outline of CIOs avowed the importance of CIO competencies and featured the essential ones. A course of action of the fundamental competencies of CIOs was broke down in this survey. The key disclosures exhibit that the role of the worldwide CIOs has advanced toward ending up continuously business drew in and crucial in a cloud and IOT based organizations. In the long run, how a CIO leads and manages his/her ICT staff will immensely affect how viable a CIO is in the role. In any case, the CIO still requires the learning of key advancement aptitudes along these lines, singular data or access to extra capacities is likewise basic in their role.***

Keywords: ***Cloud, IoT, CIO, CTO, CEO, CFO, COO***

I. INTRODUCTION

The capacities and competencies that served the CIO (chief information officer) well in the past are presumably going to be fundamental in any case, it is missing for future advancement. The advances in instruction and learning of a CIO role appear to be the most one of a kind component of advancement since its beginning around four decades prior. This position is creating from a consideration on Information administration to an accentuation on development organization and authoritative headway. With these progressions, the CIO can't shoulder the expense of simply responding to requests anymore; in any case, they ought to proactively work to get openings that drive the Information administration to an accentuation on development organization and authoritative headway. With these progressions, the CIO can't shoulder the expense of simply responding to requests anymore; in any case, they ought to proactively work to get openings that drive the association's fortunes in accordance with mission and vision of the association.

In any case, the dynamic piece of the CIO and the IT (information technology) association itself must conform to the new conditions in business and technology. Standard various leveled plots around headways or distinctive offices may not function admirably for every one of the organizations. IT legitimate structures in light of systems will be lither and better arranged to proactively utilize open means for meeting the educational and business needs of the association (Patidar, Rane and Jain, 2012). This survey along these lines takes a forward-looking viewpoint into the CIO role, perceiving essential capacities and abilities required for key organizations in 2012 and past years in perspective of a composition review, exchanges and quantitative commitment from current IT experts.

The CIO's ability to lead an enterprise that gives frameworks of immovable quality and steadfastness is a basic role for organizations. Fundamental capacities ascribed to CIOs involve the change of an essential hierarchical correspondence and aptitudes capacities, the ability to cooperate reasonably to utilize shared prerequisites and resources, operational organization aptitudes, and a sweeping learning of information technology, authoritative, and lawful issues of the association (Hay, Nance and Bishop, 2010).H. David Lambert kept an eye on "The Changing Role of the CIO" in a presentation at the 2009 EDUCAUSE Annual Conference in Denver, Colorado.

Chief information officer (CIO), Chief digital information officer (CDIO) or information technology (IT) master, is an occupation title all around given to the most senior authority in an undertaking responsible for the general information improvement and PC structures that help endeavor targets. Routinely, the CIO reports especially to the chief operating officer (COO) or chief executive officer (CEO). In military organizations, they answer to the pioneer.

The Chief Information Officer part was first

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portrayed in 1981 by William R. Synnott, past Senior Vice President of the Bank of Boston, and William H. Gruber, past educator at the MIT Sloan School of Management. (Laplante, 2005).

IT organizations are changing on a daily basis and they are robotizing business outlines, CIOs are specifically chasing down better approaches to manage a pass on a driving force to their organizations. The present IT divisions or organizations is ceaselessly focused on compensation change, client experience, and information based learning. This move is an immediate consequence of the making centrality of "digitization"— the utilization of electronic types of progress to overhaul gainfulness and responsiveness, reveal bits of information about clients, redesign, and make new plans of action. The media, progressing, and retail trade parts got digitization early, and they proceed to contribute and advance. Everything considered, most business will utilize crossbreed IT conditions for a noteworthy time assignment to come. It's the CIO's part to set general rules on the most capable procedure to change standard foundation with new limits in the cloud, in context of the coveted results the CEO needs to accomplish.

Numerous CIOs are moving their organization from inheritance frameworks to cloud technology to receive far-reaching IT foundation rewards, including expanded spryness, versatility to help developing requests, better-implanted security and decreased provisioning time. These advantages empower IT to be more receptive to the changing needs of inside business activities and make it simpler for the business to utilize IT assets.

The three sorts of cloud models—Private, Public and Hyrbid—contrast dependent on who claims the facilitating and operational help of the framework. Infrastructure as a service (IaaS) in a private cloud condition empowers organizations to hold fast to security and consistency necessities by keeping information in-house and meeting administrative prerequisites for information administration and capacity.

To start the change, CIOs must reevaluate the enterprises administration conveyance models by changing the procedures, roles and arrangements that give IT administration to the business. The initial step is to make an IaaS benefit definitions record that depicts what the cloud offers. This ought to incorporate a rundown of cloud benefit contributions, sorts and sizes of assets (little, medium, huge register or capacity foundation sizes) that a business gathering can ask for, alongside administration level alternatives.

Notwithstanding illustrating the cloud contributions, CIOs ought to build up a cloud administration show for the IT business units to assess month to month. This model spreads asset volume portion for every district or division, conventions for settling on obtainment choices for cloud framework (when, how much, from which merchant, what technology, and so on.), and in addition change-administration designs. Since numerous organizations re-appropriate a few or all segments of cloud arrangements, having a settled and clear administration demonstrate guarantees arrangement on hierarchical strategies and changes to operational parts of the cloud condition. The cloud administration model ought to be actualized in parallel with or not long after the technology sending.

One of these difficulties is moving to a chargeback display, which charges every application and business aggregate as indicated by the sum and sort of cloud assets they utilize. CIOs should begin with a show back demonstrate, which will Broadway clients what the expense of IT assets in the cloud condition will be, founded on use and execution estimations for every asset. The show back approach enables organizations to actualize a chargeback to demonstrate and build up cost responsibility. Companies regularly experience challenges including staff obstruction, however inheritance application proprietors and IT partners must will adjust to change for a fruitful undertaking private cloud organization. One of the hardest choices for CIOs is regularly whether to retrain or supplant the current operational help association.

CIOs ought to decide if the security and risk administration group is educated about cloud situations, and afterward either give preparing or contract new security staff knowledgeable in cloud technology. This incorporates information of virtualized organize security and having the capacity to set up guidelines for changing levels of security-related with each kind of IT framework in the cloud. Taking these activities is imperative to limit issues with cloud security before arrangement.

Cloud technology offers numerous advantages, however, appropriation presents challenges. Extraordinary compared to other ways to deal with tending to these difficulties is to begin by building a private cloud with the capacity of "blasting" to the general population cloud for certain IT capacities and applications, contingent upon security and management requirements.

CIOs can optimize the benefits of their cloud investments and minimize risks by taking the time to develop and implement plans for cloud-driven change in organizational structure and processes. This approach empowers CIOs to deliver the speed and agility of cloud infrastructure to their organizations while sidestepping common adoption hurdles.

II. LITERATURE REVIEW

Some of the CIO leading roles in cloud and IoT-based organizations include;

a) Business Strategist

The strategy has for quite a while been a significant test for CIOs and their endeavors. Different CIOs and their C-level partners give essential time and focal points for making frameworks, yet wind up passing on records that gather clean on a rack. In Gartner's 2018 CIO Survey, just 23% of respondents evaluated their relationship as persuading or to an awesome degree momentous at business strategy and engineering, and just 29% assessed their relationship as fruitful or unbelievably down to earth at IT framework and coordinating. (Gartner, 2018) The nonappearance of a formally recorded or obviously illuminated business procedure is both a huge test and an open door for CIOs.

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On the off chance that the business system has not been recorded or unquestionably illuminated, by then IT framework should meld a draft of foreseen that major business results would be certified by the activity gathering. Separate IT and business frameworks. At whatever point business and IT systems are self-sufficient, CIOs need to exhibit the estimation of information and improvement. The IT technique more likely than not attempted with business master, gave and used to incite the business framework (Hodgson and Lane, 2010).

b) IT Strategist

Most occasions, the cloud-computing organizations is totally and altogether viewed as functional, as frequently as conceivable so far the gaining and relationship of new advancement acknowledgment are strategized with the end goal that overspending plan, untoward methods/strategies, and so forth, which can result in a colossal disrupting impact of step-wise errands/directions is revealed and afterward revised or anticipated. (Robbins and Pappas, 2004). For instance, because of more compelled money related assets and restricted access to awe-inspiring particular capacity when emerged from massive affiliations, little-estimated business/affiliations (SMBs) are especially attempted. SMBs frequently re-appropriate progression association in sureness protested people to keep up and strengthen the present structure. These people are usually grounded just in the regions of improvement and are not open to changing particular activities to business capacities. CIOs and their organizations ought to rotate around four key locales to build up a high performing IT strategy in any authoritative setup. Key development progressions and frameworks join private, open and half and half cloud transport models, versatile, examination, security, dev-operations, mechanization, programming depicted server farms, mixed surfaces, and compartments.

To get a seat at the framework table, CIOs and the organization needs to wind up a transversely-completed business pro, and their supporting organizations individually. Having an all the way perception of the corporate and business unit (BU) frameworks, this empowers the improvement to trust in business organizations over different layers of vital execution. The prerequisite for CIOs to drive business association obligation has never been more objectives. For instance, 35 percent of IT imagines come up short not as a result of IT, but rather by ethicalness of the business.

