

Toward learning organization in a telecom operator network operation center



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ABSTRACT

In new ICT ecosystem, telecom operators need to be adaptive in order to survive in turbulent market environment. The changes in competition, shifting customer preference and rapid technology development force the operator to be adaptive and learn faster than the competitor. The operator needs to be a learning organization. To established profound change, the learning organization (LO) shall start with pilot of small unit of the organization. This study is exploration research in Network Operation Center Department (NOC) in one of telecom operator in Qatar. The study consider three building blocks of learning organization based on Garvin's framework: supportive learning environment, concrete learning processes & practices and leadership that reinforces learning. A survey was administered to collect staff's perspectives using the Learning Organization Survey (LOS). The research will use mixed methodology. The results from the assessment were used to formulate questions for interviews to NOC top management in semi-structural way. Observation was used to analyze and correlate the qualitative and quantitative data and information. The study concludes that NOC still need to develop further to have expected LO and leadership is the key factor on learning organization development at NOC. As implication to organizational development the initiative in people, process and technology expected to fill this gap.

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1. Introduction

Rapid development in technology, especially the adoption of Internet has transformed Information, Communication Technologies into new ICT Ecosystem (Fransman, 2010). The new ICT Ecosystem consisted of four layers of components, which are: network element provider, network operator, content & application provider and consumer. The interaction between all those layers involves financial flow (purchase-sale), material flow, information flow and input for innovation.

The new ICT Ecosystem also evolving. The shifting boundary on each layer might happen from time to time. One layer to another might also absorb some functionality during the interaction.

The dynamic changes in ICT ecosystem force the network operator to be adaptive. The continuous change interventions extend the transformational change into a nonstop process of strategy setting,

organization designing, and implementing the change (Cummings and Worley, 2014). Furthermore in order to adapt to turbulent environments, network operator need to have new strategy approach that is self-design. According to Cummings and Worley (2014), "The self-designing organizations have the capability to alter themselves fundamentally and continuously. It includes considerable innovation and learning as organizations gain the capacity to design and implement significant changes continually. Learning organizations are those with the ability to learn how to change and improve themselves constantly."

The network operator also needs to learn faster to be ahead in the market. According to Garvin (1993), only learning organization that can learn and act faster than rivals can.

In order to generate profound change, the learning organization (LO) shall be start from small unit of the organization. It's to create strong foundation for further development in bigger/wider implementation. It's also need to have unique implementation approach according to unit characteristic.

Network Operation Center (NOC) as the core of operational activities in a telecom operator required

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being adaptive to new technology, new products & services, new business processes and new strategy. The adaptation to change is one of key factor of NOC to be successful on its objectives. Accordingly, NOC need to be learning organization in order to be adaptive to change.

The study of learning organization at NOC is important to assess the present condition of NOC department and its sub-unit based on LO perspective. By having the assessment will also help NOC to identify the supporting and weaknesses factors for further organization development. Ultimately toward learning organization, NOC department expected to be able to run its mission, adaptive to internal and external changes, deliver best output to the organization and add value to organization.

This research is exploration research that focuses on how well LO practice has been implemented at NOC. Secondly, it will focus on identifying supporting and weaknesses factors that influenced NOC to achieve current status.

The research use mixed method that combining qualitative research based on observation & interview and quantitative research based on survey to the staff and management. The interview was conducted in semi structural way to NOC Director, Senior Manager NOC Mobile and Assistant Manager OGNOC Data. The learning organization survey (LOS) was conducted to NOC staff to assess present condition. The median benchmark of LOS is the expected level of LO and the gap analysis was used to identify supporting and weaknesses factors based on the present and expected LO level comparison. Observation was used to correlate result with its context. As implication, the propose initiative of organization development also produce by this research.

1.1. Rational of study

Learning organization as a concept has been introduced for more than decade; however the realization of ideal LO still had many challenges. [Senge \(1990\)](#) mentioned that one of challenge to initiate the LO initiative is not enough time. Author view that for business organization, any initiatives must have quick win to start, to engage people to participate. The result will reinforce enthusiasm, willingness of people to commit on change initiative.

[Garvin \(1993\)](#) identified the gap that the ideal learning organization has not been realized yet currently due to three factors:

1. The recommendation is too ideal and not practical to execute.
2. The LO concept was aimed at senior executives rather than at managers or smaller units where critical organizational work is done.
3. Lack of standard and tools for assessment.

