



Management of Crisis of COVID-9 by the Council for Regulation of Engineering in Nigeria (COREN) Benin City, Using Six Sigma Project Management Approach

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ABSTRACT: Effective project management style is extremely important for managing crisis and this strongly contributes to the success of an organization such as COREN. The objective of this study is to assess the management crisis of COVID-19 by the council for regulation of Engineering in Nigeria (COREN) Benin City, Nigeria using six sigma project management approach with the triangulation design of two phases, Phase 1 using quantitative analysis, descriptive statistics while phase 2 used the qualitative analysis. Final results collected from the merger of phase 1 and phase 2 showed a T-test value of -37.523 at P value significant of 0.000 obtained for understanding project management as it relates to crisis management during times of extraordinary crisis in the model and was less than 5% level of significance indicating that there is a significant relationship between Understanding project management as it relates to crisis management to aid organizations in working effectively during times of extraordinary crisis. Process performance was improved to address the root cause of poor crisis management using six sigma styles with 68 % strongly agreeing that proper planning will provide an efficient medium. A one sample T test result of -42.547, with a 95% confidence interval of the difference at a lower value of -1.99 and an upper value of -1.81, showed that the model is reliable with absence of serial auto correlation. A standard deviation of 0.309 showed that 1% increase in proper understanding of project management styles (six sigma) activities results in 30.9% decrease in crisis such as COVID 19. Hence using the six sigma style of managing extraordinary crisis has proved to sustain managing crisis and strongly contributes to the success of organizations such as COREN.

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COVID-19 affected businesses everywhere, causing the distribution chain not to be uniform. Businesses that thrived on movement of people and goods – airlines, automobiles etc., were the first to feel this impact as several routes both international and local were shut down. Although not facet of industries was affected equally, in as much as some saw a drastic drop in revenue (such as banking firms), some sectors such as the technology sector (commonly referred to as the ICT/IT department) saw a rise in revenue as companies' demand for tech services increased almost exponentially as they focused even more on securing their assets during the troubling times. Establish Communication Protocols Good communication protocols in times of crisis include: whether the business will continue to be functioning throughout the crisis, and if yes, what proportion of the business will remain online? This is particularly important in case there is a lockdown in the area. How will updates be communicated to the client? What will be the tools used for communication, approvals, etc.? What parts of the project should the customer care about? With the issue of unceasing lockdown in most areas, the idea of working from an office is slowly waning as

organizations have been compelled to carry out their day-to-day work from the comfort of their homes. The following are ways that can be adopted to achieve a successful remote working experience: The right remote working tools, especially for seamless communication and video. A unified project management tool that gives a complete picture of the entire agency's operations. A culture that promotes transparency, sharing, collaboration, and teamwork over individual brilliance. Protecting staffs and investors alike should be the number one priority, as some are anxious about the investments, some their careers. The following are measures that can be taken to ensure that: Adopting working remotely policies, cutting out all unimportant movements, cutting non-essential expenditures and Slashing salaries of senior staffs, if possible. Jaques (2010) conversed on reshaping crisis management: the challenge for organizational design. A recent methodology to crisis management is developing which advances past a purely volatile response and creates fresh opportunities for improved organizational development. Therefore, the objective of this study is to assess the management crisis of COVID-19 by the

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council for regulation of Engineering in Nigeria (COREN) Benin City, Nigeria using six sigma project management approach with the Triangulation design of two phases.

MATERIALS AND METHODS

This study employed the concurrent triangulation model. Quantitative and qualitative analysis were explored where the quantitative analysis used questionnaires survey. The in-depth interview method was used to explain the qualitative phase of the model. The concurrent triangulation design is presented.

