

Cloud-IoT Implementations & Its Impact on Organizational Performance - A Quantitative Study on IT & Business Leaders

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Abstract

In recent years we have seen tremendous growth in two key technologies like Cloud and IoT. Be that as it may, a few common points of interest getting from their integration have been recognized in the literature and are anticipated later on. From one perspective, IoT can profit by the boundless abilities and assets of the Cloud to repay its mechanical requirements (e.g., capacity, handling, vitality). In particular, the Cloud can offer a powerful answer for actualizing IoT service management and structure and additional applications that endeavor the things or the data created by them. Then again, the Cloud can profit by IoT by stretching out its extension to manage genuine things in a more disseminated and dynamic way, and for conveying new services in an expansive number of genuine situations. The integral attributes of Cloud and IoT emerging from the distinctive recommendations in literature and moving the Cloud IoT worldview are accounted for in this paper. The Cloud goes about as a middle layer between the things and the applications, where it conceals all the multifaceted nature and the functionalities important to actualize the last mentioned. This framework will affect future application advancement, where data social occasion, preparing, and transmission will create new difficulties to be tended to, likewise in a multi-cloud condition. In the accompanying, we condense the issues settled and the points of interest acquired while embracing the Cloud IoT worldview. Cutting edge technologies like Cloud & IoT has gained popularity in various businesses and there is great importance for organizations to understand the possible benefits which an organization can benefit by the adoption & implementation of new technologies like Cloud & IoT. This study focuses on a survey-based investigation of various businesses & IT leaders to identify the organizational performance post after the implementation of cloud & IoT. This study focuses on measuring key organizational performance metrics like profit, revenue, customer satisfaction, product delivery, product quality etc.

Keywords: Cloud, IoT, CIO, SME

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1. Introduction

IoT and Cloud computing has transformed the business in recent years. Internet-of-Things & cloud can create profit for the organization by the adaptability, execution and pay-as-you-go nature of it. To be sure when IoT & its application usage increases it would create vast volumes

of data and involve different computational parts (e.g., data handling and investigation calculations) & their integration with cloud computing infrastructures would become a major factor for all the IT consumers or implementers.

A Small Medium Enterprise (SME) building up a vitality management IoT item, focusing on keen homes and shrewd structures. By spilling the data of the item (e.g.,

sensors and WSN data) into the cloud it can oblige its development needs in an adaptable and practical form. When the client base of SMEs increases it can result in developing volumes of data scalable, accordingly exploiting a "pay-as-you-develop" demonstrate. Also, cloud integration enables the SME to store and process huge datasets gathered from different arrangements

A city with smart technologies can create profit by the cloud-based organization of its IoT frameworks and applications. A city & IT consumers of it would probably going to send numerous IoT applications, for example, applications for keen vitality management, shrewd water management, brilliant transport management, urban versatility of the subjects. These applications contain different sensors and gadgets, alongside computational segments. Besides, they are probably going to create substantial data volumes. Cloud integration empowers the city to have these data and applications in a practical manner. Besides, the flexibility of the cloud can specifically bolster developments to these applications, besides the quick organization of new ones without real worries about the provisioning of the required cloud computing assets.

When more and more organizations are moving into Cloud & IoT it is important to study the business benefits which an organization can benefit from the adoption of these technologies. A study at senior IT & business leaders would help in grabbing the insides of organizational benefits which is anticipated post after the implementation of cloud & IoT technologies. This study focuses on quantitative study on IT & business leaders in India to identify more the organizational benefits of cloud & IoT implementations.

The primary objective of this study is to examine the various factors involved in cloud and IoT implementations and the resulting organizational performance. The study aims at assessing various organizational performance metrics like Profit, Revenue, Product Delivery, Customer satisfaction and also to analyse how cloud & IoT is impacting these key metrics. Assessment of these key organizational performance metrics is very important for any organization which is in the verge of moving to cloud or which is already in cloud. This study would help the organizations to refer to the quantitative analysis and plan or fine-tune their cloud & IoT adoptions to avoid any surprises well before the implementation or adoptions.

2. Literature Review

2.1 Profit

Cloud computing and IoT are in a condition of development. New business and age models, industry

benchmarks, best practices, and progression have empowered best performing producers to isolate themselves from whatever is left of the pack.

The outcome of cloud & IoT implementation is to transform the mechanization with cutting edge technologies, drawing in an all the more moneymaking and productive social occasion condition. By and by, for a couple of creators uniting these developments into reliable assignments has shown troublesome. As the product establishment for gathering achievement, Enterprise Resource Planning (ERP) game-plans are the trademark fit for enabling these key changes [Rao, 2012]. In a present report, makers were requested to demonstrate their best two objectives for the coming year. Plainly, profitability is the authentic driving piece for any organization; that will never be accepted to allude to change. In any case, what is changing are the techniques by which enterprises or businesses are getting to that profitability.

The greater objective of any business is to make a profit and cut the operational costs wherever conceivable can enormously impact its profit objective. The best-favored angle of moving to the cloud is obviously a budgetary one. The financial model identified with the cloud is evident and wise [Ranjan, 2015]. There is no real to living costs, level rate month to month charge per client and proportion of data trade restrain utilized, and clear adaptability in either heading.

The study found that 88 percent of cloud clients showed cost hold stores and 56 percent of respondents concurred that cloud organizations have helped them to improve the profit. Also, 60 percent of respondents said cloud computing has decreased the need for their IT organizations to deal with the framework, giving them a more noteworthy opportunity to spin around system and progression. Moreover, no ifs and or buts, 62 percent of the organizations that have set aside extra cash are reinvesting those hold sponsors again into the business to expand headcount, support wages, and drive thing progression [Perere, 2013]. The investigation indicates unequivocally what an essential effect cloud computing is having on the U.K. what's more, U.S. organizations, Engates said. It's especially enchanting that, paying little regard to the unending cash related establishment, half of the relationship on the opposite sides of "the lake" are genuinely expanding benefits and working up their business using the cloud. This solidifies setting resources into headcount and remuneration and what's all the more driving further enhancement.

2.2 Revenue

Cloud IoT adoptions would ideally enable the organizations to reduce the costs; it can also enable the organizations to dispatch completely new wage streams,

and the degree of this open passage is 'Goliath'. Take the occasion of a printing firm. In the printing plant, machine-based sensors can keep the producer taught of whether there are any lacks along the line, engaging them to settle blames as or even before they occur. They may in like way utilize sensors in a mechanical age framework to collect data about each development in the creation system, and after that dissect the data to redesign efficiencies and lessening bubbles. In any case, imagine a circumstance in which sensors are also set in the printer units. The data gave by these incalculable would give an enormous operational and execution record of the printers. This data would engage the maker to complete three things.

Promptly, it can constantly improve its things at the planning stage to guarantee routinely point by point deficiencies are removed. Likewise, it could utilize the data to imagine where and when issues may occur, engaging them to offer a subordinate accomplice association to their clients [Beale, 2011]. IoT connected with remote observing and bolster enables organizations to perseveringly pass on data from related things and particular purposes of enthusiasm for cash following and making frameworks.

As expressed, organizations can offer to propel association contracts to screen and resolve issues. For clients without such contracts, organizations can offer exceptionally named repair benefits through which they can make new leads for the thing/advantage substitution or update. For each association with a client without an association contract, effective or fizzled deals, attempts can be sustained once more into the business' suggestions motor to expand dynamic help and invigorate its business approach, guaranteeing things and game plans battle better ring with clients' needs [Dobre, 2014].