This research will use intentionally Garvin's framework to start with. It's to explore the

application of theory to real implementation. By this research it should identify whether the practical approach is sufficient to define expected LO as new objective for the small unit if organization. It also identify whether the tool provided can practically help on building LO. Moreover, this research will propose areas of opportunity for future scholarly exploration.

1.2. Research questions

The research is exploration research to identify supporting factor and weaknesses, which would influence to allow NOC to achieve status as learning organization. Mainly the research will focus on the following issues:

1. What's the existing learning organization maturity level?
2. What are the supporting and weaknesses factors to achieve such status?
3. What are the implications to the organization (NOC) in regard to existing maturity level and supporting & weaknesses factors?

1.3. Scope and limitation

- The research conducted in NOC department of one telecommunication operator in Qatar, with total workforce 57 peoples, 52 staffs and 5 managers.
- The organization is multi-national company with majority expatriate. The NOC department workforce is consisted of 17 nationalities.
- The research will not study the correlation of LO to any financial performance of the organization.
- Data of this research was taken from survey and interviews in month April – August 2016.

1.4. Theory and conceptual framework

The learning organization is built for many reasons also describe with very wide and various terminology. Many scholars describe the Learning Organization differently. [Senge \(1990\)](#) described learning organization as places "where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together". [Argyris \(1977\)](#) described organizational learning is "a process of detecting and correcting error". [Garvin \(1993\)](#) defined a learning organization as "an organization skilled at creating, acquiring, interpreting, transferring, and retaining knowledge, and at purposefully modifying its behavior to reflect new knowledge and insight".

[Senge et al. \(1994\)](#) explained that some of the reasons why people or organization builds learning organization (LO) are:

- For Competitive Advantage: In the long run, the only sustainable source of competitive advantage is yours organization's ability to learn faster than its competition.
- To Improve Quality: we have found that organization seriously committed to quality management
- To Manage Change: People in learning organizations react more quickly when their environment changes.

Back to Garvin, he describe that there're three critical issues that must be addressed before a company can truly become learning organization. First is the question of meaning: a well-grounded and easy to apply definition of learning organization. Second is management: clearer operational guidelines for practice. Third is measurement: tools that can assess an organization's rate and level of learning.

Using the "three Ms" as a framework, Garvin define learning organizations as skilled at five main activities: (1) systematic problem solving, (2) experimentation with new approaches, (3) learning from their own experience and past history, (4) learning from the experiences and best practices of others, and (5) transferring knowledge quickly and efficiently throughout the organization.

For the measurement, the complete learning audit is a must. It might measure cognitive and behavioral changes or tangible improvement output or both of them.

In order to build learning organization successfully, it's required cultivated attitudes, commitments, and management processes that

accrue slowly and steadily. The first step is to foster an environment conducive to learning. Garvin define first building block, which is supportive learning environment with sub-components psychological safety, appreciation of difference, openness to new ideas and time of reflection.

Second building block is the concrete learning process and practices consisted of five sub-components: experimentation, information collection, analysis, education & training and information transfer.

The third building block is leadership that reinforces learning. As leadership behaviors strongly influence learning organization. Its help create and sustain supportive learning environments, also make easier for the people within organization to execute learning process and practices smoothly and efficiently" (Garvin et al., 2008).

2. Methodology

This research used a mixed methods research methodology. Initial data collection was taken by conducting assessment based upon Garvin's Learning Organization Survey (LOS) instrument. The LOS was used to evaluate the degree of actual application of learning organization (LO) at NOC from staff perspective. There're 50 questions based on 3 building blocks and 10 sub components in LOS instrument. Thirty-three peoples were polled from the total of 52 staffs. An analysis was undertaken to determine the present condition by using means of each subsystem refer to the baseline as shown in Table 1.