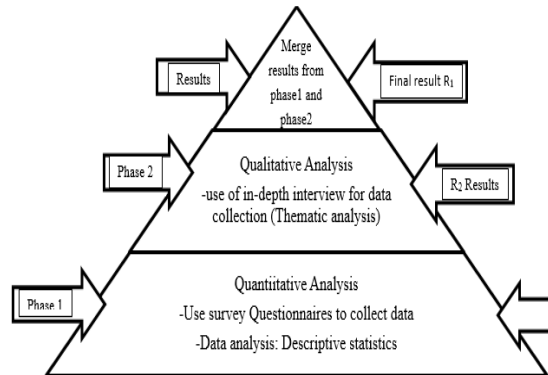


Fig 1: Concurrent triangulation design (source of figure design: Queeneth, Kingsley-O moyibo, 2020)

Project management officers from COREN office, distributed fifty (50) close ended questions in questionnaires and a total of 48 were found useable. For the second phase, the qualitative analysis was carried out using in-depth interview with a sample size of fifty (50) people. All fifty (50) in-depth interviews conducted were found useable for the analysis. A total of one hundred a (100) responses were analyzed and recorded. Residual statistics was used to validate the model. Understanding project management and how it relates to crisis management for COREN to work effectively was introduced to the sample size as a crisis checker. Engineers and some individuals were given questionnaires with in-depth interviews conducted. Collated results were analyzed and recorded.

RESULTS AND DISCUSSIONS

From Table 1 and pie charts shown, over 55% of respondents strongly agreed that a project management officer (PMO) should be flexible with his project management styles(Six sigma)and should consider the safety of his staffs at all times by developing a strong relationship with the Covid-19 medical team. Majority of the respondents also agreed that professionals and multinationals should be more involved in curbing the wide spread of the virus. Also, more than 60% of respondents strongly agreed that managing the adverse effects of covid-19 as a complex project requires good leadership skills, expertise and professionalism. The ideas of the PMO should be critically considered and presented to the covid-19 team before it is put into action. More than 55% of respondents strongly agreed to the opinion that PMO’s should set up correct planning by providing an efficient medium for delivering critical projects whilst maintaining physical distancing, they should also provide room for work digitalization in the advent of an extraordinary crisis such as covid-19, with corporation of professional bodies like COREN, extraordinary crises such as Covid-19 can be well managed and planned for.

Hypothesis Testing: Two hypotheses have been drawn and tested. For testing these hypotheses, a one sample T-Test of SPSS was used to find correlations between demographic indicators. As regards to hypothesis testing, firstly, each listed hypothesis had different sections in the questionnaires and these sections contain multiple questions which were referred to as indicators. Each indicator was related of the questionnaire. For testing each hypothesis, there is a null hypothesis against an alternative hypothesis. For the null hypothesis(H_0), It was supposed that the indicators had not negatively affected the management of the current crisis (covid-19), while for an alternative hypothesis(H_1),

Table 1: Table showing statistics of in-depth interviews carried out on respondents

	In-depth interview							
	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
IDI1	50	2	1	3	1.42	.081	.575	.330
IDI2	50	2	1	3	1.48	.077	.544	.296
IDI3	50	2	1	3	1.52	.087	.614	.377
IDI4	50	3	1	4	2.02	.132	.937	.877
IDI5	50	3	1	4	1.48	.112	.789	.622
IDI6	50	3	1	4	1.58	.103	.731	.534
IDI7	50	3	1	4	1.44	.100	.705	.496
IDI8	50	2	1	3	1.46	.082	.579	.335
IDI9	50	4	1	5	1.56	.125	.884	.782
IDI10	50	1	1	2	1.42	.071	.499	.249
Valid N (list wise)	50							

It was supposed that implementing said indicators had positive effect on the management of the current crisis (covid-19). Conclusions were drawn according to the result of the tests; Firstly, if Significant, it is less than 0.05. Hence the null hypothesis will be rejected, it means that said indicators positively affected the management of the current crisis (covid-19). Secondly, if the mean in the T-Test is less than 3 based on the Likert scale in the questionnaires (1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 5=undecided), it meant most of the respondent's answered less than 3 (1=strongly agree, 2=agree). Hence the alternative hypothesis will be accepted.

Hypothesis 1: Understanding project management as it relates to crisis management during times of extraordinary crisis: Lack of proper understanding of project management as it relates to crisis management by a PMO or an organization like COREN, may cause massive problems for them which can lead them to incurring unwarranted debt. This hypothesis seeks to find out if understanding project management as it relates to crisis management will aid organizations like COREN to develop an effective working environment for her staff during times of extraordinary crisis or not? Null hypothesis (H_0): Understanding project management as it relates to crisis management will negatively affect organizations in working effectively during times of extraordinary crisis. (Mean ≥ 3). Alternative hypothesis (H_1): Understanding project management as it relates to crisis management will positively affect organizations in working effectively during times of extraordinary crisis. (Mean < 3)



Fig 1: Demographic statistic of a PMO'S flexibility with his project management styles during the crisis.62% of the respondents strongly agreed that the Project Management officials should be flexible with project management styles during a crisis.