Business executives either change needs or end up reasons for their most prominent preferred standpoint in IT's undertakings. (Way, 2007) CIOs have made the push to understand business necessities, in any case, different business chiefs have not responded.

c) Change agent

While the bit of the CIO has unendingly made over the before decades; the developments for the CIO working out as expected out of the robotized interest are conceivably more critical and more central than later in continuous memory. The plain focal point of the CIO's part—to be specifically working IT — moves progressively into the back as undertakings attempt a "cloud-first" approach. Then again, a radical new degree of errands is being put onto the CIO's shoulders, requiring additional capacities and requesting liberally more obvious feature on areas, for example, headway or making and arranging modernized regular systems. (Gartner, 2013)

With IT framework curving up continuously of a thing, CIOs will push their idea toward dealing with organizations that connect with them to design, secure and arrange cloud organizations from different vendors over the web. At whatever point apparent, CIOs have an essential persuading power to a CEO. As an authority with one of only a bundle couple of broad perspectives of the relationship through supporting business frameworks, they have a striking learning. Organizations that have had the CIO champion endeavor building are essentially put to get the 'business plan'. It does not just give the CIO full recognizable quality of the association's choice to-end shapes, it overhauls end client and ICT responsibility through the consultative work-shopping of frameworks in transit. It gives an enhanced deftness and it accomplishes a strong establishment of the end client purchase in light of the way that all new change practices begin from a business strategy approach.

d) IT Functional leader

The best CIOs acknowledge essential sorting out ties, setting up organizations that drive compensation rather than basically passing on IT foundation like frameworks association, servers, and limit. They work to slice through utility limits and expect authority over the execution of business-crucial applications like ERP and web business. The profile of a convincing CIO is never again the official of the one start server develops.

Creative aptitude alone isn't adequate, nor is exclusively business knowledge. (Grover, 2011) The present IT pioneers must have their fingers on the beat of headway reviews and see how those precedents may possibly drive business targets. They should in like way an energy about how current progression can enhance capability and decrease costs, and additionally how it can drive productivity.

The best IT key designs unite proportions of achievement that will fill in as mile markers for advancement after some time. In the present advancement driven business center, regardless, those estimations should concentrate less on the information sources or yields IT might have utilized as guideposts previously and more on true blue business comes to fruition. "Having clear, result based key execution pointers, that is, Key Performance Indicator [KPIs] is fundamental," says Strock. "It is basic to guarantee tight bargain with the business system."

e) Technology Advocate

The technology Advocate gives particular inclination grounded in the business case and interestingly created to address the captivating needs of every client association. Relationship of all sizes utilizes headway to facilitate business limits extending from direct correspondence to complex "enormous data" data examination.

The Technology Advocate gives client-centered inclination to authorities and guarantees snappy choices with respect to improvement. The technology advocate is steadfastly identified with the CIO and CTO positions at presentation found in more prominent affiliations, and by ethicalness of little and direct estimated firms, exists as a re-appropriated capable association. At long last, the Technology Advocate gives particular incite grounded in the business case and only fitted to address the phenomenal needs of every client association.

For some, getting off traditional (otherwise called heritage organizations) to an unadulterated cloud-local methodology is a bit like changing auto at 100mph (miles every hour)— it can affect altogether security, speed and also cost. Likewise for some changing auto bodes well, for other people, it may not. The equivalent applies a bit to cloud too—cloud is an unfortunate chore, and not the real end for an association—and to comprehend whether a functioning change of heritage based traditional to cloud-local is gainful a best down and base up view is required.

The hindrances to moving from traditional to cloud-local are noteworthy; long-standing contracts with outsiders, existing IT association with limited micro services experience, cybersecurity, and data insurance concerns, sunk expense in the on-premises framework and in addition cloud-local contrary technology. Cloud-local isn't simply changing the manner in which applications are developed, yet additionally how they are being sent—traditional pursues a monolithic and cascade approach, while cloud-local pursues a micro services and dexterous methodology. Applying a cloud-local methodology isn't only a technology move, it above all else requires an altogether different arrangement of abilities and societies than a traditional methodology.

Programming is the new gold; progressively organizations apply a digital-first way to deal with separate where cloud-local is the overall diagram for the present digital application scene. Organizations that hold their current traditional scenes may remain behind, and the choice to change the current traditional scene to a cloud-local worldview needs to consider numerous components—for nearly a functioning and discount move from traditional to cloud-local is the correct way, for some leaving the traditional As-Is, in addition, to apply a cloud first for just new applications, and for other people, a blended methodology is the correct route forward. Choosing the correct way requires a nitty-gritty evaluation covering individuals, process and technology.

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	

Fig 1: 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.

	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	

Fig 2: Age

From the pool of respondents, it's 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	

Fig 3: 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 participant 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	

Fig 4: 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 participant 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.

	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 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

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.

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	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
Definitely	143	35.3	35.3	35.3
Very Probably	104	25.7	25.7	61.0
Probably	120	29.6	29.6	90.6
Probably not	30	7.4	7.4	98.0
Definitely not	8	2.0	2.0	100.0
Total	405	100.0	100.0	

Fig 8: Do you think that the challenges posed by IoT and Cloud computing technology, the roles of a CIO have changed drastically?

As show in Fig. 8, the total number of 405 respondents made known their opinion concerning the question; Do you think that the challenges posed by IoT and Cloud computing technology, the roles of a CIO have changed drastically? Out of these respondents, an exact number of 143 respondents accounting for 35.3 percent of the total respondents responded with a definite yes to the question. About 104 respondents representing 25.7 percent of the total respondent believed there is high chance that the challenges posed by IoT and cloud computing might have changed the role of CIO drastically, meanwhile some respondents, not more than 120 in number believed the chance is not that high. About 30 respondents did not wholly respond positively to the question. And exactly 8 respondents representing 2 percent of the total respondents strongly disagreed that challenges posed by IoT and cloud computing technology have changed drastically.

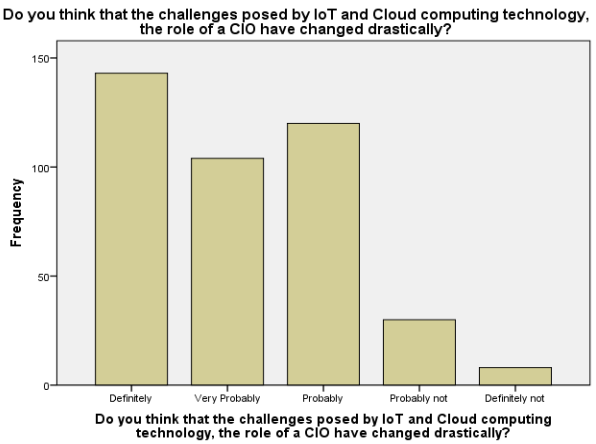

Fig 9

a. CIO As Business Strategist

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	168	41.5	41.5	41.5
Agree	194	47.9	47.9	89.4
Neutral	38	9.4	9.4	98.8
Disagree	3	.7	.7	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 10: A CIO should look for adopting best practices for the company's business.

In accordance to Fig 10 and 11, the total number of people who made known their opinion concerning the notion stating that a CIO should look for adopting best practices for the company's business, was 405. About 362 respondents agreed with this notion, in which 168 of these respondents accounting for 41.5 percent of the total respondents did agreed strongly with the notion. Meanwhile very few respondents, about 5 in number disagreed with this notion, whereas two of these respondents strongly expressed their dissension. The remaining respondents, summing up to 38 in number, neither disagree nor agree with the notion.

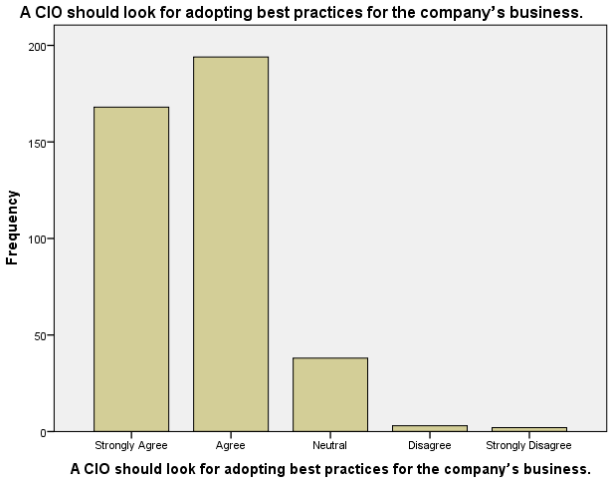

Fig 11:

In accordance to Fig 12 and 13, the total number of people who made known their opinion concerning the notion stating that the main aim of the CIO should be to increase benefits and to continue cost reductions was 405. About 180 respondents agreed with this notion accounting for 44.4 percent of the total respondents did agreed with the notion. Meanwhile very few respondents, about 13 in number disagreed with this notion, whereas 4 of these respondents strongly expressed their dissension. The remaining respondents, summing up to 79 in number, neither disagree nor agree with the notion

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	129	31.9	31.9	31.9
Agree	180	44.4	44.4	76.3
Neutral	79	19.5	19.5	95.8
Disagree	13	3.2	3.2	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 12: The main aim of the CIO should be to increase benefits and to continue cost reductions

