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Research paper

Informal learning in work place: a case of caregivers

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Abstract

Dynamism and adaptive divergence in working environment in responsive to the ever changing knowledge world is an unavoidable factor contributing the growth of any industry. The informal learning gained naturally from day to day practices in healthcare organizations devel-ops an insight which would help to expand the quality of treatment. This motivates the people to learn to improve the treatment with the help of technology. The main objective of this research is to analyse the factors which impact the informal learning in the healthcare organization for the young adult age group (age between 18- 29) of the caregivers. By using the Interpretive Structural Modelling(ISM) finding the inter-relationship between the factors. Finally, the paper concludes with most influential factors feedback, individual level learning culture and team work learning culture which affecting the caregivers in hospitals.

Keywords: *Informal Learning; Caregivers Learning; Learning in Healthcare; Workplace Learning; Interpretive Structural Modelling*

1. Introduction

In day to day activities, due to changes in the environments, innovative and competitive advantages the workplace learning is a very important factor to be considered. In Healthcare sector the human capital caregivers are the most important for the treatment. To improve the quality of the treatment and acquire new knowledge and skills. Workplace learning can occur in two ways, one is formal learning and another is informal learning. The some of the formal learning are such as classroom teaching, training session, practical sessions and the informal learning activities such as sharing the resources, talking with friends and discussing about new technologies and complicated cases. The informal learning helps to improve the skills and knowledge. The formal workplace learning gives only a small portion of workplace learning. Various hospitals follow various methods of informal workplace learning's.This paper explains about the various factors which mainly influence the informal workplace learning in the healthcare sector. The linkage between the factors are analysed through ISM approach.

2. Literature review

The literature is comprised of two parts, namely informal learning factors and it is followed by ISM approach.

2.1. Literature review on informal learning

The informal learning is very crucial to leveraging and personal mastery as one of the five restraints for an organizational culture (Garavan, 1997; Lee and Roth, 2007; Small and Irvine, 2006; Thomas and Allen, 2006).The organizational factor is important for informal workplace teaching (Evers et al., 2016). The self-efficacy is the one of the most concern for the informal workplace learning for the employees (Kyndt et al., 2016). A person with high self-efficacy has high enthusiasm and more participation in the learning process. It is able to the influence of external power (Chen et al., 2001) the self-efficacy is based on the training proficiency and learning intention (Martocchio and Judge,1997).The highly proactive people will willingly participate in the activities and shows initiative, to achieve a significant goal with their high standards(Antonacopoulou,2000).

Collecting feedback from the supervisors and co-workers it encourages the people to learn informally. Feedback concerns with two different functions, i).They provide the adequate information of someone's knowledge and skills is cognitive function.ii). it is one of the motivational function because they get opportunity to improve their learning and to meet the expectation (Ellstrom, 2001). Through getting feedback they can learn about their strengths and weakness of their individual from their supervisors.

Work pressure and Emotional demand are the measurable challenging factor like pace of work and workload. The important outcome of work pressure depends on the two types, viz.collaborative activities and instrumental activities (Kwakman, 2003). The workload and learning activities is based on the levels of workload, (van Ruysseveldt and van Dijke, 2011). Emotional demand is denote the degree to which the job needs to be emotional shared (Kwakman, 2003).The individual level learning culture the people gain more knowledge and skill through the upgrade of reviewing and making continuous learning (Berg and Chyung, 2008).The 80% of workplace learning occurs through informal individual level learning remaining 20% only organizational exposures (Cross, 2011).The environmental culture which inhibited by four aspects are lack of time, lack of proximity, resources and monetary rewards for learning's (Lohman, 2005).

The next step is to develop the research question of this study. It also aids us to get deep insights about inter-connection between various factors by using ISM.

RQ1: What are the factors that influence the informal workplace learning in hospitals in India?
RQ2: How do these factors affect one another?
RQ3: Can we rank these factors?

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2.2. Literature review on ISM

ISM approach has been applied in the various areas and it's depicts in Table1.