2.3 Product Delivery

What do oil pipelines, mechanical office floors, computerized stockrooms, shipping compartments, and sustenance disseminating focuses have in like way? They're all crucial parts in supply chains and they're all confronting a key change by the prudence of the Internet of Things. The Internet of Things, or IoT, has changed into an intense issue over the business world, somewhat in the context of the sheer number of "things" being connected over the Internet. These contraptions, be they cars, mechanical robots, pieces of clothing washers, lifts, or home indoor controllers, are being equipped with sensors and frameworks that draw in them to make high volumes of data and transmit it over the Internet.

On the not as much as the appealing end, organizations are amassing and investigating that data to train a course of action regarding business choices and endeavors. Stores sort out circumstances, and the frameworks that

explore them will be among the best recipients of cloud-controlled IoT designs [Hossain, 2013]. Sensors, controllers, and other IoT related contraptions will pester everything from specific things to compartments and transportation holders. They will be presented all through amassing plants and stockrooms and will help track maritime powers of vessels, trucks, and particular vehicles.

All things considered, these changing and interconnected segments will give administrators predictable, end-to-end perceptible quality and authority over their supply chains and thing transport. Layer on data-driven computerization, huge data examination, wherever/at whatever point cloud-based organizations and other basic advances, and store orchestrate outlines are set to bend up fundamentally more earth-shattering, evident and cost-productive. Getting by the capacity of the IoT requires careful sorting out and consolidates dealing with a gathering of difficulties.

Notwithstanding, a different relationship in the degree of industry divisions are by and by tolerating prizes from IoT-empowered supply chains [Hassan, 2013]. Given the present pace of innovative change, and the stimulus to utilize moved advances to switch created plans of action and assignments, affiliations need to move right currently to begin modernizing their supply chains with IoT-driven strategies. Different sorts of supply chains may see more obvious or lesser profitability gets, yet IoT-connected with strategies should drive gigantic changes in thing transport, profitability, reasonability, and other key execution markers paying little respect to the store-mastermind class.

In the Forbes insights survey, 64% of regulators said that the general association of the store arrange was a prerequisite for their association. For organizations with sprawling coordination errands, this shows up to a great degree clear. Amazon, for instance, has encountered quick headway in recent years. It beginning at now oversees more than 500 million stock keeping units (SKUs) (up from 400 million prior this year) and works more than satisfaction focuses, centers, and assorted zones the world over, some of which are more than 1 million square feet in the district. Amazon workers used to stroll around these 'goliath' satisfaction focuses, checking, and picking things [Prakash, 2015]. In any case, in 2012, Amazon procured Kiva Systems, which makes IoT-connected with robots that are eventually used to mechanize that approach. By redesigning scattering center profitability; these robots have cut working costs by 20%, sparing an ordinary \$22 million dependably in each. On the off chance that the Kiva robots were exhibited all around, at all of Amazon's evaluated scattering focuses, it could spare the affiliation more than \$5 billion reliably while in like way guaranteeing that thing transport is lovely.

2.4 Product Quality

Brian Buntz rapidly records cases of organizations that are executing or benefitting from IoT limits. Every depiction shows how IoT is reshaping or renaming industry hones. One case staggeringly persuading is Proactive Quality Assurance, empowered by a course of action of distinguishing and evaluating gadgets in key zones all through the store framework and age process. IoT sensors amass mean thing data and other distant syndicated data from different times of a thing cycle. This data identifies with the strategy of grungy materials utilized, temperature and workplace, abuses, the effect of transportation, and so on the last things. Likewise, whenever utilized as a bit of the exact opposite thing, the IoT gadget can give data about the customer ends on utilizing the thing. These wellsprings of data can later be eviscerated to perceive and fix quality issues. With IoT, the capacity to screen and examine process and thing quality at central fixations in the store framework and age shapes, and perceive when sub-standard materials are presented or thing traits get derailed purposes of intrigue guarantees basic expense decreases [Marusic,2013].

Consider circumstances where redesigned checking of arrangements, fabricating outlines, and even things being utilized by customers can add to an enhanced thing and process quality. Regardless, IBM has for quite a while being an expert on a proactive quality association, building up the Quality Early Warning System (QEWS) estimations for prior, more conclusive affirmation of issues each through it have creation arrange. The QEWS calculations have been joined into the IBM Prescriptive Quality on Cloud offering to engage makers to see issues in provider materials and advancement strategies.

2.5 Customer satisfaction

A productive cloud and IoT usage enable organizations to trick the greater part of their inventive movement, consequently updating the adequacy of their clients who utilize the framework. Through altering slim unquestionable verification and quality controls, organizations can spare this abundance of time and exertion and possess it towards different zones of their business assignments by actualizing cloud and IoT. One unexpected favored viewpoint of cloud and IoT utilization is buyer commitment. While your organization is utilizing cloud and IoT react in a due request in regards to updating all zones of its business shapes, these developments will, over the long haul, affect the customers. Transport times can be all the more precisely anticipated, adjacent to the responsiveness of the customers while planning with the customers [Wamba, 2017]. If your association's customers are furnished with a solid and beneficial snippet of data, they will hand-off this sureness to their customers. This, along these lines, broadens purchaser commitment.

With the assistance of Oracle Service Cloud, Elsevier copied the number of customers discovering answers through its help center concentrations around 52%, while the measure of demand achieving the contact focus decreased by 28%. General purchaser resolute nature stretched out to 91%. Cloud move or its show spending moving from standard IT contributions to cloud organizations will affect more than \$1 trillion in IT spending by 2020, as per Gartner. Two application portions that will feel cloud move the most are business process-as-a-service (BPaaS) and software-as-a-service (SaaS), with a 43% and 37% particular cloud move rate. One of the essential suppliers of BPaaS and SaaS-based IT advantage association answers for endeavors, BMC Software, has utilized cloud move and more indisputable interconnection to change the vehicle/exchange of its Digital Enterprise Management software answers for BMC representatives and customers with fundamentally enhanced shopper reliability, diminished downtime and lower costs.

A victor among the most broadly legitimate indications of the IoT is in its capacity to engage relationships to enhance the customer encounter/satisfaction. In Forbes Insights consider, 90% of officials said that a potential change to customer/buyer satisfaction was a victor among the most fundamental open passages for the IoT. While this shows up extraordinarily clear in the customer space, the IoT can correspondingly essentially impact how customers acquire and gobble up present-day equip [Stephen, 2012]. Every last one of these cases displays that IoT can engage any relationship to push its business. Despite whether it's through creative movement, a streamlined stock framework, better resource following, and association, updated financial key expert, or an unrivaled customer encounter, the IoT can and will proceed to, enhance the fundamental stress for a relationship in generally every vertical.

3. Research Design

As part of this study, a survey was conducted using online methods. The survey attempted to explore the various factors involved in cloud-IoT implementations and the impact it on key organizational performance metrics like Profit, Revenue, Product Delivery, Product Delivery, Customer satisfaction, etc. This study was conducted on IT and business leaders/professionals from various 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 to have an effective result after excluding the errors.

Since this study was conducted on senior IT & business leaders an online viva was used for the data collection purpose. A website named e-mailmeform.com was used to create an online survey. It is a paid services based portal that provides survey setup services. This has

security features like one response from one computer and one response from one IP address. These sorts 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.

4. Survey Results & Discussions

Total number of participants were 405 about 346 male and 59 female respondents were surveyed to explore the change in the CIO role and the resulting organizational performance post after the implementation of cloud & IoT. As showed in the data computed above, exactly 228 respondents out of the total number of people who responded, which is 405 in number, strongly agreed with the fact answering the question that the successful implementation of IoT and cloud computing based technologies will have a bearing on the overall performance of the organization.