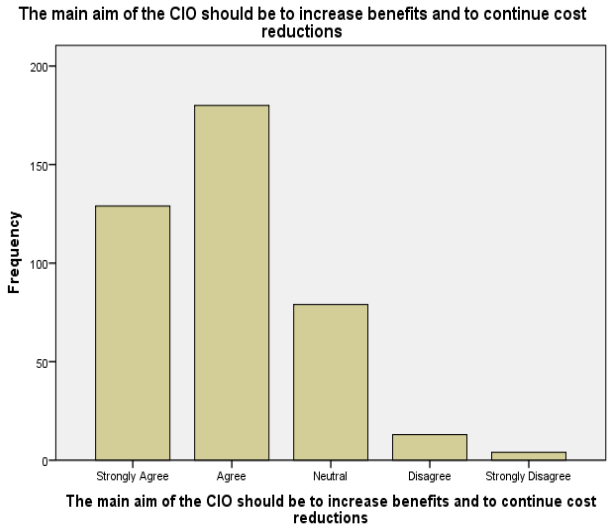

Fig 13 :

With respect to Fig. 14 and 15, out of 405 respondents that participated, exactly 301 respondents agreed that a CIO should take into account the strategies of rival organizations while making business strategies. Among these respondents, 102 respondents strongly agreed. Meanwhile, a few respondents, about 22 in number representing five percent of the total respondents, disagreed. And four out of these respondents did disagree strongly that CIO should take into account the strategies of rival organizations while making business strategies. The remaining 82 respondents neither disagreed nor agreed.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	102	25.2	25.2	25.2
Agree	199	49.1	49.1	74.3
Neutral	82	20.2	20.2	94.6
Disagree	18	4.4	4.4	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 14: A CIO should take into account the strategies of rival organizations while making business strategies

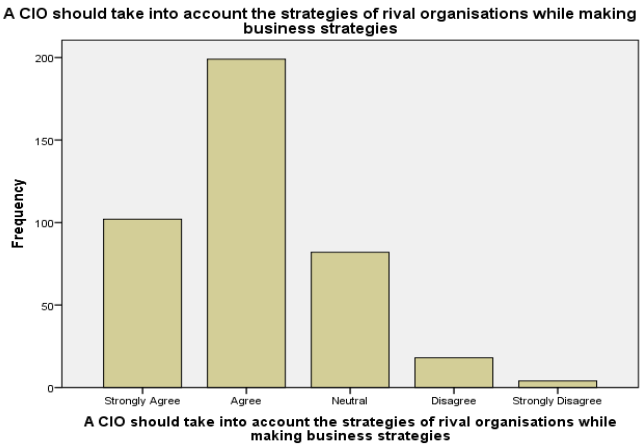

Fig 15:

Total number of 405 respondents expressed their opinion on the fact that apart from automating t existing systems, a CIO should also make strategies to provide new direction to the business. Out these respondents, 340 respondents agreed, and about 140 respondents representing 34.6 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly 10 in number disagreed, and two of out these respondents strongly showed their disagreement. As much as the number of respondents who agreed and disagreed, a few number of respondents, about 55 in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	140	34.6	34.6	34.6
Agree	200	49.4	49.4	84.0
Neutral	55	13.6	13.6	97.5
Disagree	8	2.0	2.0	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 16: Apart from automating t existing systems, a CIO should also make strategies to provide new direction to the business

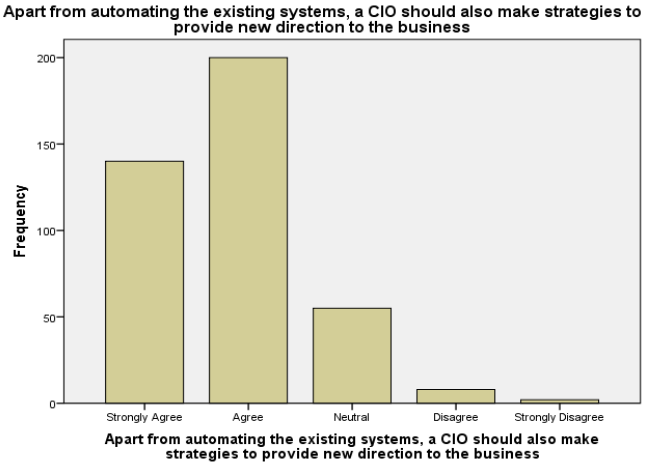

Fig 17:

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	96	23.7	23.7	23.7
Agree	156	38.5	38.5	62.2
Neutral	105	25.9	25.9	88.1
Disagree	44	10.9	10.9	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 18: Apart from technical role, a CIO should also take up administrative responsibilities

In congruence to Fig. 18 and 19, 405 people responded to the suggestion stating that apart from technical role, a CIO should also take administrative responsibilities. Out of these respondents, a number of 252 respondents agreed to this suggestion,out of which ninety-six respondents of representing 23.7 of the total respondents did strongly agree. About 48 respondents accounting for 10.9 percent of the total respondents expressed their dissension,and four of these respondents strongly did. The remaining percentage of the respondents, which is 25.9 percent was occupied by respondents who were neutral to the suggestion

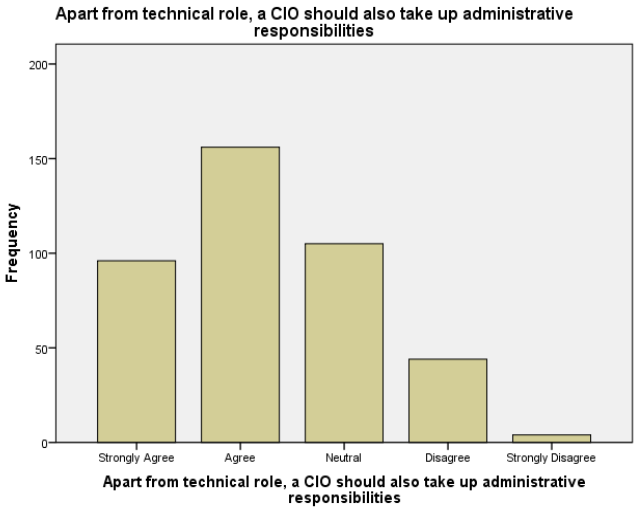

Fig 19:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	122	30.1	30.1	30.1
Agree	187	46.2	46.2	76.3
Neutral	74	18.3	18.3	94.6
Disagree	19	4.7	4.7	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 20: If necessary, a CIO should not hesitate to propose replacing existing business strategies

With respect to Fig 20 and 21, a whopping 122 respondents out of the total number of 405 people who responded, strongly supported the idea that if necessary, a CIO should not hesitate to propose replacing existing business strategies. And these set of respondents accounted for 30.1 percent of the total respondents. The total number of respondents, who agreed though not strongly with the idea, was exactly 187 representing a whopping 46.2 percent of the total respondents. However, about 21 respondents showed their disagreement the idea stated above, out of these set of respondents, three of them strongly disagreed. Although most of the respondents expressed their opinion by either agreeing or disagreeing, however few respondents summing up 74 in number neither agreed nor disagreed with the suggestion stating that if necessary, a CIO should not hesitate to propose replacing existing business strategies.

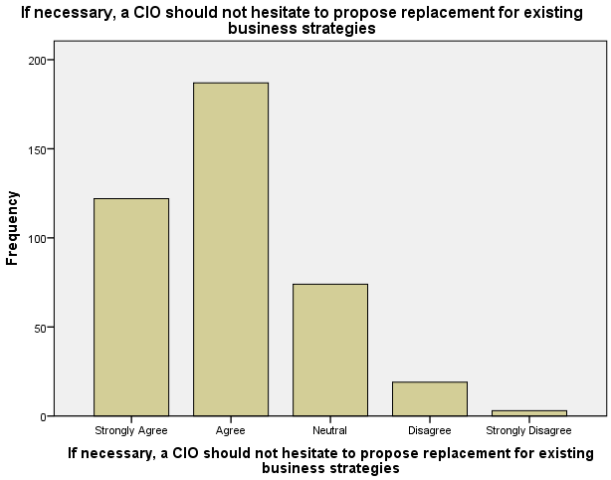

Fig 21:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	166	41.0	41.0	41.0
Agree	180	44.4	44.4	85.4
Neutral	50	12.3	12.3	97.8
Disagree	7	1.7	1.7	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 22: A CIO should introduce new technologies to the organization

In accordance to data recorded in Fig 22 and 23, about 346 respondents out of the 405 people who responded, agreed with suggestion stating CIO should introduce new technologies to the organization. Out of these 346 respondents that agreed, an exact 166 respondents accounting for 41.0 percent of the total respondents, strongly agreed. Very few respondents, not more than nine in number, representing 2.2 percent of the total respondents expressed their dissension with the suggestion and two of these respondents did express their disagreement strongly. However some set of respondents summing up to 50 in number and accounting for 12.3 percent of the total respondents, neither agreed nor disagreed with the suggestion.

b. CIO As IT Strategist

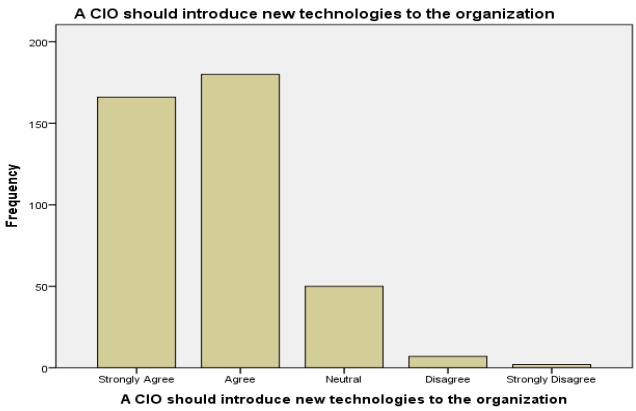

Fig 23:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	184	45.4	45.4	45.4
Agree	172	42.5	42.5	87.9
Neutral	38	9.4	9.4	97.3
Disagree	9	2.2	2.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 24: A CIO should be able to answer how an IT solution is beneficial to the company

As showed in the data computed in Fig 24 and 25, exactly 184 respondents out of the total number of people who responded which is 405 in number, strongly agreed with the fact stating CIO should be able to answer how an IT solution is beneficial to the company. Following this wise, a whopping number of 172 respondents, representing 45.4 percent of the total respondents also did agree though not strongly with the fact stated above. Meanwhile, very few respondents, about 11 in number and accounting for 2.7 percent of the total respondents, disagreed that CIO should be able to answer how IT solution is beneficial to the company. Two of these respondents who disagreed, strongly expressed their own disagreement.