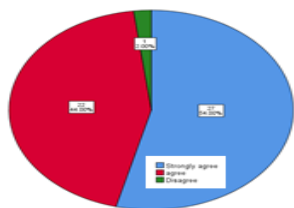


Fig 2: Demographic statistic of a PMO'S safety consciousness of his staffs.98% of the respondents agreed with 54% strongly agreeing and 44% agreeing to a high level of safety consciousness during an extraordinary crisis. Only 2% disagree.

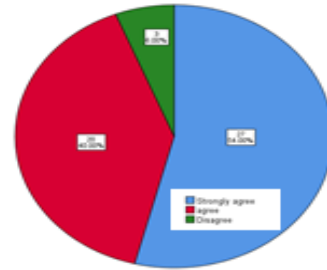


Fig 3: Demographic statistic of a PMO'S solid relationship with the covid-19 medical team

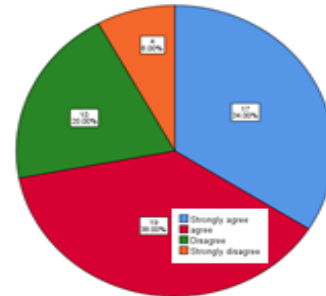


Fig 4: Demographic statistic of involvements of professionals, and multinationals in the fight against covid-19

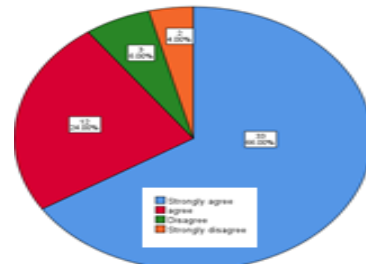


Fig 5: Demographic statistic of good leadership skills as a vital ingredient in managing the adverse effects of covid-1

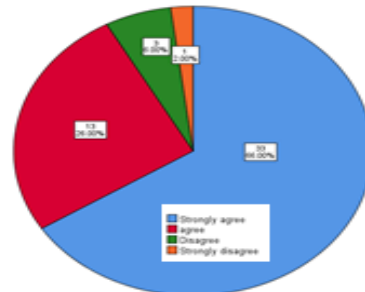


Fig 6: Demographic statistic of expertise/professionalism as a vital ingredient in managing the adverse effects of covid-19

From Table 2, the average significance is 0.00, since $0.00 < 0.05$, the null hypothesis (Mean ≥ 3) will be rejected. Hence the alternative hypothesis (H_1) will be accepted; meaning that understanding project management as it relates to crisis management will positively affect organizations like COREN in working effectively during times of extraordinary crisis.

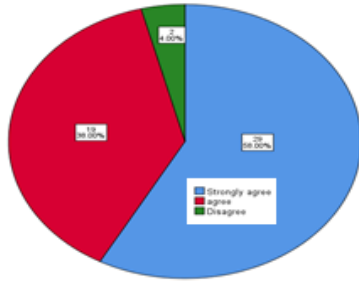


Fig 8: Demographic statistic of critically discussing the PMO'S idea with the covid-19 response team before it is put to action

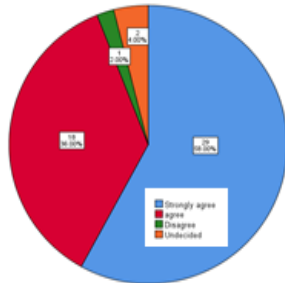


Fig 9: Demographic statistic of providing a room for work digitalization in the advent of an extraordinary crisis such as covid-19

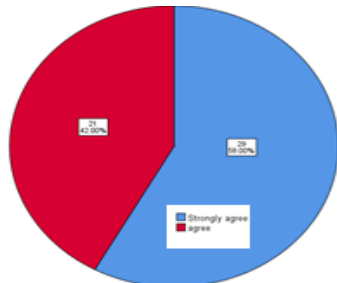


Fig 10: Demographic statistic of corporation of professional bodies like COREN and PMO's in managing and planning for an extraordinary crisis such as covid-19