Table 1: ISM Approach Applications

Sl.No	Authors	Application area
1	Kannan et al. (2009)	ISM and fuzzy TOPSIS approach used for the selection of reverselogistics provider
2	Saleeshya et al.(2012)	Framework developed for agility assessment in supply chain network using ISM with analytic hierarchy process
3	Attri et al.(2013)	Identified the key enablersin the implementation of total productive maintenance using ISM
4	Kannan et al. (2014)	Applied ISM for analyzing the factors of end-of-life
5	Ambika Devi Amma et al. (2015)	Applied ISM for analysing major threads of cloud computing
6	Venkatesh and Suresh (2016)	Analyses on tourism promotion factors through social media in context of India using ISM
7	Renganath and Suresh (2016)	Analyses on factors related to safety practices in Indian manufacturing company using ISM
8	Keerthana and Suresh (2016)	Analyses on factors related to lean practices by street food vendors using ISM.
9	Amrita and Suresh (2016)	Analyses on lean practicing factors in supermarket using ISM.
10	Patri and Suresh (2017a)	Analyses on lean implementation factors in healthcare organisations using ISM.
11	Patri and Suresh (2017b)	Analyses on agile factors in healthcare organisations using total ISM.
12	Veltmeyer et al. (2017)	Analyses on TQM factors and its hierarchical ranking using ISM

3. Methodology

3.1. Data collection

Using the factors identified from the literature, data was collected from 15 respondents from doctors and nurses from hospital in Tamil Nadu. Data was collected by conducting interviews with the respondents and noting down the responses provided.

3.2. ISM approach

The following steps are used to illustrate the modelling procedures of ISM (Patri and Suresh, 2017a):

1) Identification of factors through expert interview and literature survey. Table 2 depicts the identified informal learning factors related to caregivers at work in hospital.
2) Self structured interaction matrix: Deriving a contextual relationship between the pair of factors which are mentioned below:

V: i alters j
A: j alters i
X: J and I are mutually related
O: J and I are not related

The pair wise comparisons of factors are taken from opinions of 15 experts. The highest mode of opinion is selected from the opinions of all experts. The Self Structured Interaction Matrix (SSIM) derived from mode of opinions of each pair is depicted in Table 3.

3) Initial reachability matrix: The development of initial reachability matrix from SSIM and the conversion steps are mentioned below:

From SSIM (i,j)	V	A	X	O
Initial reachability matrix (i,j) entry	1	0	1	0
Initial reachability matrix (j,i) entry	0	1	1	0

It is represented in Table 3.
The initial reachability matrix for informal learning process is shown in Table 4.

4) Final reachability matrix (Table 5): It is developed through transitivity analysis of initial reachability matrix. Example: if,D=E and E=F, then D=F.
5) Partition of the final reachability matrix:

Partitions of the final reachability matrix are mainly based on the three sets, i.e. reachability set, antecedent set and intersection set. Iteration-1, the intersection elements are only present in the reachability set, those enablers are removed from the set and designated as level-1 factors. Then go to next iteration, repeat the process until all the factors are removed from the set. At the end of this process we get partitioned reachability matrix in to different levels and it is depicted in Table 6, 7, 8, 9 and 10.

6) Digraph Creation:

Digraph is created using information from final reachability matrix and level partitions. In digraph factors are placed in ascending order i.e. first level factor at top of the digraph and second level factor at second position and so on until the lowest level factor is placed at the lowest level in the digraph. The ISM model is depicted in Figure 1.

Table 2: Identified Informal Learning Factors for Caregivers

Sl. No.	Factors	Definition	Reference
1	Organizational (F1)	The two levels of organizational factors are integrated such as cultural factors and social psychological relations. The type of organization factor, which affect the participation in professional learning activities, it perceived as being job resources.	Evers et al. (2016)
2	Self-efficacy (F2)	Self-efficacy is the individual concerns have their own abilities to perform a job to achieve goals. Person with the higher self-efficacy leads to the higher learning process.	Kyndt et al.(2016)
3	Proactive personality (F3)	Proactive learning helps to motivate the people learn and to participate in the activities.	Kyndt et al.(2016)
4	Feedback (F4)	Feedback, which helps the people to learn and improve about their own strength and weakness from coworkers and supervisors.	Kyndt et al.(2016)
5	Learning motivation(F5)	The highly motivateds people willing to learn more and participate in the activities.	Kyndt et al. (2016)
6	Work pressure (F6)	It is defined as "measurable challenging aspects such as the step of work and workload"	Evers et al.(2016)
7	Emotional demand (F7)	It refers to which the workplace requires emotional demand that impact three types of activities such as collaborative, individual and instructional	Evers et al. (2016)
8	Individual level learning culture (F8)	In individual level learning people tends to gain more knowledge and skills through the upgrading the studies.	Berg and Chyung(2008)
9	Team work learning culture (F9)	The team work level is termed as "the mutual construction of new knowledge including the capacity for concerted, combined action"	Berg and Chyung(2008)
10	Environmental culture (F10)	The environmental culture which inhibited by four aspects are lack of time, lack of proximity, resources and monetary rewards for learning's.	Lohman (2006)