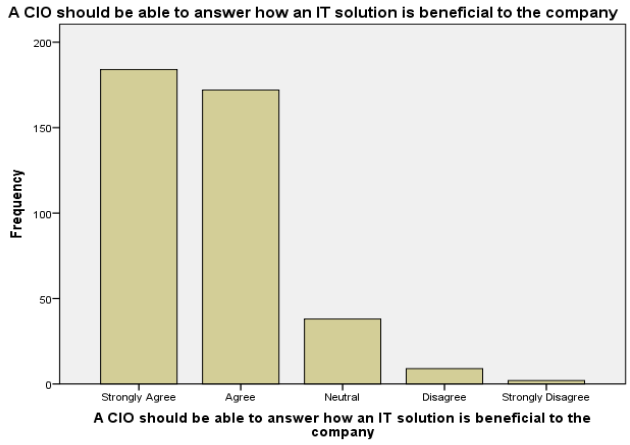

Fig 25:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	145	35.8	35.8	35.8
Agree	202	49.9	49.9	85.7
Neutral	46	11.4	11.4	97.0
Disagree	9	2.2	2.2	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 26:

A CIO should be able to make decisions regarding platforms to be used, the kind of resources to be deployed etc.

With respect to Fig. 26 and 27, a total number of 405 respondents made known their opinion on the suggestion stating a CIO should be able to make decision regarding platforms to be used, the kind of resources to be deployed, etc. An exact number of 145 respondents, representing 35.8 percent of the total respondents, strongly agreed with suggestion. Also about 202 respondents agreed though not strongly with this suggestion. However 12 respondents, representing 2.9 percent of the total respondents, disagreed with the suggestion stated above. Of these set of respondents disagreed, three of them did expressed their dissension strongly. A few respondents however were neutral to this suggestion, i.e they neither agree nor disagree with it.

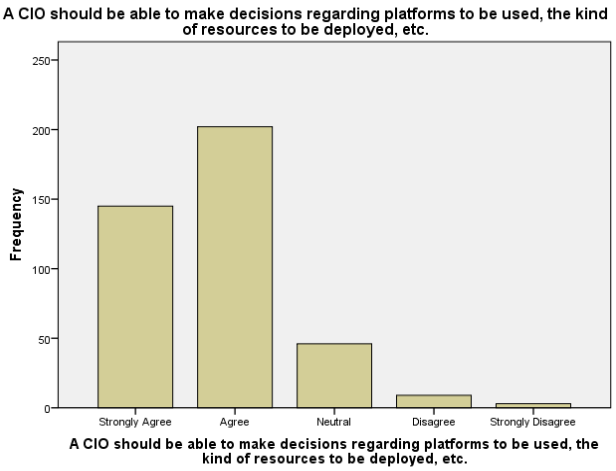

Fig 27:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	143	35.3	35.3	35.3
Agree	200	49.4	49.4	84.7
Neutral	47	11.6	11.6	96.3
Disagree	14	3.5	3.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 28: A CIO should be able to guide the company with regard to the type of technology vendors to be used

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In congruence to data computed in Fig. 28 and 29, 405 people responded to the idea stating CIO should be able to guide the company with regard to the type of technology vendors to be used. About 343 respondents agreed with this idea, in which 143 respondents accounting for 35.3 percent of the total respondents, strongly agreed with it. A total number of 15 respondents representing 3.7 percent of the total respondents disagreed with this idea. Meanwhile a few respondents, about 47 in the number and accounting for 11.6 percent of the total respondents, were neutral towards the idea.

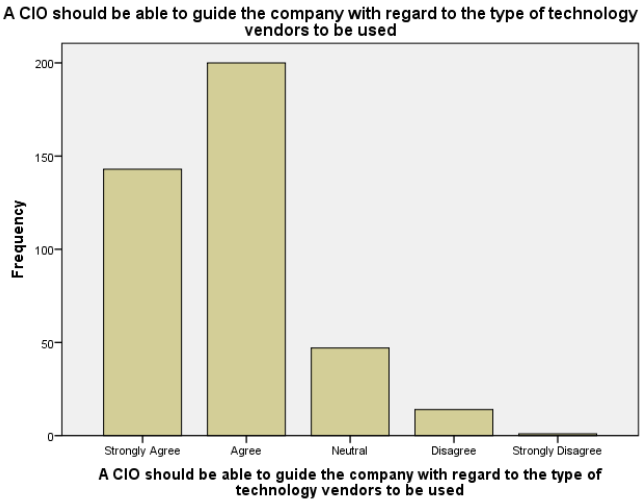

Fig 29:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	136	33.6	33.6	33.6
Agree	178	44.0	44.0	77.5
Neutral	72	17.8	17.8	95.3
Disagree	14	3.5	3.5	98.8
Strongly Disagree	5	1.2	1.2	100.0
Total	405	100.0	100.0	

Fig 30: The CIO should pitch in to negotiate with IT vendors, frame contract terms, and resolve disputes in contracts

With respect to Fig. 30, a number of 314 respondents out of 405 people that responded agreed that the CIO should pitch in to negotiate with IT vendors, frame contract terms, and resolve disputes in contracts. Out of these respondents who agreed, exactly 136 of them did agree strongly. About 19 respondents disagreed and five of these respondents strongly disagreed to the suggestion stating The CIO should pitch in to negotiate with IT vendors, frame contract terms, and resolve disputes in contracts. However there is few number of respondent which are not more than 72 in number and accounting for 17.8 percent of the total respondents, were neutral to this suggestion.

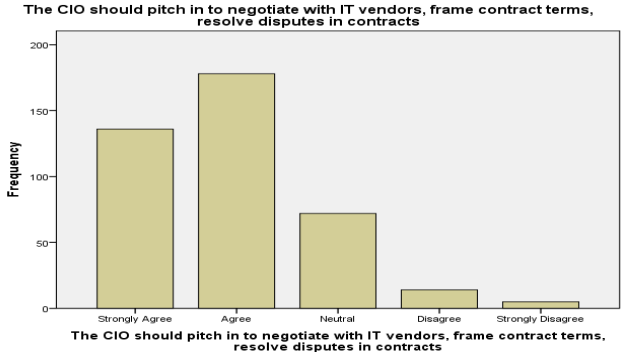

Fig 30:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	134	33.1	33.1	33.1
Agree	205	50.6	50.6	83.7
Neutral	51	12.6	12.6	96.3
Disagree	12	3.0	3.0	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 31: CIOs should be able to manage incumbent risks that come with new technologies

In congruence to the data computed in Fig.31 and 32, the number of people who responded to the notion stating CIOs should be able to manage incumbent risks that come with new technologies, was 405. About 134 of these respondents representing 33.1 percent of the total respondents strongly agreed with this notion, while 202 respondents accounting for a whopping 50.6 percent of the total respondents did agree but not strongly with this notion. However a few number of respondents, not more than 15 in number did disagree with the notion and about 51 respondents representing 12.6 percent of the total respondents were neutral tot this notion.

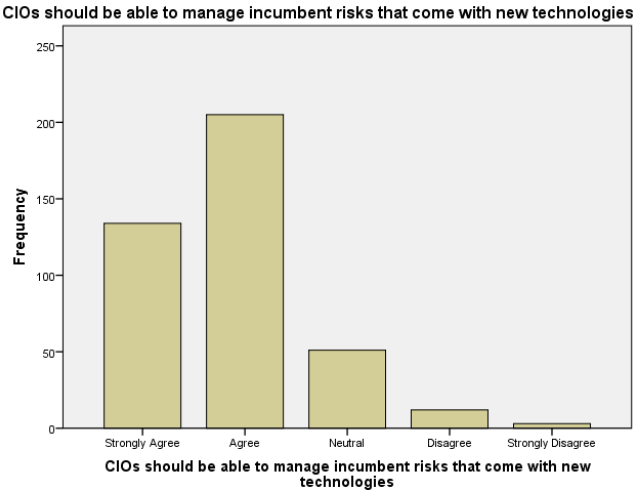

Fig 32:

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c. CIO As Change Agent

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	143	35.3	35.3	35.3
Agree	186	45.9	45.9	81.2
Neutral	65	16.0	16.0	97.3
Disagree	10	2.5	2.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 33: In times of need, the CIO should initiate changing the technology of the entire organization

As showed in Fig 33 and 34, a number of 143 out 405 respondents strongly agreed to the notion stating: In times of need, the CIO should initiate changing the technology of the entire organization. About 186 respondents representing a whopping 45.9 percent of totality of the respondents did agree to this fact but not strongly. Few respondents not more than eleven in number disagreed with the fact and one of them strongly did disagree. About 65 of the respondents happened to give an indifference response to the notion.