Following this wise, a whopping number of 120 respondents, representing 29.6 percent of the total respondents also did agree though not strongly with the fact stated above. Meanwhile, very few respondents, about five in number and accounting for 1.2 percent of the total respondents, disagreed with that. Only two of these respondents who disagreed, strongly expressed their own disagreement while about fifty of the remainder participants went neutral and indeterminate on the matter stating that it is both possible and impossible at the same time.

	Frequency	Percent	Valid Percent	Cumulative Percent
Very high	110	27.2	27.2	27.2
High	182	44.9	44.9	72.1
Moderate	73	18.0	18.0	90.1
Slight	7	1.7	1.7	91.9
Not important	33	8.1	8.1	100.0
Total	405	100.0	100.0	

Figure 1. What is the level of importance of IoT and cloud based technologies in improving the company's performance

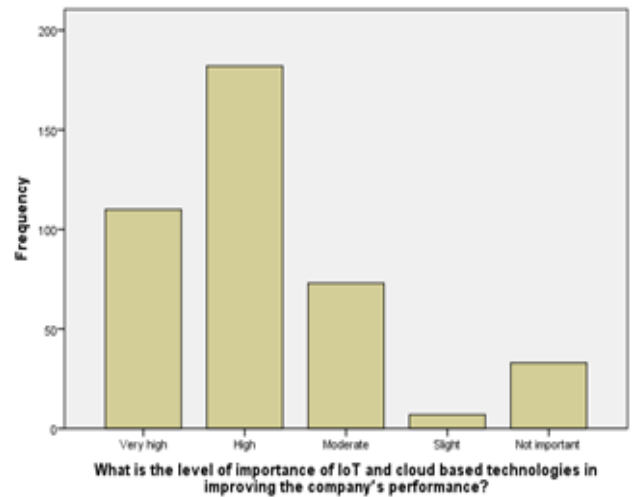


Figure 2.

In agreement with the data computed in Fig. 1 and 2, the total number of respondents who made known their opinion on the question stating “*What is the level of importance of IoT and cloud based technologies in improving the company's performance?*” was 372. About 110 of these respondents accounting for 27.2 percent of the total respondents strongly agreed with the question that CIOs have a high level of importance, while about 182 respondents taking up 44.9 percent of the total respondents did agree with the suggestion though not very strongly. However, about seven of the remaining respondents think that CIOs on have a slight level of importance and only thirty-three persons of these respondents strongly disagreed emphasizing on their non-relevance in organizations. Moreover, there are few respondents who gave a moderate view to the stated suggestion above, and they are 73 in number, accounting for the remaining 18.0 percent of the total respondents.

4.1 Profit

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	74	18.3	18.3	18.3
Agree	182	44.9	44.9	63.2
Neutral	134	33.1	33.1	96.3
Disagree	13	3.2	3.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Figure 3. The Company is making higher profits after implementation of cloud and IoT based technologies

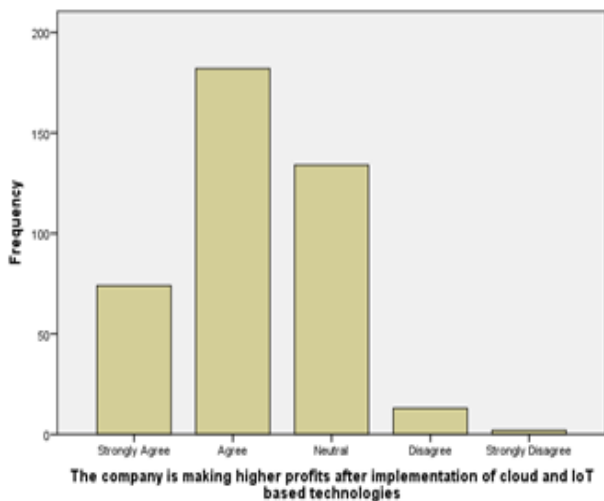


Figure 4.

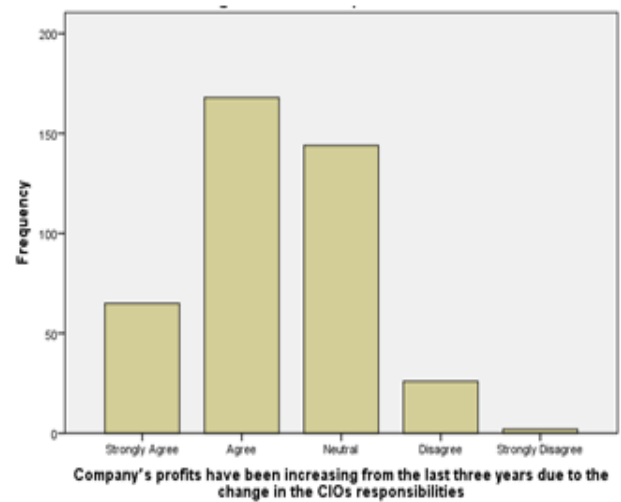


Figure 6.

In agreement with the data computed in Fig. 3 and 4, the total number of respondents who made known their opinion on the suggestion stating “*The Company is making higher profits after implementation of cloud and IoT based technologies*” were 256 in all. About 74 of these respondents accounting for 18.3 percent of the total respondents, strongly agreed with the suggestion, while about 182 respondents taking up 44.9 percent of the total respondents, did agree with the suggestion though not very strongly. However about thirteen of the remainder respondents showed their disagreement with suggestion and only two persons of these respondents strongly disagreed. Moreover, there are few respondents who gave a neutral response to the stated suggestion above, and they are 134 in number, accounting for the remaining 33.1 percent of the total respondents.

With the respect to the data computed above, the total number of respondents to the notion stating that Company’s profits have been increasing from the last three years due to the change in the CIOs responsibilities. About sixty-five of these respondents taking up 16.0 percent of the total respondents strongly agreed with this notion, and about 168 respondents, representing a whopping 41.5 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about twenty-six persons in number and representing 6.4 percent of the total respondents, disagreed with the notion, while two more respondents strongly disagreed. However a few number of respondents, which are exactly 144 in number and accounting for 35.6 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	65	16.0	16.0	16.0
Agree	168	41.5	41.5	57.5
Neutral	144	35.6	35.6	93.1
Disagree	26	6.4	6.4	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Figure 5. Company’s profits have been increasing from the last three years due to the change in the CIOs responsibilities

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	55	13.6	13.6	13.6
Agree	151	37.3	37.3	50.9
Neutral	167	41.2	41.2	92.1
Disagree	29	7.2	7.2	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Figure 7. The stock value of the company in on the upward slope from the time of cloud and IoT implementation

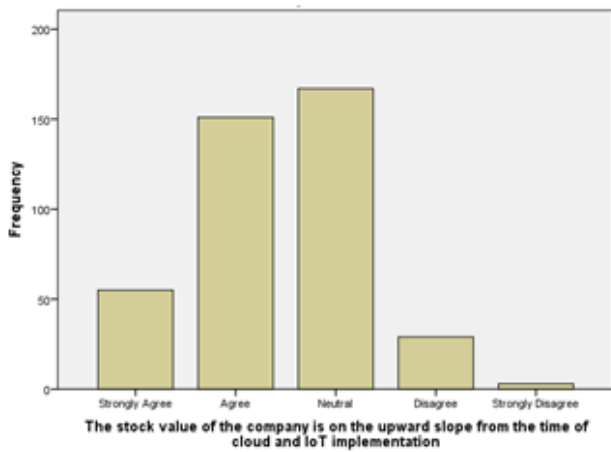


Figure 8.