Table 1: LOS baseline (Garvin et al., 2008)

Building Blocks and Their Subcomponents	Scaled Scores				
	Bottom quartile	Second quartile	Median	Third quartile	Top quartile
Supportive Learning Environment					
- Psychological safety	31 - 66	67 - 75	76	77 - 86	87 - 100
- Appreciation of differences	14 - 56	57 - 63	64	65 - 79	80 - 100
- Openness to new ideas	38 - 80	81 - 89	90	91 - 95	96 - 100
- Time for reflection	14 - 35	36 - 49	50	51 - 64	65 - 100
Learning environment composite	31 - 61	62 - 70	71	72 - 79	80 - 90
Concrete Learning Processes and Practices					
- Experimentation	18 - 53	54 - 70	71	72 - 82	83 - 100
- Information collection	23 - 70	71 - 79	80	81 - 89	90 - 100
- Analysis	19 - 56	57 - 70	71	72 - 86	87 - 100
- Education and training	26 - 68	69 - 79	80	81 - 89	90 - 100
- Information transfer	34 - 60	61 - 70	71	72 - 84	85 - 100
Learning processes composite	31 - 62	63 - 73	74	75 - 82	83 - 97
Leadership that Reinforces Learning					
Composite for this block	33 - 66	67 - 75	76	77 - 82	83 - 100

The results were then used to set up topics for semi-formal interview and depth-in discussion in informal dialogue. A purposive sampling method was used. The samples were selected based on managerial functions at NOC from different levels and sub-units. Three people were interviewed: the NOC Director, Senior Manager - NOC Mobile and Assistant Manager - OGNOC Data. The results described the characteristics of the learning organization practice at NOC and the supporting and weaknesses factors involved. To validate the

qualitative data analysis that was extracted from the interview manuscript, survey also conducted to management to validate the finding. Observation had used to explain how and why NOC achieved present LO maturity level.

3. Learning organization maturity

The results as shown in Table 2 indicate that NOC in overall has achieved only one out of three the learning organization building blocks. The

supportive learning environment and concrete processes & practices still under the median of the baseline. Only leadership pillar that show strong performance. Hence, it can conclude that NOC has not yet performed learning organization practice and required to develop further.

NOC department consist of three sub-units currently: NOC IT, NOC Fixed and NOC Mobile. Based on the comparative analysis within the sub-units, NOC IT has excelled in many areas compare to the others two as shown in Fig. 1. Based on observation, authors identifies that there are two reasons why it's happened:

- NOC IT was developed recently, it's initiated two years back as pilot project at NOC to absorb IT operation function that was out-sourced. As a pilot, the best talented staffs from NOC Fixed & Mobile were assigned to deliver successful project. In same time, this team has created strong foundations, supportive environment, open communication, performance culture and concrete learning process.
- This sub unit initially led by the best manager at NOC. The person has leadership competences, individual maturity, and good emotional intelligence hence able to perform all six leadership styles (Leadership that Gets Results, Goleman (2000))

Table 2: NOC assessment result

Building blocks	Sub Components & Composite	Present Condition	
		Means	Remark
Supportive Learning Environment	Psychological safety	74	2nd quartile
	Appreciation of differences	68	3rd quartile
	Openness to new ideas	75	Bottom quartile
	Time for reflection	63	3rd quartile
	Learning Environment Composite	70	2nd quartile
Concrete Learning Processes & Practices	Experimentation	67	2nd quartile
	Information Collection	67	Bottom quartile
	Analysis	73	3rd quartile
	Education & training	73	2nd quartile
	Information transfer	66	2nd quartile
Leadership	Learning Process Composite	69	2nd quartile
	Composite	79	3rd quartile

Population (N=52), sample (n=33)

The result of leadership building blocks assessment is also showing the same indication. Since the same manager has been a leader in two sub-units (NOC Mobile and IT), these two has leadership composite above the baseline as shown in Fig. 2.

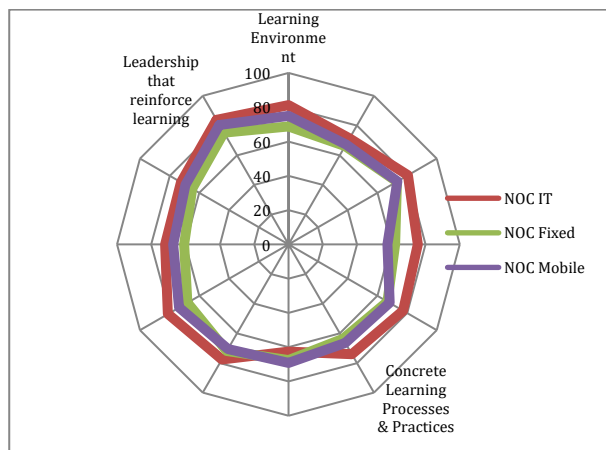


Fig. 1: NOC sub-units comparison of LOS assessment result

4. Supporting and weaknesses factors

To answer the second research question, authors combine the assessment result (quantitative) with qualitative data analysis from the interview. According to the assessment result the supporting factors are: leadership, time for reflection, analysis and appreciation of differences; while from qualitative data analysis there are four additional factors mentioned by the management which are:

self-motivation, multi-nationality /staff diversity, recognition & reward, accepting mistake as part of learning. Refer to LOS questionnaire, the analysis sub component is asking the different views, dissenting opinion during discussion and productive conflict and debate. The appreciation of differences also mention almost the same topic, it's about how the people and organization handle the differences of opinion. Based on that fact, authors correlates those sub-components are linked with the multi-nationality factor.

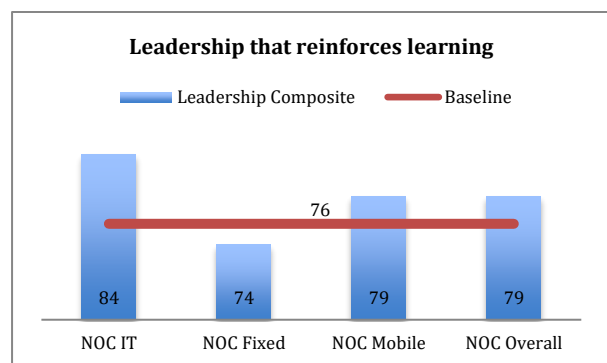


Fig. 2: Comparison of leadership component at NOC

In regard with the weaknesses factors, based on assessment; the openness to new ideas still the main contributor of inhibits factors in term of environment. It's the challenge due to fact that NOC mostly work in routines. Then in process building block the information collection is the most weakness point at NOC. In addition to that, based on

qualitative data analysis management sees following factors are inhibiting LO development: people mindset, length of service, ages, routines and time limitation due to working on shift basis.

Survey was conducted to NOC management in order to validate the findings as well identify the degree of importance from their perspective. Following are the results:

- a) The top three supporting factors of LO practice in NOC are: (1) Leadership, (2) Self-Motivation, (3) Recognition, appreciation & reward.
- b) The top three of weaknesses factors are: (1) People mindset, (2) Time limitation/working on shift, (3) Length of service.

Table 3: Training sub-component delta comparison with average length of service

	NOC Fixed	NOC Mobile	NOC Overall
Education & training (LOS result)	68	74	73
Baseline	80	80	80
Delta to Baseline	-12	-6	-7
Length of Service average (years)	13.76	11.20	11.56

5. Implications to NOC

By having key factors that supporting learning organization as well identifying the weaknesses. This study intended to find solution on how to minimize the weaknesses and to flourish supporting factors. Consequently, the solution will also develop NOC to the next level of LO maturity.

The main ideas as the business solution for NOC to develop more further are:

- Leaders development program
- Integrative process of use of existing tools
- Establishment NOC Information system

According to the survey, the degree of importance of leadership is the first supporting factor to flourish learning organization. There are

Authors found that there's direct correlation between lengths of service with negativity of assessment result on learning & education sub-component. From the observation, authors found it's happened due to the personnel development program (PDP) has been implemented as a standalone program that did not have direct impact to employee appraisal or career development. Accordingly, the ineffective program has been producing negative sentiment to people mindset. Hence, the longer period the person served in the company resulting more negativity in training sub-component process as shown in [Table 3](#). This phenomenon did not happening in NOC IT that still newly established for few years at NOC.

two approaches in order to accelerate the development:

- a. Intensive coaching / mentoring and training for the manager that still have lack of skills & competences. It's to fill the gap in management layers.
- b. NOC introduces team leaders (TL) as new layer in management. The team leaders' role expected to be the enabler that already interacts intensively with the staff to flourish LO in daily operation. Accordingly, TLs need to be equipped with proper knowledge and tools. The TL development program will initiate as bridging program as well a pilot of systematic staff development program for broader scope. The program plan can be shown in [Table 4](#).