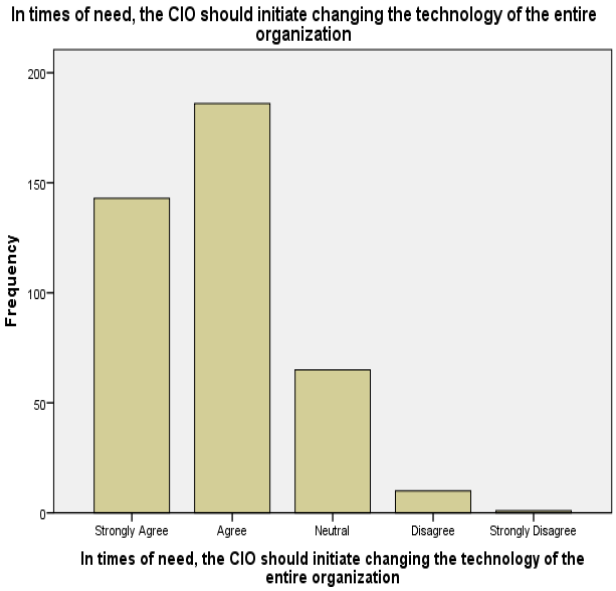

Fig 34:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	146	36.0	36.0	36.0
Agree	199	49.1	49.1	85.2
Neutral	48	11.9	11.9	97.0
Disagree	10	2.5	2.5	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 35: A CIO should be able to explain the costs and benefits of a new technology before implementing it in the company.

With the respect to the data computed in Fig 35 and 36, the total number of respondents to the notion stating A CIO should be able to explain the costs and benefits of a new technology before implementing it in the company, was 405. About 146 of these respondents taking up 36.0 percent of the total respondents strongly agreed with this notion, and about 199 respondents, representing a whopping 49.1 percent of the total respondents also agreed with the notion albeit not strongly. A very few respondents, 10 in number and representing 2.5 percent of the total respondents, disagreed with the notion, while 2 more respondents strongly disagreed. However a few number of respondents, which are exactly 48 in number and accounting for 11.9 percent of the total respondents, neither agree nor disagree with the stated notion.

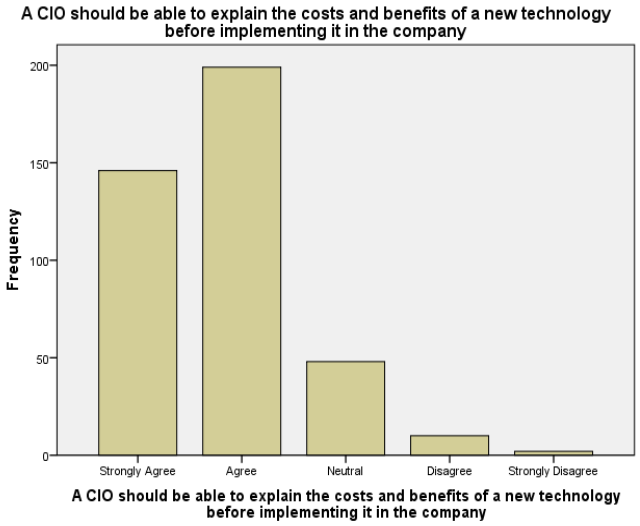

Fig 36:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	138	34.1	34.1	34.1
Agree	196	48.4	48.4	82.5
Neutral	60	14.8	14.8	97.3
Disagree	8	2.0	2.0	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 37: CIO should play a main role in smoothly rolling out new technological initiatives

In phase with data computed in Fig. 37 and 38, 138 of 405 respondents, accounting for 34.1 percent of the total respondents strongly agreed with idea stating, CIO should play a main role in smoothly rolling out new technological initiatives. About 196 respondents, representing 48.4 percent of the total respondents, agreed though not strongly with the idea. However, 8 respondents showed their dissension concerning the idea, 3 of the respondents strongly expressed their disagreement. Even though most of the respondents did agree and disagree, there are still few respondents summing up 60 in number, who neither agree nor disagree with the stated idea above.

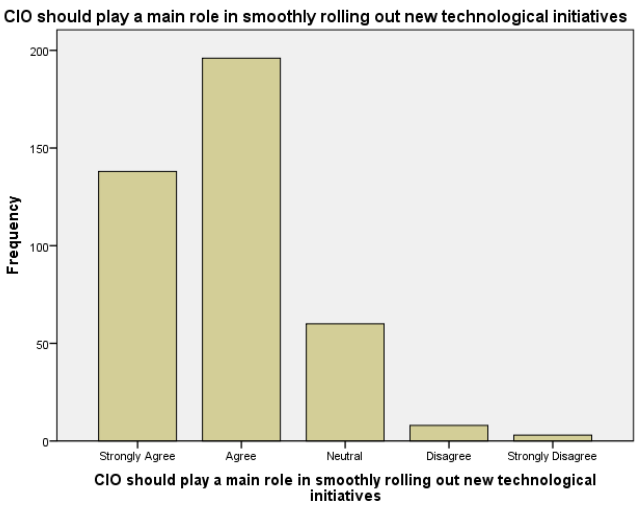

Fig 38:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	116	28.6	28.6	28.6
Agree	197	48.6	48.6	77.3
Neutral	70	17.3	17.3	94.6
Disagree	20	4.9	4.9	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 39: CIO should try to bring about technological changes in departments that are not directly related to IT, i.e. H.R., Logistics, etc.

Regarding data computed in Fig 39 and 40, total number of 405 respondents made known their opinion on the suggestion stating CIO should try to bring about technological changes in departments that are not directly related to IT, i.e. H.R., Logistics, etc. An exact number of 116 respondents expressed strongly their agreement with this suggestion. Also about 197 respondents representing 48.6 percent of the total respondents did agree albeit not strongly. The total number of respondents that disagreed with this suggestion was 22, where 2 of the respondents strongly did disagree. However few respondents, who are 70 in number and accounting for 17.3 percent of the total respondents, neither disagree nor agree.

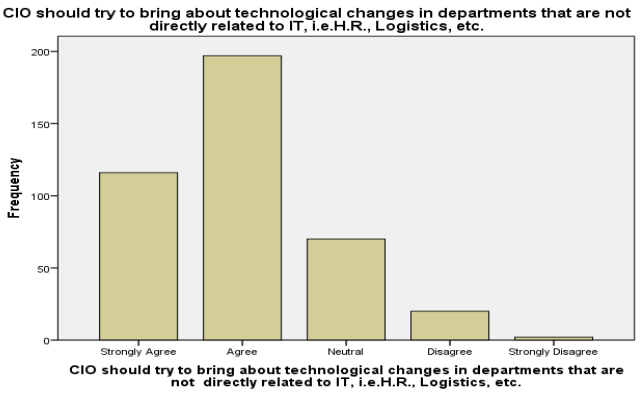

Fig 40:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	129	31.9	31.9	31.9
Agree	202	49.9	49.9	81.7
Neutral	56	13.8	13.8	95.6
Disagree	16	4.0	4.0	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 41: CIO should efficiently address all kinds of resistance and criticism during new technology adoption

As showed in data computed in Fig 41, the number of people who responded to the notion stating CIO should efficiently address all kinds of resistance and criticism during new technology adoption, was 405. Of these respondents, 129 respondents strongly agreed with notion and 202 respondents accounting for 49.9 percent of the total respondents did agree too though not strongly. Whereas about 16 respondents representing 4.0 percent of the total respondents showed their disagreement with the notion, while two respondents also did disagree, but doing so strongly. Moreover, exactly 56 respondents taking up 13.8 percent of the total respondents gave an indifference response to the notion.

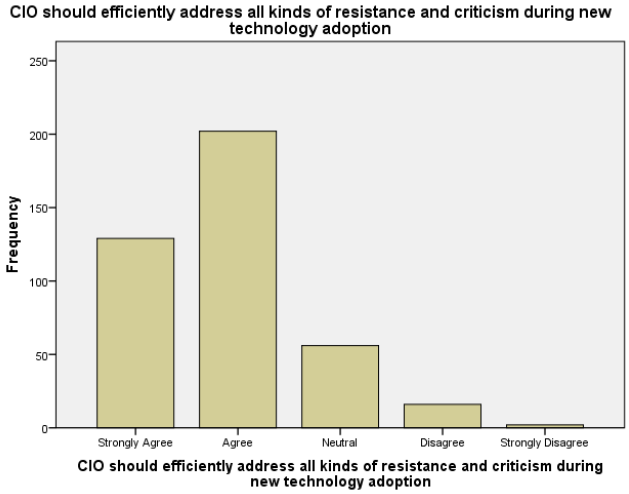

Fig 41:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	145	35.8	35.8	35.8
Agree	204	50.4	50.4	86.2
Neutral	46	11.4	11.4	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 42: A CIO should take measures to build the users' confidence in the new technology to be adopted

In accordance to Fig. 42 and 43, the total number of people that responded to the suggestion stating: a CIO should take measures to build the users' confidence in the new technology to be adopted, was 405. About of 145 respondents representing 35.8 percent of the total respondents, strongly agreed with this suggestion and a whopping number of 204 respondents, accounting for 50.4 percent of the total respondents also agreed though not strongly. However very few respondents, 6 in number disagreed with this suggestion and 4 more respondents did disagree strongly. About 46 of the total respondents, taking up 11.4 percent of the total respondents were neutral towards the suggestion.