With the respect to the data computed in Fig 7 and 8, the total number of respondents to the notion stating that the stock value of the company in on the upward slope from the time of cloud and IoT implementation were 405. About fifty-five of these respondents taking up 13.6 percent of the total respondents strongly agreed with this notion, and about 151 respondents, representing a whopping 37.3 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about twenty-nine persons in number and representing 7.2 percent of the total respondents, disagreed with the notion, while three more respondents strongly disagreed. However a few number of respondents, which are exactly 167 in number and accounting for 41.2 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	75	18.5	18.5	18.5
Agree	181	44.7	44.7	63.2
Neutral	130	32.1	32.1	95.3
Disagree	18	4.4	4.4	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Figure 9. The profits of the company are reflected in the optimistic behaviour of the senior management

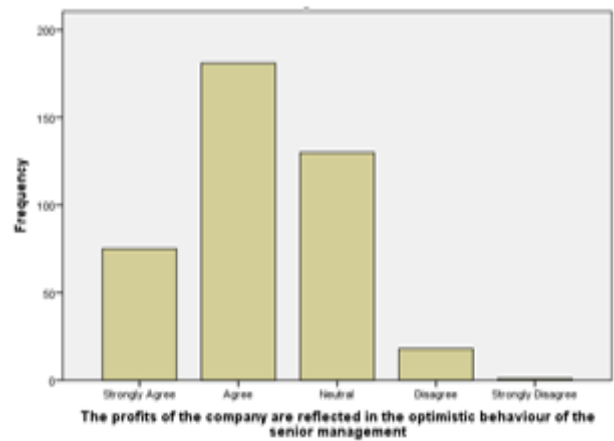


Figure 10.

With the respect to the data computed in Fig 9 and 10, the total number of respondents to the notion stating that the profits of the company are reflected in the optimistic behaviour of the senior management, were 405. About seventy-five of these respondents taking up 18.5 percent of the total respondents strongly agreed with this notion, and about 181 respondents, representing a whopping 44.7 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about eighteen persons in number and representing 4.4 percent of the total respondents, disagreed with the notion, while one more respondents strongly disagreed. However a few number of respondents, which are exactly 130 in number and accounting for 32.1 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	66	16.3	16.3	16.3
Agree	201	49.6	49.6	65.9
Neutral	109	26.9	26.9	92.8
Disagree	24	5.9	5.9	98.8
Strongly Disagree	5	1.2	1.2	100.0
Total	405	100.0	100.0	

Figure 11. the Company's profits have improved as indicated by higher amounts of resource optimization

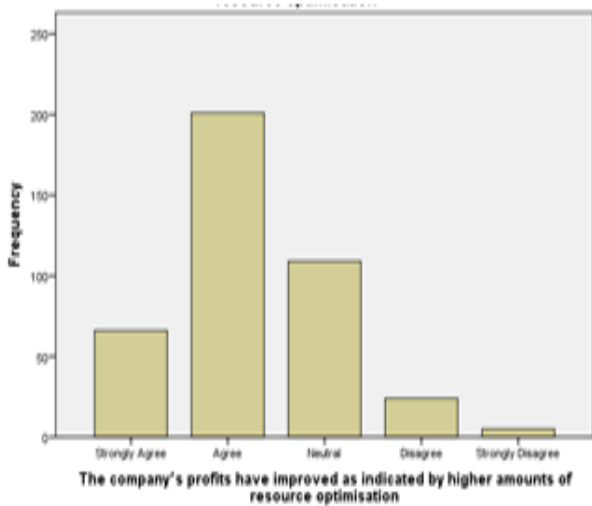


Figure 12.

With the respect to the data computed in Fig 11 and 12, the total number of respondents to the notion stating that The Company’s profits have improved as indicated by higher amounts of resource optimization, were 405. About sixty-six of these respondents taking up 16.3 percent of the total respondents strongly agreed with this notion, and about 201 respondents, representing a whopping 49.6 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about twenty-four persons in number and representing 5.9 percent of the total respondents, disagreed with the notion, while five more respondents strongly disagreed. However a few number of respondents, which are exactly 109 in number and accounting for 26.9 percent of the total respondents, neither agree nor disagree with the stated notion.

4.2 Revenue

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	70	17.3	17.3	17.3
Agree	169	41.7	41.7	59.0
Neutral	141	34.8	34.8	93.8
Disagree	22	5.4	5.4	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Figure 13. The Company's revenues have increased due to cloud and IoT implementation

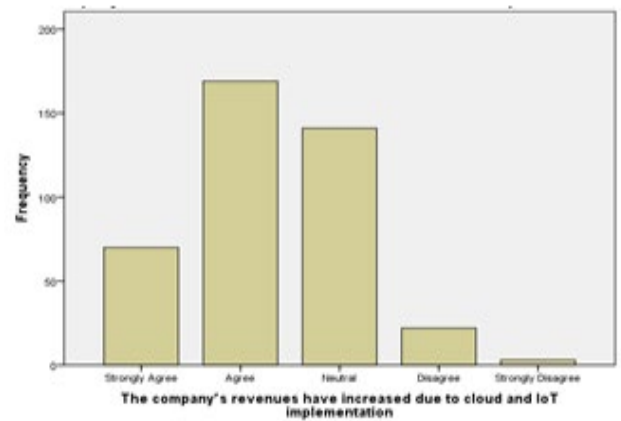


Figure 14.

With the respect to the data computed in Fig 13 and 14, the total number of respondents to the notion stating that The Company’s revenues have increased due to cloud and IoT implementation, were 405. About seventy of these respondents taking up 17.3 percent of the total respondents strongly agreed with this notion, and about 169 respondents, representing a whopping 41.7 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about twenty-two persons in number and representing 5.4 percent of the total respondents, disagreed with the notion, while three more respondents strongly disagreed. However a few number of respondents, which are exactly 141 in number and accounting for 34.8 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	71	17.5	17.5	17.5
Agree	170	42.0	42.0	59.5
Neutral	137	33.8	33.8	93.3
Disagree	23	5.7	5.7	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Figure 15. The change in the role and competencies of CIO has resulted in an increase in the company revenue

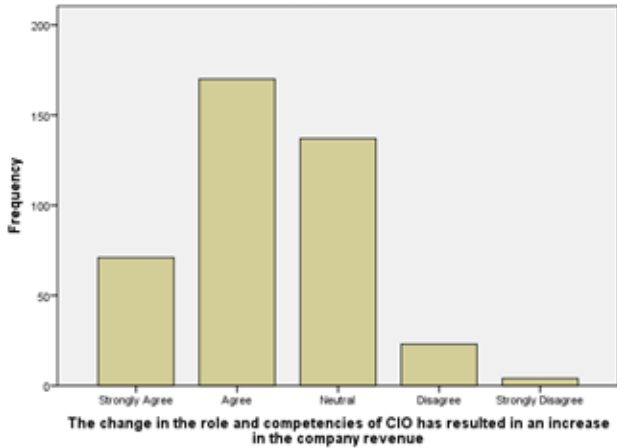


Figure 16.