Hypothesis 2: Establishing ways to identify crisis, assess crisis, handle crisis, and manage extraordinary crisis by organizations like COREN: Failing to establish lockdown measures in managing crises by organizations such as COREN may result in devastating consequences, in the sense that both staff and activities might be halted as a result of negligence. Establishing ways to identify, assess, handle, and manage extraordinary crisis should they arise, will assist organizations like COREN to manage crisis to suppress its adverse effects or will not? Null hypothesis (H₀): Establishing ways to identify, assess, handle, and manage extraordinary crisis should they arise will not assist organizations like COREN to manage crisis to suppress its adverse effects (Mean >=3). Alternative hypothesis (H₁): Establishing ways to identify, assess, handle, and manage extraordinary crisis should they arise will assist organizations like COREN to manage crisis to suppress its adverse effects (Mean <3).

Table 2: One sample T-Test of hypothesis 1

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
CMC1	50	1.02	.141	.020
CMC2	50	1.04	.198	.028
CMC3	50	1.14	.351	.050
CMC4	50	1.24	.431	.061
CMC5	49	1.04	.200	.029
CMC6	46	1.02	.147	.022
CMC7	46	1.02	.147	.022
CMC8	40	1.13	.335	.053

One-Sample Test						
Test Value = 3						
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
CMC1	-99.000	49	.000	-1.980	-2.02	-1.94
CMC2	-70.015	49	.000	-1.960	-2.02	-1.90
CMC3	-37.523	49	.000	-1.860	-1.96	-1.76
CMC4	-28.847	49	.000	-1.760	-1.88	-1.64
CMC5	-68.601	48	.000	-1.959	-2.02	-1.90
CMC6	-91.000	45	.000	-1.978	-2.02	-1.93
CMC7	-91.000	45	.000	-1.978	-2.02	-1.93
CMC8	-35.406	39	.000	-1.875	-1.98	-1.77

Table 3: One sample T-Test of hypothesis 2

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
LMOE1	48	1.10	.309	.045
LMOE2	46	1.02	.147	.022
LMOE3	45	1.07	.252	.038
LMOE4	39	1.05	.223	.036
LMOE5	47	1.04	.204	.030
LMOE6	45	1.09	.288	.043

One-Sample Test						
Test Value = 3						
T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference		
				Lower	Upper	
LMOE1	-42.547	47	.000	-1.896	-1.99	-1.81
LMOE2	-91.000	45	.000	-1.978	-2.02	-1.93
LMOE3	-51.412	44	.000	-1.933	-2.01	-1.86
LMOE4	-54.461	38	.000	-1.949	-2.02	-1.88
LMOE5	-65.773	46	.000	-1.957	-2.02	-1.90
LMOE6	-44.545	44	.000	-1.911	-2.00	-1.82

From Table 4, the average significance is 0.00, since $0.00 < 0.05$, the null hypothesis ($\text{mean} \geq 3$) will be rejected. Hence, the alternative hypothesis (H_1) will be accepted; meaning that establishing ways to identify,

assess, handle, and manage extraordinary crisis should they arise will not assist organizations like COREN to manage crisis to suppress its adverse effects.

Table 4: Findings of research hypothesis results

Hypothesis	Hypothesis Test	Significant.	Result
Hypothesis 1	Understanding project management as it relates to crisis management will positively affect organizations in working effectively during times of extraordinary crisis.	<0.05	SUPPORTED
Hypothesis 2	Establishing ways to identify, assess, handle, and manage extraordinary crisis should they arise will assist organizations like COREN to manage crisis to suppress its adverse effects	<0.05	SUPPORTED

Conclusion For the effective implementation of project management styles such as the six sigma style, the major thing to remember is: a project manager should be flexible with his project management styles. A Project Management Officer (PMO), should always put the safety of his colleagues first at all times, and develop good leadership skills to be applied in managing the adverse effects of covid-19 as a complex project requires expertise and professionalism. Using the six sigma approach of managing extraordinary crisis, there is sustainability in managing crisis as it strongly contributes to the success of organizations such as COREN. Lockdown measures in managing crises by organizations such as COREN were established and it helped to prevent devastating consequences, in the sense that both staff and activities were not halted and negligence was avoided. Established ways to identify, assess, handle, and manage extraordinary crisis should they arise, were recorded to assist organizations like COREN to manage crisis to suppress its adverse effects.

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