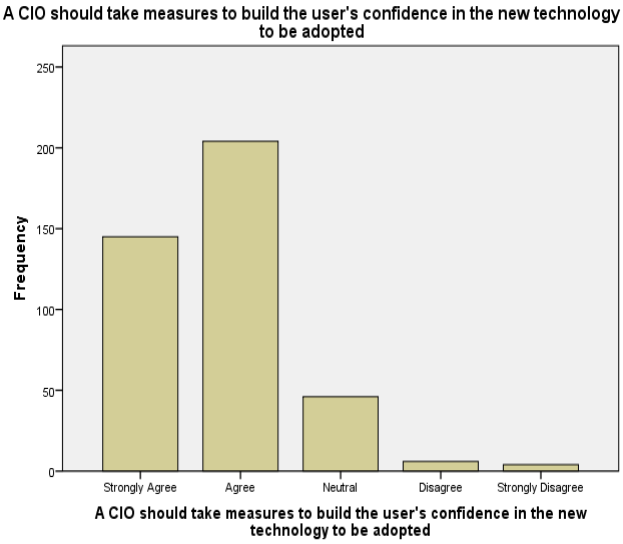

Fig 43:

d. CIO As IT Functional Leader

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	179	44.2	44.2	44.2
Agree	175	43.2	43.2	87.4
Neutral	42	10.4	10.4	97.8
Disagree	8	2.0	2.0	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 44: A CIO should able to motivate the staff and encourage them to perform better

In congruence with data recorded in Fig. 44 and 45, exactly 405 people responded to the idea stating a CIO should able to motivate the staff and encourage them to perform better.179 of these respondents accounting for 44.2 percent total respondents strongly with this idea, and 175 respondents representing 43.2 percent of the total respondents did agree, albeit not strongly. Few numbers of respondents, not more than 8 in number disagreed and only one respondent strongly expressed his disagreement with the idea. However, 42 respondents accounting for 10.4 percent of the total respondents were neutral towards the idea.

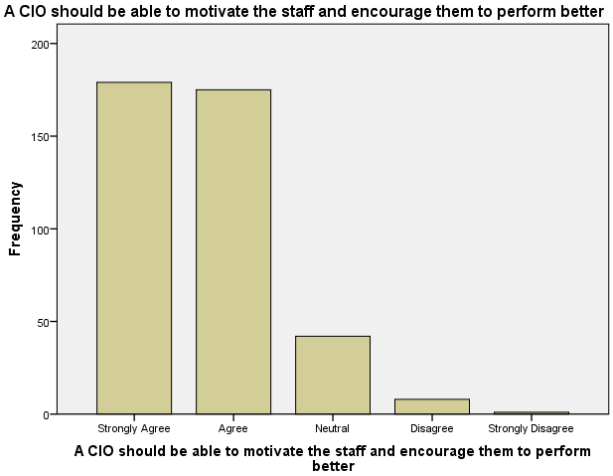

Fig 45:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	126	31.1	31.1	31.1
Agree	180	44.4	44.4	75.6
Neutral	75	18.5	18.5	94.1
Disagree	20	4.9	4.9	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 46: CIOs should plan meticulously for projects apart from managing resources effectively

In congruence with the Fig. 46 and 47, where the total number of respondents was 405, exactly 126 respondents, representing 31.1 percent of the total respondents strongly agreed with notion stating CIOs should plan meticulously for projects apart from managing resources effectively. And 180 respondents accounting for 44.4 percent of the total respondents did agree albeit not strongly with this idea. However few numbers of respondents summing up to 24 in number expressed their dissension and four of these respondents strongly expressed their disagreement with the suggestion. Meanwhile the remaining 75 respondents representing 18.5 percent of the total respondents neither agree nor disagree with stated suggestion above.

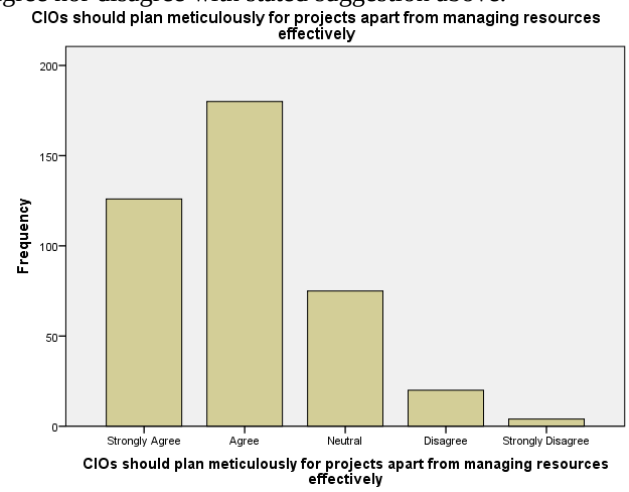

Fig 47:

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	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	157	38.8	38.8	38.8
Agree	182	44.9	44.9	83.7
Neutral	55	13.6	13.6	97.3
Disagree	9	2.2	2.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 48: A CIO should take measures to identify and eliminate unethical unsafe technology practices

With respect to Fig, 48 and 49, total number of 405 people responded to the suggested idea stating a CIO should take measures to identify and eliminate unethical unsafe technology practices. Exactly 157 of these respondents accounting for 38.8 percent of the total respondents, strongly agreed with this idea, and 182 respondents representing 44.9 percent of the total respondents also did agree though not strongly with it. However nine respondents disagreed with the idea and two more respondents strongly showed their own disagreement. Meanwhile 55 respondents taking up 13.6 percent of the total respondents gave indifference response to the idea.

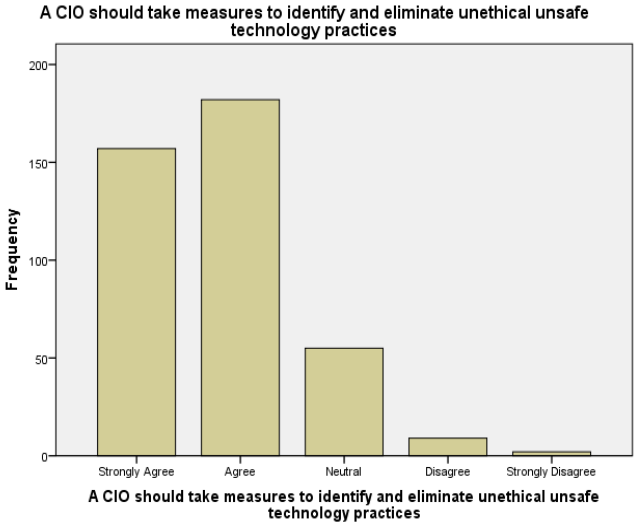

Fig 49:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	129	31.9	31.9	31.9
Agree	183	45.2	45.2	77.0
Neutral	74	18.3	18.3	95.3
Disagree	18	4.4	4.4	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 50: A CIO should interact with staff at every level in order to stay updated on the developments in the business process

In phase with the data computed in Fig. 50 and 51, total number of respondents who made known their opinion on the suggestion stating a CIO should interact with staff at every level in order to stay updated on the developments in the business process, was 405. 129 of these respondents accounting for 31.9 percent of the total respondents, strongly agreed with the suggestion, while about 183 respondents taking up 45.2 percent of the total respondents, did agree with suggestion though not strongly. However about 19 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 74 in number, accounting for the remaining 18.3 percent of the total respondents.

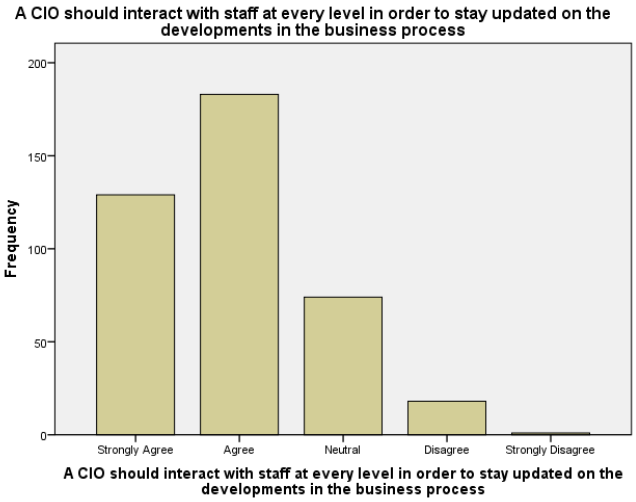

Fig 51:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	132	32.6	32.6	32.6
Agree	197	48.6	48.6	81.2
Neutral	63	15.6	15.6	96.8
Disagree	11	2.7	2.7	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 52: A CIO should take efforts to constantly improve the IT processes while reducing resource use

As showed in Fig. 52 and 53, with the total number of respondents 405, 132 of the respondents strongly agreed with the notion stating a CIO should take efforts to constantly improve the IT processes while reducing resource use. And 197 respondents representing 48.6 percent of the total respondents did agree also but not strongly. Total number of respondents who disagreed with this notion was 13 and two of these respondents did strongly disagree. Meanwhile 63 respondents accounting 15.6 percent of the total respondents neither disagree nor agree with notion stated above.