With the respect to the data computed in Fig 15 and 16, the total number of respondents to the notion stating that the change in the role and competencies of CIO has resulted in an increase in the company revenue, were 405. About seventy-one of these respondents taking up 17.5 percent of the total respondents strongly agreed with this notion, and about 170 respondents, representing a whopping 42.0 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about twenty-four persons in number and representing 5.7 percent of the total respondents, disagreed with the notion, while four more respondents strongly disagreed. However a few number of respondents, which are exactly 109 in number and accounting for 33.8 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	70	17.3	17.3	17.3
Agree	175	43.2	43.2	60.5
Neutral	130	32.1	32.1	92.6
Disagree	24	5.9	5.9	98.5
Strongly Disagree	6	1.5	1.5	100.0
Total	405	100.0	100.0	

Figure 17. The company is making huge investments on acquiring new technology indicating increasing revenues

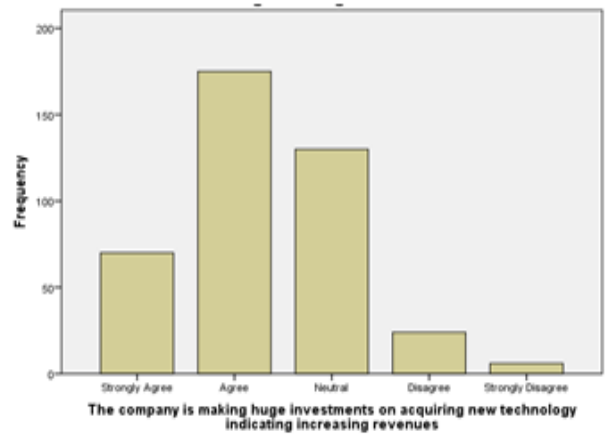


Figure 18.

With the respect to the data computed in Fig 17 and 18, the total number of respondents to the notion stating that The company is making huge investments on acquiring new technology indicating increasing revenues, were 405. About seventy of these respondents taking up 17.3 percent of the total respondents strongly agreed with this notion, and about 175 respondents, representing a whopping 43.2 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about twenty-four persons in number and representing 5.9 percent of the total respondents, disagreed with the notion, while six more respondents strongly disagreed. However a few number of respondents, which are exactly 130 in number and accounting for 32.1 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	68	16.8	16.8	16.8
Agree	170	42.0	42.0	58.8
Neutral	148	36.5	36.5	95.3
Disagree	17	4.2	4.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Figure 19. the Company's growing activity in India and abroad implied higher incomes

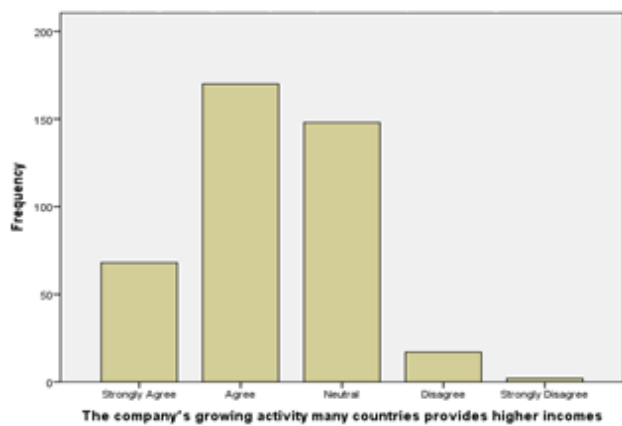


Figure 20.

With the respect to the data computed in Fig 19 and 20, the total number of respondents to the notion stating that The company’s growing activity in India and abroad implied higher incomes, were 405. About sixty-eight of these respondents taking up 16.8 percent of the total respondents strongly agreed with this notion, and about 170 respondents, representing a whopping 42.8 percent of the total respondents also agreed with the notion albeit not strongly. A very handful of respondents, about seventeen persons in number and representing 4.2 percent of the total respondents, disagreed with the notion, while two more respondents strongly disagreed. However a few number of respondents, which are exactly 148 in number and accounting for 36.5 percent of the total respondents, neither agree nor disagree with the stated notion.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	74	18.3	18.3	18.3
Agree	175	43.2	43.2	61.5
Neutral	133	32.8	32.8	94.3
Disagree	19	4.7	4.7	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 21. Success of cloud and IoT based platforms of the company has resulted in an increase in the company revenue

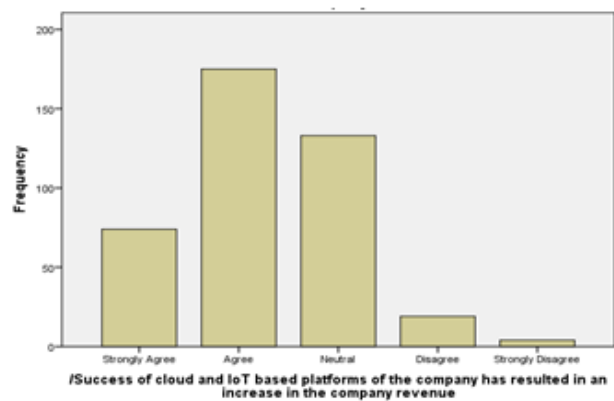


Figure 22.

With respect to figures shown above, total number of 405 people responded to the suggested idea stating that as CIOs; Success of cloud and IoT based platforms of the company has resulted in an increase in the company revenue. Exactly 74 of these respondents accounting for 18.3 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 nineteen respondents disagreed with the idea with four more respondents who strongly disagreed. Meanwhile exactly one-hundred and thirty-three respondents taking up 32.8 percent of the total respondents gave indifference response to the idea.

4.3 Product Delivery

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	95	23.5	23.5	23.5
Agree	203	50.1	50.1	73.6
Neutral	88	21.7	21.7	95.3
Disagree	17	4.2	4.2	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Figure 23. We have always been delivering our products and services well in time

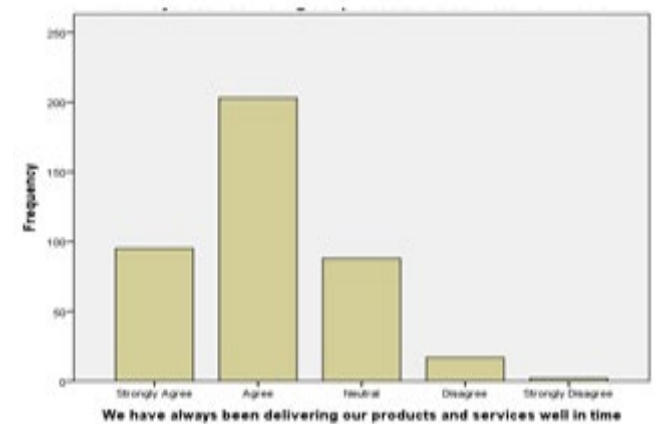


Figure 24.

With respect to Fig 23 and 24, total number of 405 people responded to the suggested idea stating that as CIOs; we have always been delivering our products and services well in time. Exactly 95 of these respondents accounting for 23.5 percent of the total respondents, strongly agreed with this idea, and 203 respondents representing 50.1 percent of the total respondents also did agree though not strongly with it. However seventeen respondents disagreed with the idea with two more respondents who strongly disagreed. Meanwhile exactly eighty-eight respondents taking up 21.7 percent of the total respondents gave indifference response to the idea.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	82	20.2	20.2	20.2
Agree	206	50.9	50.9	71.1
Neutral	104	25.7	25.7	96.8
Disagree	13	3.2	3.2	100.0
Total	405	100.0	100.0	

Fig 25. We have mechanisms to ensure quick product development without loss of time