Table 3: SSIM for Informal Learning Factors for Caregiver

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
F1	1	X	O	A	O	O	X	A	O	O
F2		1	O	O	X	O	A	O	O	O
F3			1	O	O	A	A	O	O	A
F4				1	O	V	O	V	V	O
F5					1	O	O	O	O	O
F6						1	A	O	O	X
F7							1	O	O	V
F8								1	X	O
F9									1	O
F10										1

Table 4: Initial Reachability Matrix

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
F1	1	1	0	0	0	0	1	0	0	0
F2	1	1	0	0	1	0	0	0	0	0
F3	0	0	1	0	0	0	0	0	0	0
F4	1	0	0	1	0	1	0	1	1	0
F5	0	1	0	0	1	0	0	0	0	0
F6	0	0	1	0	0	1	0	0	0	1
F7	1	1	1	0	0	1	1	0	0	1
F8	1	0	0	0	0	0	0	1	1	0
F9	0	0	0	0	0	0	0	1	1	0
F10	0	0	1	0	0	1	0	0	0	1

Table 5: Final Reachability Matrix

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
F1	1	1	1*	0	1*	1*	1	0	0	1*
F2	1	1	1**	0	1	1**	1*	0	0	1**
F3	0	0	1	0	0	0	0	0	0	0
F4	1	1*	1*	1	1**	1	1*	1	1	1*
F5	1*	1	1***	0	1	1***	1**	0	0	1***
F6	0	0	1	0	0	1	0	0	0	1
F7	1	1	1	0	1**	1	1	0	0	1
F8	1	1*	1**	0	1**	1**	1*	1	1	1**
F9	1*	1**	1***	0	1***	1***	1**	1	1	1***
F10	0	0	1	0	0	1	0	0	0	1

Table 6: Iteration-1 of Level Partition of Factors

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
1	1, 2,3,5,6,7,10	1, 2,4,5,7,8,9	1,2,5,7	
2	1, 2,3,5,6,7,10	1, 2,4,5,7,8,9	1,2,5,7	
3	3	1, 2,3,4,5,6,7,8, 9,10	3	I
4	1, 2,3,4,5,6,7,8, 9,10	4	4	
5	1, 2,3,5,6,7,10	1, 2,4,5,7,8,9	1,2,5,7	
6	3,6,10	1, 2,4,5,6,7,8,9,10	6,10	
7	1, 2,3,5,6,7,10	1, 2,4,5,7,8,9	1,2,5,7	
8	1, 2,3,5,6,7,8,9,10	4,8,9	8,9	
9	1, 2,3,5,6,7,8,9,10	4,8,9	8,9	
10	3,6,10	1, 2,4,5,6,7,8,9,10	6,10	

Table 7: Iteration-2 of Level Partition of Factors

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
1	1, 2,5,6,7,10	1, 2,4,5,7,8,9	1,2,5,7	
2	1, 2,5,6,7,10	1, 2,4,5,7,8,9	1,2,5,7	
4	1, 2,4,5,6,7,8,9,10	4	4	
5	1, 2,5,6,7,10	1, 2,4,5,7,8,9	1,2,5,7	
6	6,10	1, 2,4,5,6,7,8,9,10	6,10	II
7	1, 2,5,6,7,10	1, 2,4,5,7,8,9	1,2,5,7	
8	1, 2,5,6,7,8,9,10	4,8,9	8,9	
9	1, 2,5,6,7,8,9,10	4,8,9	8,9	
10	6,10	1, 2,4,5,6,7,8,9,10	6,10	II

Table 8: Iteration-3 of Level Partition of Factors

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
1	1, 2,5,7	1, 2,4,5,7,8,9	1,2,5,7	III
2	1, 2,5,7	1, 2,4,5,7,8,9	1,2,5,7	III
4	1, 2,4,5,7,8,9	4	4	
5	1, 2,5,7	1, 2,4,5,7,8,9	1,2,5,7	III
7	1, 2,5,7	1, 2,4,5,7,8,9	1,2,5,7	III
8	1, 2,5,7,8,9	4,8,9	8,9	
9	1, 2,5,7,8,9	4,8,9	8,9	

Table 9: Iteration-4 of Level Partition of Factors

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
4	4,8,9	4	4	
8	8,9	4,8,9	8,9	IV
9	8,9	4,8,9	8,9	IV