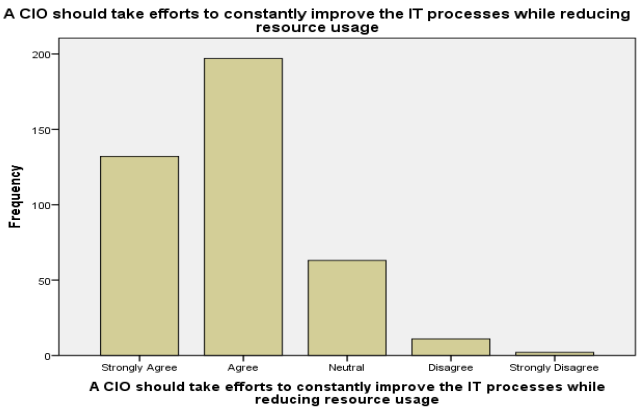

Fig 53:

e. CIO As Technology Advocate

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	132	32.6	32.6	32.6
Agree	206	50.9	50.9	83.5
Neutral	55	13.6	13.6	97.0
Disagree	11	2.7	2.7	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Fig 54: A CIO should help devise methods for intelligent deployment of technology

As showed in Fig, 54 and 55,total number of 405 people responded to the notion stating A CIO should help devise methods for intelligent deployment of technology. About 132 of these respondents accounting for 32.6 percent of the total respondents, strongly agreed with this notion, and a whooping number 206 respondents did agree though not strongly with the notion. However few respondents, about 12 in number disagreed with this notion, where one of these respondents strongly disagreed with it. Also, exactly 55 respondents accounting for 13.6 percent of the total respondents neither agree nor disagree with the notion.

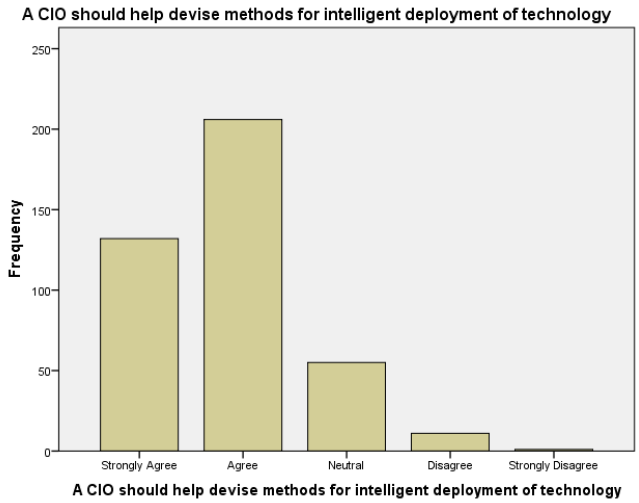

Fig 55:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	123	30.4	30.4	30.4
Agree	202	49.9	49.9	80.2
Neutral	62	15.3	15.3	95.6
Disagree	16	4.0	4.0	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Fig 56: If need be, a CIO should readily promote a new technological platform, product or standard

In accordance to data result in Fig. 56 and 57, the total number of respondents responding to the idea stating if need be, a CIO should readily promote a new technological platform, product or standard, was 405. Of these respondents, about 123 of them strongly agreed with this idea and a whopping 202 respondents accounting 49.9 percent of the total respondents agreed though not strongly with idea. However, a few respondents numbering 18 disagree with the idea and two of these respondents strongly expressed their dissension. Although almost all the respondents did agree and disagree, however there are few respondents who gave an indifference response to the idea, and they are altogether 62 in number accounting for 15.3 percent of the total respondents.

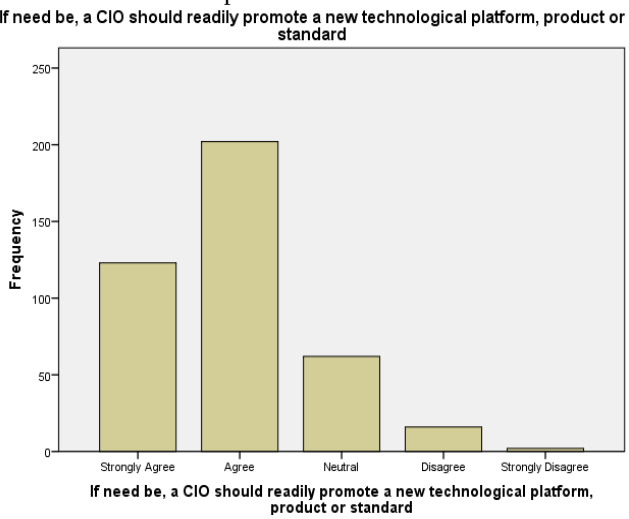

Fig 57:

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	120	29.6	29.6	29.6
Agree	183	45.2	45.2	74.8
Neutral	76	18.8	18.8	93.6
Disagree	20	4.9	4.9	98.5
Strongly Disagree	6	1.5	1.5	100.0
Total	405	100.0	100.0	

Fig 58: A CIO should design and lead skills training program to help the staff to refresh skills and learn new technology

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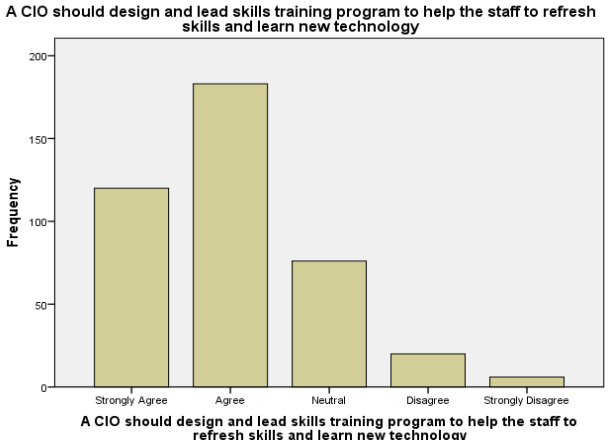

Fig 59:

Concerning the role of a CIO in designing and leading skills training programs to help the staff to refresh their known skills and also learn new technologies, about 120 of the respondents strongly agreed and concurred to the notion, 183 of the 405 participants agreed moderately. Only 76 respondents decided to go indecisive on the matter as the remnant respondents are totally against the discourse.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	134	33.1	33.1	33.1
Agree	197	48.6	48.6	81.7
Neutral	61	15.1	15.1	96.8
Disagree	10	2.5	2.5	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 60: A CIO should help the company in deploying and maintaining necessary platforms/ technology

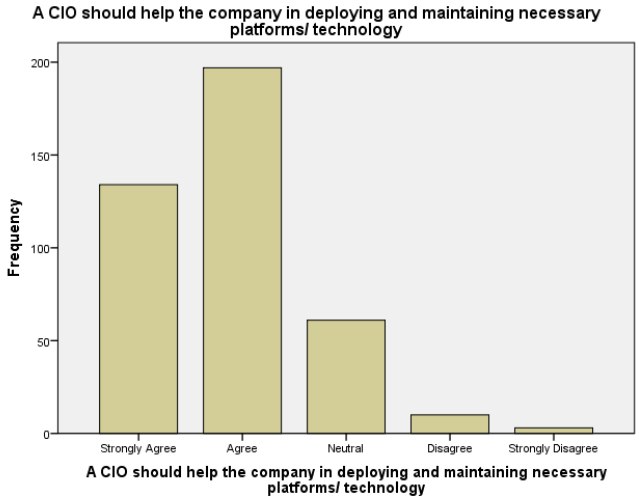

Fig 61:

About 134 of the respondents strongly agreed that it is the function and role of a CIO to help the company as regards the deployment and the maintenance of necessary platforms and technology in the organization, while approximately two-hundred respondents are also in convincing agreement. Sixty-one of the remaining candidates are neutral on the matter and the remaining respondents appear to be in disagreement with the notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	113	27.9	27.9	27.9
Agree	191	47.2	47.2	75.1
Neutral	79	19.5	19.5	94.6
Disagree	18	4.4	4.4	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 62: A CIO should also take steps to improve the desktop support and help desk services of the company

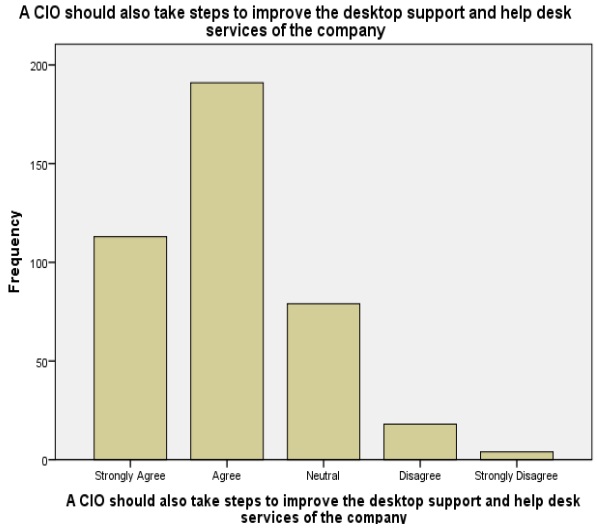

Fig 63:

According to figures 62 & 63 respectively, we can infer that the rendered services of CIOs as observed in form of improved desktop support and help-desk services of the company is very crucial. This fact was supported by a huge amount of 304 participants who contributed to the survey. Whereas, few of the respondents (5.4%) expressed disagreement to the whole matter while the rest of the respondents are neither against nor in support.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	132	32.6	32.6	32.6
Agree	204	50.4	50.4	83.0
Neutral	52	12.8	12.8	95.8
Disagree	14	3.5	3.5	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Fig 64: A CIO should make efforts to recruit and good quality technical talent for the benefit of the organization

Considering whether or not a CIO ought to make enormous efforts in recruiting good quality technical talent for the benefit of any organization, a whopping 336 participants of

the online survey showed their total agreement and accordance with the notion. Only fifty-two of the remainder candidates sat on-the-fence concerning the matter on ground. The left were basically of a disagreeing opinion that a good quality technical talent will not be necessary within the framework of the competency role of CIOs.