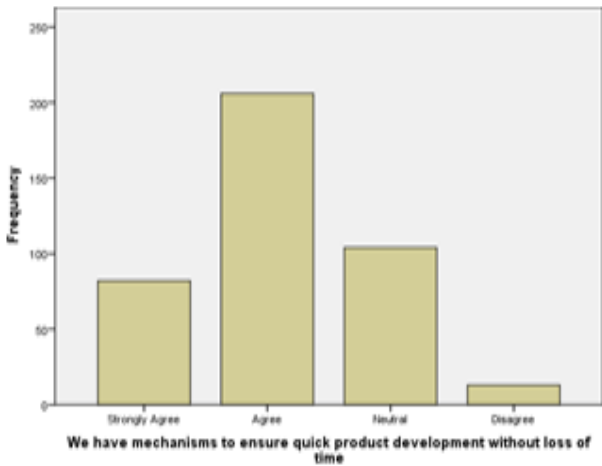


Figure 26

With respect to Fig 25 and 26, total number of 405 people responded to the suggested idea stating that as CIOs; we have mechanisms to ensure quick product development without loss of time. Exactly 82 of these respondents accounting for 20.2 percent of the total respondents, strongly agreed with this idea, and 206 respondents representing 50.9 percent of the total respondents also did agree though not strongly with it. However thirteen respondents disagreed with the idea. Meanwhile exactly one-hundred and four respondents taking up 25.7 percent of the total respondents gave indifference response to the idea.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	84	20.7	20.7	20.7
Agree	205	50.6	50.6	71.4
Neutral	100	24.7	24.7	96.0
Disagree	16	4.0	4.0	100.0
Total	405	100.0	100.0	

Figure 27. As our technology and business objectives are clear and well defined, we are able to deliver products quickly

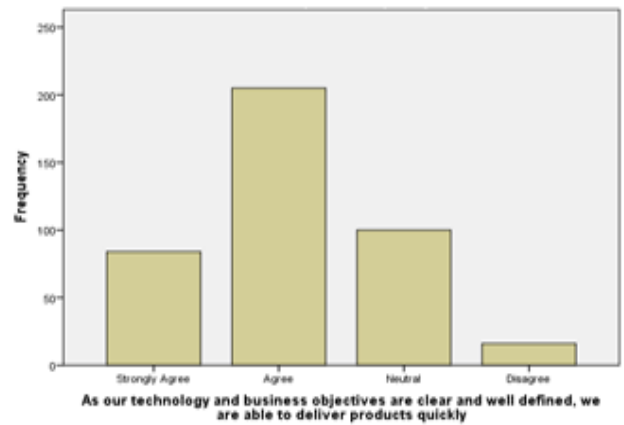


Figure 28.

With respect to Fig 27 and 28, total number of 405 people responded to the suggested idea stating that as CIOs; As our technology and business objectives are clear and well defined, we are able to deliver products quickly. Exactly 84 of these respondents accounting for 20.7 percent of the total respondents, strongly agreed with this idea, and 205 respondents representing 50.6 percent of the total respondents also did agree though not strongly with it. However sixteen respondents disagreed with the idea. Meanwhile exactly one-hundred respondents taking up 24.7 percent of the total respondents gave indifference response to the idea.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	81	20.0	20.0	20.0
Agree	200	49.4	49.4	69.4
Neutral	109	26.9	26.9	96.3
Disagree	11	2.7	2.7	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Figure 29. As our cloud and IoT technology has resulted in coordination among different departments, our production process has become faster

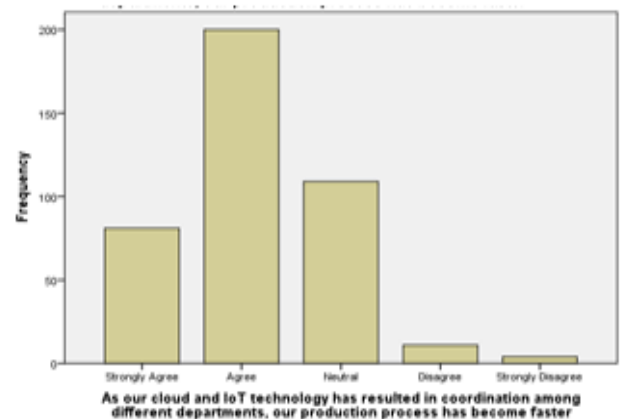


Figure 30.

With respect to Fig 29 and 30, total number of 405 people responded to the suggested idea stating that as CIOs; As our cloud and IoT technology has resulted in coordination among different departments, our production process has become faster. Exactly 81 of these respondents accounting for 20.0 percent of the total respondents, strongly agreed with this idea, and 200 respondents representing 49.4 percent of the total respondents also did agree though not strongly with it. However eleven respondents disagreed with the idea and four more respondents strongly showed their own disagreement. Meanwhile exactly one-hundred and nine respondents taking up 26.9 percent of the total respondents gave indifference response to the idea.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	96	23.7	23.7	23.7
Agree	180	44.4	44.4	68.1
Neutral	107	26.4	26.4	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	

Figure 31. We have never been penalized or no legal actions have been taken against us for delayed delivery

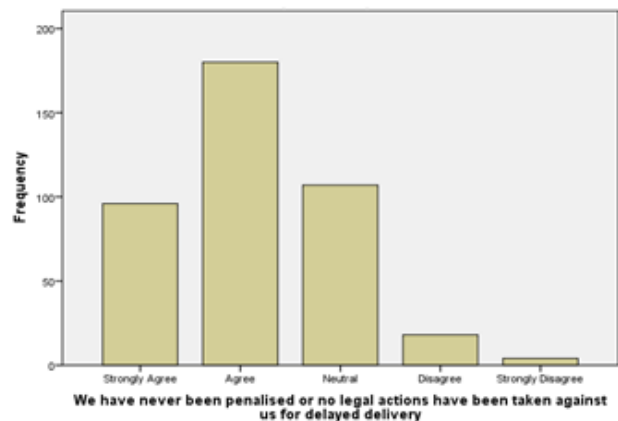


Figure 32.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, We have never been penalized or no legal actions have been taken against us for delayed delivery. Out these respondents, one-hundred and eighty respondents agreed, and about 96 respondents representing 23.7 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly eighteen in numbers disagreed, and only 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 one-hundred and seven participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	98	24.2	24.2	24.2
Agree	203	50.1	50.1	74.3
Neutral	92	22.7	22.7	97.0
Disagree	6	1.5	1.5	98.5
Strongly Disagree	6	1.5	1.5	100.0
Total	405	100.0	100.0	

Figure 33. We ensure uninterrupted and regular availability of our cloud and IoT based platforms

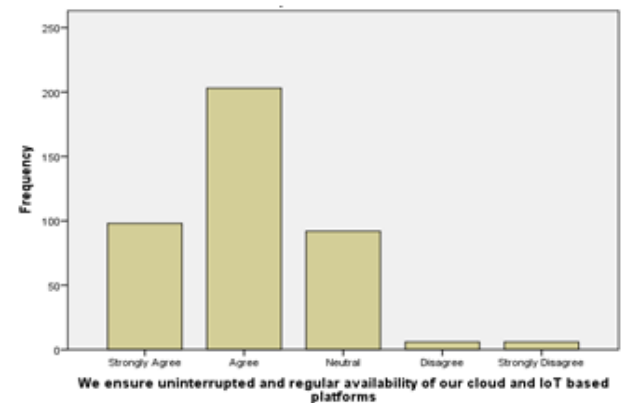


Figure 34.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, We ensure uninterrupted and regular availability of our cloud and IoT based platforms. Out these respondents, two-hundred and three respondents agreed, and about 98 respondents representing 24.2 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly six in numbers disagreed, and only 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 ninety-two participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	101	24.9	24.9	24.9
Agree	206	50.9	50.9	75.8
Neutral	85	21.0	21.0	96.8
Disagree	10	2.5	2.5	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Figure 35. We provide on time, reliable service and back end support in case of emergencies