Table 4: Team leaders' development plan

Stages	Key Activities
Develop grand design	Define strategy Identify future challenges & scenarios Identify required skills & competences for TL (team leaders) Develop learning methods Develop time plan
Launch pilot program (validate learning methods)	TL learning phase (Internalization) Transformational leadership Emotional Intelligence Fifth disciplines Team building exercise Externalization, Socialization & Combination learning process Knowledge sharing session Emotional intelligence exercise Report and documentation Evaluation
Implementation	Acquire metrics and KPIs Define detailed PDP (Personnel Development Program) PDP execution Monitoring & control Evaluation

Concrete processes still not yet established at NOC according to assessment result. Authors

identifies that organization already had many tools that can be exploited further to achieve better result.

The key touch point in this process is the integration. Currently the organization had following tools of personal and organizational performance: (i) employee performance management /EPM, (ii) personal development program /PDP, (iii) echo survey (employee engagement survey), (iv) company scorecard, (v) internal monthly/weekly report. The only issue is the absent of solid linkage / correlation among those tools. In order to overcome this issue, authors propose the integration approach as shown in Fig. 3.

The third initiative is to establish NOC information system (NIS). It's to fill the gaps on time limitation that identify the as the barrier factor of learning during qualitative data analysis. In parallel, this initiative also addresses the lack of information collection and transfer as found from the LOS assessment.

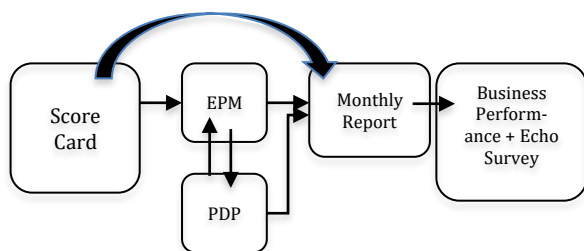


Fig. 3: Integration of existing tools

The NIS shall contain all the knowledgebase of technology; business process as well the best practice. Information such as lesson learned, root cause analysis, activity logs, historical changes / event, products & services catalogues, network diagram, list of partners, escalation matrix, list of contacts and any other important information for the operation shall be consolidated and ease to retrieve by anyone at NOC. The platform must consider the robustness as the critical point during the design phase, as cited by Hariharan (2011).

6. Results and discussion

The comparisons of the research results in NOC department with the theoretical concept LO as follow:

- The need of learning organization practice at NOC is consistent with theory. The NOC management expresses the need of organization to be adaptive to the change regardless it's due to technology advance, market change, or shifting of customer preferences. It's consistent with theory in Fifth Discipline Fieldbook regarding reason for organization to have learning organization (Senge et al., 1994)
- NOC management able to express the meaning of learning organization that really practical and well-grounded as describe by Garvin (1993). One of the manager was describe the LO and emphasize the learning from mistake that consistent with theory from Argyris (1977).
- In order to have optimum result, the three Ms (meaning, management & measurement) need to be aligned and balanced. Authors identify that the weakness in measurement is causing gap between management observations with the actual data (assessment result). The finding of this research is consistent with theory on how to build learning organization (Garvin, 1993; Garvin et al., 2008).
- The influence of leadership role in learning organization is directly shown on assessment result.. As the sub-unit NOC Fixed having weak point in leadership, the performance of this sub-unit in the two others building blocks also lower compare to the others unit. Almost all sub-component of LO in NOC Fixed delivering low result. It's consistent with the theory describe by Garvin about leader key roles to create supportive environment and concrete processes.
- Authors identify that leader at NOC able to transform culture diversity into positive environment and concrete practices to flourish LO. The multi-nationality of NOC workforce contributing positively to the appreciation of differences sub-component. Even NOC employees come from 17 nationalities, the people able to turn this diversity into positive atmosphere that supportive for the learning environment. The multinational environment, also positively contributed to concrete learning process building blocks. The analysis sub-component takes the concern of productive debate and dissenting views during discussion. This result is consistent in NOC department also the sub-units.

7. Conclusion

The organizational development through learning organization is recommended and supported by NOC management. The initiative intended to create agile and adaptive people & organization to overcome external & internal changes and to build effective & efficient team that can support company to survive in turbulent market conditions.

This research can be used for further research in organization development toward learning organization in one company or the operation department in ICT sector. Future research should gather more comparative data from the institution/organization level or the ICT industry.

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