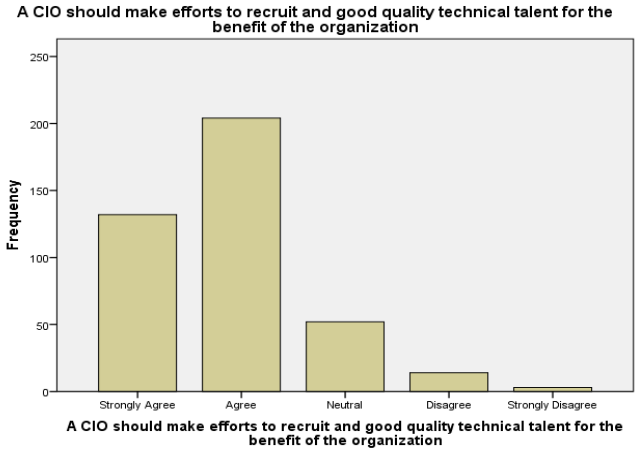

Fig 65:

V. CONCLUSION AND RECOMMENDATIONS

It creates the impression that from the earliest starting point; the CIO role will undoubtedly advance. As predicted by Benjamin et al. (1985: 180), 'CIOs will not be the overseer of the data. Or maybe, he or she will be the corporate officer who genuinely comprehends the interconnection of the information stream to the businesses. The study proves that the CIOs role has changed based on cloud and IoT technology implementations or adoptions in various organizations. The results of the survey proves that CIO as a business strategist should look for adopting best practices for the company's business. In order to adopt the best practices the CIO should look for best practices adopted by majority of the organizations or vendors. The study also states that as a business strategist the main moto of a CIO should be to increase the organizational benefits and the focus should be towards reducing the costs. The study also states that the CIO should consider the strategies adopted by their rival organizations. This will help the organizations to defend against the business rivals at the same pace. The study also states that CIO should look for bringing up automation and enable automating the existing systems and adopt strategies to provide a new direction to the business. The CIO also should be skilled enough to take up administrative responsibilities apart from technical roles. A CIO also has to be ready to propose or replace the existing business strategies as and when required.

The CIO members noticed that factors, for example, energy about authoritative elements and legislative issues, business insight, relational abilities and management of associations with outside and inward partners affect the manner in which the CIO role is being seen and thusly on the desires for this role. CIOs are relied upon to play out their role inside an exceedingly obliged condition and observational material presumes that the role a CIO plays enormously relies upon components, for example, the arrangement and disposition of the board, the development of the association towards the utilization of innovation, role set desires, comprehension of the role of the CIO, announcing structures and access to senior initiative. Exact data demonstrates that the dimension of abilities, competencies, and capacities displayed by CIOs lighten or strengthen the imperatives inside their condition.

The responses received as part of the study states that as an IT strategist the CIO should introduce new technologies to an organization. This will have relationship with training for staff. This can also be a factor which can help training companies for a business opportunity in training services. They can approach the cloud and IoT based organizations to offer training in the respective areas. The cloud service providers also can also look into the opportunities for training services and certifications. The study also states that the CIO should be in a position to answer how a particular IT solution is going to be beneficial to the company. This can be answer to the CEO, COO, CFO and also to the users. This also makes us to think about the fact that CIOs should have idea about the various IT solutions available in the market and they should be able to learn and adopt it for the betterment of their organization. The study also states that CIO as an IT strategist should be able to make decisions regarding the platforms which are to be used in an organization and what kind of resources needs to be deployed in an organization. The CIO should have a great understanding of the vendors and their services and he should be in a position to advice the company which vendor to go for. The workshops and trainings and the feedbacks from the market would be a parameter which the CIO can look for opting the best vendor. The study also states that the CIO should have skills to negotiate with IT vendors, frame contracts and resolve disputes in contracts. He should also know the statutory obligations related to every contract. The CIO should also foresee the risk associated with each vendor or their services and should have skills to manage the incumbent risk that comes along with any new technologies.

Numerous CIOs and numerous organizations, as we have just observed, are now well on their way on the adventure. The organizations have experienced radical change – ending up more natural, less various leveled, and characterized more by process than by practical action – and the CIO has changed with them. In a cutting edge organizations, nobody stops. Business, of course, is not an alternative: it must be actuated on interest. Yet, in what capacity will the role keep on advancing? There are a few changes that are as of now in progress. • Keeping the business running tomorrow, the CIO's role will be a lot more extensive than it is today.

The study states that as a change agent the CIO should initiate changing the technology of the entire organization as and when required. This can be based on market demands or for effective competitor handling. The CIO should also should be able to explain the reason behind the implementation of a new technology along with the costs and benefits of it for an organization. As a change agent the CIO should play a main role in smoothly rolling out new technologies initiatives. The CIO has to acquire enough

change management skills to roll out any new technologies and ensure that they are not resulting in business disruptions. The knowledge of disruptive technologies can be a value add for any CIO. The CIO should try to bring technological changes in non IT departments like HR,logistics and so on. This also states that the CIO should have a great business understanding of even the non IT departments in an organization. The study also states that the interpersonal skills of a CIO is very important to handle the resistance and criticisms during the implementation of a new technology. This also connects to the conflict management skills of a CIO. The CIO while bringing change should take measures to build confidence to users while adopting any new technologies in an organization.

Today, the CIO oversees IT change – however as of now, IT is progressively associated with driving business changes which stay with an in front of the opposition. The CIO can distinguish what business changes are required to enhance execution and go up against responsibility for driving end-to-end business process change. Administration situated engineering and process organization apparatuses imply that organizations can change their procedures rapidly and effectively. Business nimbleness, more proficient services, and enhanced speed-to-advertise are all inside the CIO's ambit of duty. The everyday running of the organization, its execution, and productivity, and its long haul key prospects will depend increasingly on the data, information and business understanding that the CIO and the IT division can give. Rather than just conveying IT-focused change, the CIO in tomorrow's organizations will drive business change. So maybe the present CIO will go up against the role of Chief Change Officer?

As an IT functional leader CIO should be able to motivate the staff and encourage them to perform better. This has relationship with various motivational theories in management. The CIO should also plan meticulously for projects apart from managing resources effectively. This proves that CIO should have good project management skills and knowledge. A CIO should take necessary measures to identify and eliminate unethical and unsafe technological practices in an organization. A CIO can achieve this by looking at the industry wide standards and best practices. A CIO should also interact with staff at every level to stay updated on the developments in the business process. This reflects more about the leadership skills and interpersonal skills of a CIO. The results also show that a CIO as an IT functional leader should take efforts to constantly improve the IT process while reducing resource usage. This means that the CIOs should be keen to look at automation and latest technologies which can reduce to resource usage to extend which would in turn increase the revenue of an organization.

The role we foresee for the CIO later on is a considerably farther reaching, testing, and key one than exists today. Managing the expansion in power and impact inside the organization and the manner in which it influences other C-level partners, will request political abilities of the most elevated request. Overseeing and executing IT will stay imperative; however alternate aptitudes which have just progressed toward becoming piece of the CIO's stock-in-exchange will put him or her in post position in the race for senior arrangements. Most CIOs as of now have understanding of the complexities and difficulties of taking care of re-appropriating and organizational connections past their very own organizations. Such relationship management and accomplice management abilities will be vital in the business of things to come. As a technology advocate the CIO should help devise methods for intelligent deployment of technology so the CIO has to take the inputs of his technology peers like a CTO or any such technical leader and help the organization for intelligent deployment of the technology. If required a CIO should step up and readily promote a new technological platform, product or standard which would help the organization to move forward. A CIO should support his staff by providing trainings programs which will enhance their skillsets. This can state that a CIO can be the sponsor for any trainings with in the IT department. As a technology advocate the CIO should help the companies in deploying and maintaining necessary platforms and technologies. The study also states that a CIO should take necessary steps to improve the support service functions in an organization. The CIO also should make efforts to recruit good quality technical talent for the benefit of the organization.

CIOs have dependably must be communicators, in the case of clarifying innovation in the days of yore to individuals who didn't generally comprehend or esteem it, or alarming associates to the business potential outcomes today. On the planet that is coming, with the CIO forming business procedures and drive development over the enterprises, such abilities will be still more imperative. They will unquestionably still need an all-around established innovation range of abilities, yet likewise the growing and advancing role will request business aptitudes of the most elevated request. CIOs will require an entire comprehension of the business forms as the role extends to incorporate the obtainment and management of procedures and the assistance of advancement.

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