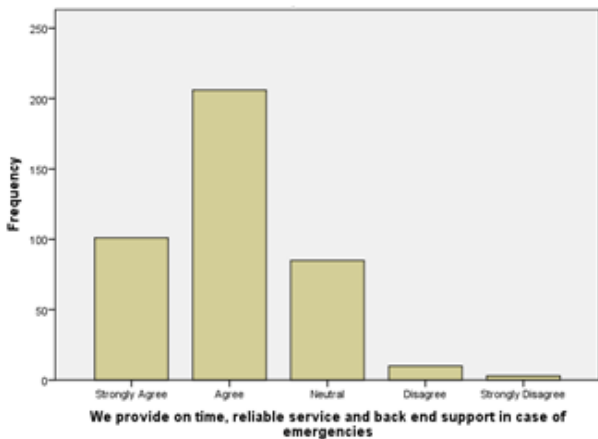


Figure 36.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, We provide on time, reliable service and back end support in case of emergencies. Out these respondents, two-hundred and six respondents agreed, and about 101 respondents representing 24.9 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly ten in numbers disagreed, and only three 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 eighty-five participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	85	21.0	21.0	21.0
Agree	198	48.9	48.9	69.9
Neutral	113	27.9	27.9	97.8
Disagree	7	1.7	1.7	99.5
Strongly Disagree	2	.5	.5	100.0
Total	405	100.0	100.0	

Figure 37. Our cloud and IoT based offerings are secured against all kinds of data and privacy intrusions

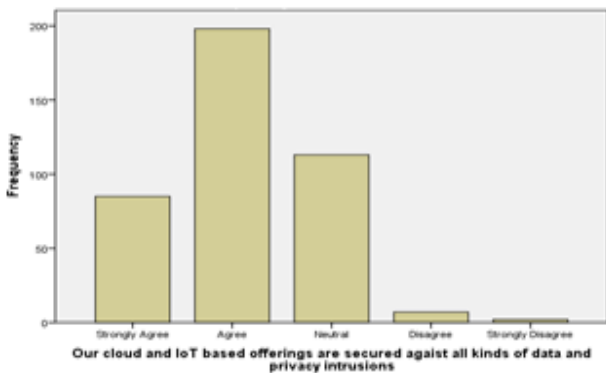


Figure 38.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, Our cloud and IoT based offerings are secured against all kinds of data and privacy intrusions. Out these respondents, one-hundred and ninety-eight respondents agreed, and about 85 respondents representing 21.0 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly seven 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 one-hundred and thirteen participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	99	24.4	24.4	24.4
Agree	200	49.4	49.4	73.8
Neutral	95	23.5	23.5	97.3
Disagree	10	2.5	2.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Figure 39. Our cloud and IoT based solutions are offered only after conforming to SLA requirements and compliance guidelines

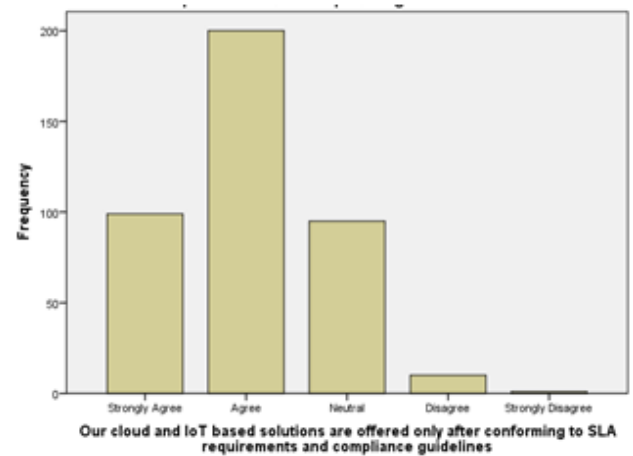


Figure 40.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, Our cloud and IoT based solutions are offered only after conforming to SLA requirements and compliance guidelines. Out these respondents, two-hundred respondents agreed, and about 99 respondents representing 24.4 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly ten in numbers disagreed, and only one 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 ninety-five participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	96	23.7	23.7	23.7
Agree	203	50.1	50.1	73.8
Neutral	96	23.7	23.7	97.5
Disagree	7	1.7	1.7	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Figure 41. Our cloud and IoT based technology is cost effective and efficient

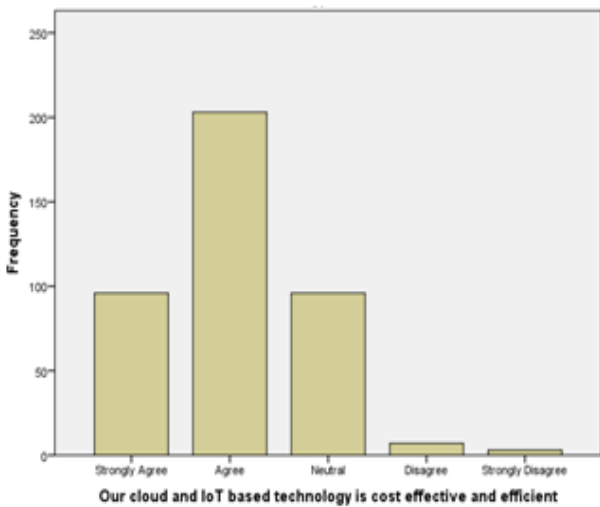


Figure 42.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, Our cloud and IoT based technology is cost effective and efficient. Out these respondents, two-hundred and three respondents agreed, and about 96 respondents representing 23.7 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly seven in numbers disagreed, and only three 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-six participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	84	20.7	20.7	20.7
Agree	203	50.1	50.1	70.9
Neutral	103	25.4	25.4	96.3
Disagree	14	3.5	3.5	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Figure 43. We receive minimal complaints regarding our cloud and IoT based solutions

4.4 Customer Satisfaction

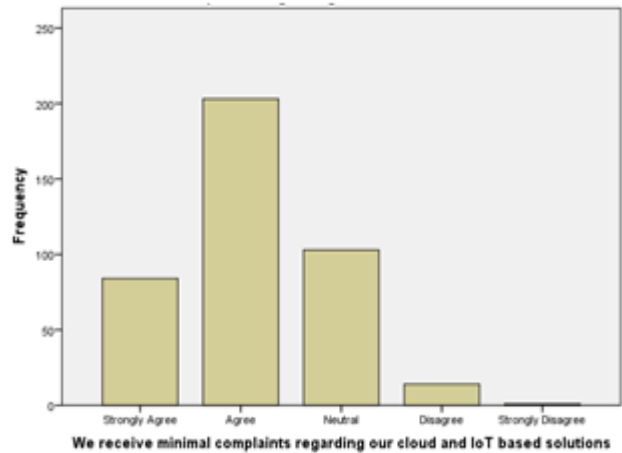


Figure 44.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, We receive minimal complaints regarding our cloud and IoT based solutions. Out these respondents, two-hundred and three respondents agreed, and about 84 respondents representing 20.7 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly fourteen in numbers disagreed, and only one 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 one-hundred and three participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	67	16.5	16.5	16.5
Agree	172	42.5	42.5	59.0
Neutral	145	35.8	35.8	94.8
Disagree	17	4.2	4.2	99.0
Strongly Disagree	4	1.0	1.0	100.0
Total	405	100.0	100.0	

Fig 45. Our customers prefer to use only the cloud and IoT based solutions offered by our company over other organizations