Table 10: Iteration-5 of Level Partition of Factors

Factor	Reachability Set	Antecedent Set	Intersection Set	Level
4	4	4	4	V

4. Results and analysis

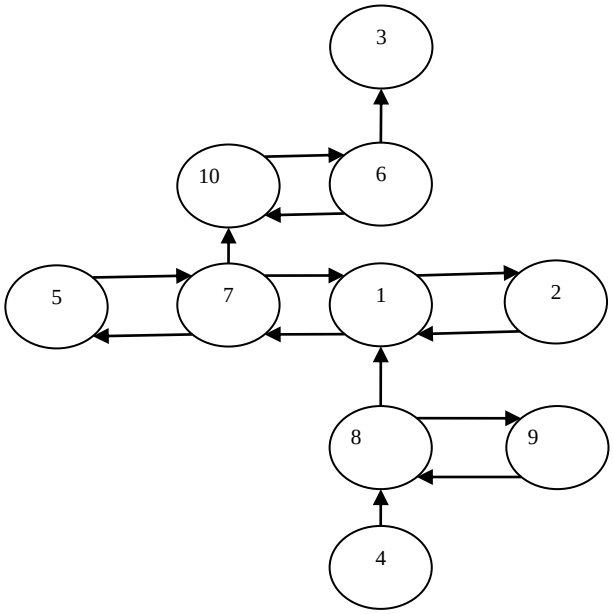


Fig. 1: ISM Model of Informal Learning Factors for Caregivers.

Level V Factor: F4

Factor F4 is directly influencing the factor F8. The individual level learning culture is the important factor for informal workplace learning through collecting the feedback from their colleagues, friends, etc. to improve the value of the treatment.

Level IV Factors: [8] and [9]

Factor F8 and factor F9 are mutually related factors. Factor F8 is directly influencing the factor F1. The organizational culture is important for the informal learning in which the top management should provide the good organizational culture for the employees.

Level III Factors: [5 7], 1 and 2

The factor-5 and factor-7 is mutually related factors. Without the individual learning, motivation and emotional demand there is no informal learning. This should provide by the individual peoples by informal learning to develop their skills. The factor-7 and factor-1 are mutually related factors. Factor-7 is directly influencing the factor-10.The emotional demand and organizational cultures are the most important factor in informal workplace learning that should be managed by the organization. The factor-1 and factor-2 mutually related factors. Without the self-efficacy, there is no informal workplace learning. The self-efficacy should be maintained by the individual it is important factor in gaining knowledge through informally.

Level II Factors: 10 and 6

Factor-10 and Factor-6 are mutually related factors. The work environment is important factors in informal workplace learning.Factor-6 is directly influencing the factor-3. The proactive personality is should come from the individual person's interest for the informal learning to develop their own skills and knowledge.

Level I Factor: 3

Factor-3 is level one factor. This is the factor which has come out after the analysis to be directly related to the key objective of this paper.

5. MICMAC analysis

MICMAC analysis is the cross-impact matrix multiplication applied to classification and it's an operational method. MICMAC rank helps to classify the identified factors based on their driving power and dependence power. In this MICMAC analysis, the variables involved in the study are classified broadly into four categories viz. autonomous factors(zone-I), dependent factors(zone-II), linkage factors (zone-III), independent/key factors(zone-IV) and corresponding MICMAC graph is presented in Figure 2.

		Zone-IV					Zone-III				
Driving Power ➔	10	F4									
	9			F8,F9							
	8										
	7							F1,F2, F5,F7			
	6										
	5										
	4										
	3									F6,F10	
	2										
	1										F3
		1	2	3	4	5	6	7	8	9	10
		Zone-I					Zone-II				
		Dependence Power ➔									

Fig. 2: MICMAC Graph.

Autonomous factors (Zone-I): Nil.

Dependent factors (Zone-II): Work pressure, environmental culture and proactive personality.

Linkage Factors (Zone-III): Organizational, self-efficacy, learning motivation and emotional demand.

Independent/Key Factors (Zone-IV): Feedback, individual level learning culture and team work learning culture.

Table11 represents the MICMAC rank of the study where Rank-1 corresponds to the most crucial factors and Rank-5 corresponds to the least important factors among all.

Table 11: MICMAC Analysis of Factors Rank

Factor	Driving power	Dependence power	Driving power / Dependence power	MICMAC rank
F1	7	7	1.000	3
F2	7	7	1.000	3
F3	1	10	0.100	5
F4	10	1	10.000	1
F5	7	7	1.000	3
F6	3	9	0.333	4
F7	7	7	1.000	3
F8	9	3	3.000	2

F9	9	3	3.000	2
F10	3	9	0.333	4

Feedbacks, individual level learning culture, team work learning culture are critical and key factors for informal learning among caregivers.

6. Conclusion

The informal workplace learning is important to improve the quality of treatment and service in the hospital. Caregivers can improve their individual skills and knowledge's through informal learning. The ISM approach helps in identifying the key factors which measure the informal workplace learning in the health care which are found to be feedbacks, individual learning culture and teamwork learning culture for the informal workplace learning in the hospital.

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