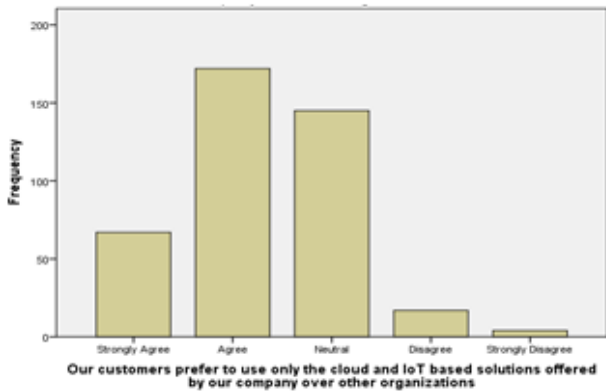


Figure 46.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, Our customers prefer to use only the cloud and IoT based solutions offered by our company over other organizations. Out these respondents, one-hundred and seventy-two respondents agreed, and about 65 respondents representing 16.5 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly seventeen in numbers disagreed, and only 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 one-hundred and forty-five participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	71	17.5	17.5	17.5
Agree	178	44.0	44.0	61.5
Neutral	134	33.1	33.1	94.6
Disagree	21	5.2	5.2	99.8
Strongly Disagree	1	.2	.2	100.0
Total	405	100.0	100.0	

Figure 47. Our customers are readily willing to try all our new cloud and IoT based offerings



Figure 48.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, Our customers are readily willing to try all our new cloud and IoT based offerings. Out these respondents, one-hundred and seventy-eight respondents agreed, and about 71 respondents representing 17.5 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly twenty-one in numbers disagreed, and only one 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 one-hundred and thirty-four participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	88	21.7	21.7	21.7
Agree	192	47.4	47.4	69.1
Neutral	111	27.4	27.4	96.5
Disagree	11	2.7	2.7	99.3
Strongly Disagree	3	.7	.7	100.0
Total	405	100.0	100.0	

Figure 49. We receive positive and constructive reviews from customers regarding our cloud and IoT offerings

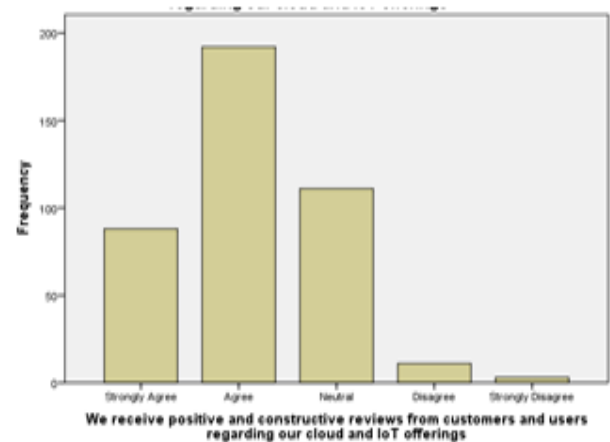


Figure 50.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, We receive positive and constructive reviews from customers regarding our cloud and IoT offerings. Out these respondents, one-hundred and ninety-two respondents agreed, and about 88 respondents representing 21.7 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly eleven in numbers disagreed, and only three 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 one-hundred and eleven participants in number did appear neutral towards it.

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	75	18.5	18.5	18.5
Agree	185	45.7	45.7	64.2
Neutral	124	30.6	30.6	94.8
Disagree	14	3.5	3.5	98.3
Strongly Disagree	7	1.7	1.7	100.0
Total	405	100.0	100.0	

Fig 51. Our clients understand and stay patient in cases of minor issues and bottlenecks in terms of the performance of our cloud or IoT based products

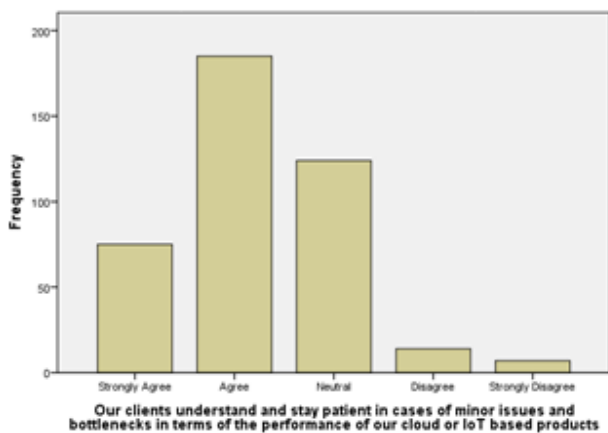


Figure 52.

A total number of 405 respondents expressed their opinion on the fact that as a CIO, Our clients understand and stay patient in cases of minor issues and bottlenecks in terms of the performance of our cloud or IoT based products. Out these respondents, one-hundred and eighty-five respondents agreed, and about 75 respondents representing 18.5 percent of the total respondents strongly agreed. Meanwhile few respondents, exactly fourteen in numbers disagreed, and only seven 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 one-hundred and twenty-four participants in number did appear neutral towards it.

5. Conclusion and Recommendations

Cloud & IoT are emerging technologies that are emerging at a fast pace and this study on IT & business leaders states that they had found cloud & IoT as key technologies that are expected to transform their company’s performance. The awareness about these technologies on senior business and IT leaders proves that the foundation stone already exists in the organization and this spark can be ignited further to achieve business outcomes out of this. Senior IT & business leaders agree

to the fact that they had noticed an improvement in the profit of their organization after the implementation of cloud and IoT technologies. The savings by cornering the legacy technologies would have helped the organizations to achieve higher profits. This analysis would help the other organization who has not implemented these technologies and this can shed some light on such organizations to look at improving their profit with the adoption of these technologies.

The study states that some of the companies even had noticed a change in their stock values due to improvement in profit margin. Cloud & IoT has helped many organizations to optimize their cost and eventually it has contributed to savings and profit. In terms of profits, it can be deduced that the successful implementation of Cloud-IoT-based technologies will improve the overall performance of the organization. It was observed that the Cloud-IoT companies are making higher profits after the implementation of Cloud-IoT technologies. Over the years, the profits of companies have improved as indicated by a higher amount of resource optimization. Considering the revenues; according to the surveyed statistics, the company’s revenues have increased due to cloud and IoT implementation. Also, it can be concluded that the company is making huge investments in acquiring new technologies, indicating high revenue gains. That is, the successes of Cloud-IoT platforms of companies have increased the company’s revenue income.

In the aspect of product delivery and product quality, timely deliveries of products and services due to clear and well-defined technology & business objectives are essential in organizational performance. This can be successfully implemented via mechanisms to ensure quick product development without loss of much time. It also enables a faster production process by proper coordination among different departments controlling the operations of Cloud-IoT based technologies. Then, highly uninterrupted and regular availability of Cloud-IoT based platforms has further promoted product delivery satisfactorily.

.Then with regards to customer satisfaction, such Cloud-IoT-based platforms should delve towards receiving minimal complaints from clients regarding poor Cloud-IoT solutions being offered. By good customer service, great customer satisfaction would be birthed resulting in clients preferring your solutions above that of other companies. With changes in CIO roles, the clients or customers must be readily willing to try all the company’s new Cloud offerings. On the final note, positive constructive reviews from customers and users are beneficial factors to view the positive impact of the change in the role and qualities of CIOs on organizational performance.

From the survey result analysis, we can think and conclude that the successful implementation of IoT and Cloud computing-based technologies will have a positive impact on the overall performance of the organization.

This can be seen in terms of profits, revenues, product delivery, product quality, and customer satisfaction

6. Limitation & Constraints of the Study

A cross-sectional study was conducted to explore the major organizational performance metrics like profit, revenue, customer satisfaction, product delivery etc. The information was gathered only once and at one respondent from the participants, which further limits comparison between groups elusive. Employees from different industry verticals, different organization sizes, and different hierarchical positions were used for purposive sampling to attain representativeness. Although the researcher made an attempt to have representation from different levels of hierarchy in this research, it was not practically possible to draw a random sample from the sampling frame.

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