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IMPACT OF ORGANIZATIONAL LEARNING ON ORGANIZATIONAL PERFORMANCE OF SOUTH INDIAN AUTOMOBILE INDUSTRIES

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Abstract: *The present study aimed to investigate the impact of Organizational Learning (OL) on organisational performance in selected South Indian automobile companies. The study adopted Senge's Learning Organization that captures OL under five constructs: systems thinking, personal mastery, mental models, building shared vision, team learning to investigate the characteristics of learning organization. The questionnaires were given to 400 employees from different firms where 335 participants completed with the response rate of 83.7 per cent. The structural equation modeling technique revealed that there is a strong relationship between the components of OL and Organizational performance. To conclude, this study confirmed that organization with the development of their learning process could able to increase their organization performance directly.*

Keywords: *Organization learning, organization performance, India, South India*

1. INTRODUCTION

In the past decade, technological innovation is evidently shown to play a crucial role in the international competition. Hence, technological and scientific capacity decides the export performance of the country (Castells and Laserna, 1989; Drucker, 1993). Since Country's novel systems are not strong, therefore, are not great producers of technology leading to import of both high and low technology products. Consequently, these are forced to import high-technology products to find their trade balance to depreciate in the same fraction, as they are not able to export high-value products. Such situations weaken the country's capability to industrialize and develop export. In this situation, organizational learning has become a crucial process to design a technological learning process and slowly attain the level of innovation. Senge (1990), suggests to build an organization having the attributes of continuous learning and

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improvement, which is the best way to keep up with the competition. Senge also suggests that Organization Learning (OL) controls many factors within an organization, including manufacturing activities.

Earlier studies conducted in this area have mainly concentrated in advanced countries and little attention in developing countries. Although Asian countries articulated their technological, educational and economic performance as the basis of their organization in the organizational learning process, study focusing from this perspective is little, especially from Indian scenario. In spite of the crucial requirement of theoretical models in these countries, organizational learning and technological advance are important qualification to study the active capability building process and consequently, notify the policy makers on the appropriate strategies' design for their industrial progress. Thus, there a need was felt in the present study to examine the organizational learning impact on the performance of South Indian automobile industries.

1.1. Overview of Indian Automobile Industry

A total of 1.69 million vehicles that included commercial, three and two wheelers and passenger vehicles were produced in August 2013; whereas, the production was 1.56 million in August 2012 in the Indian automobile industry. It also registered a development of 8.18 per cent over the same month as against the previous year. By and large, exports in the automobile industry increased by 2.03 per cent during the period of April-August 2013. The passenger vehicle's production was assumed to develop at 13 per cent Compound Annual Growth Rate (CAGR) by the year of 2012-2021 (ACMA, 2012).

The equipments used in the industry plant are the result from a learning process emphasizing competence and the dynamic capabilities of the industry. The investment on the manufacturing technologies is non-reversible or sunk costs, as it represents long-term commitments (Ghemawat, 1991; Kogut and Kulatilaka, 1994). In the present world of mounting competition, organizations are forced to look at new ways to improve their performance and to meet the ever increasing pressure. Thus, the firms are progressively focused upon the concept of organizational learning. In turn, this increases the competitive advantage, innovation, and effectiveness. Knowledge management through division influences both the individual and organizational learning (Liao *et al.*, 2008). It is also being evident throughout the literature that, traditional organizational management in the present competitive market does not follow an appropriate strategy in longer days (Keskin, 2006; Noruzi *et al.*, 2013; Ussahawanitchakit, 2008) and businesses should take necessary steps for their survival by implementing innovation strategies and making continuous improvement .

Further in any organization, resistance to innovation probably results in the business collapse. Employees working in the innovative environment are more likely to share and transfer knowledge and novel ideas efficiently among individuals, which

is crucial for novel product innovation (Hansen, 1999; Cohen and Levinthal, 1990). Researchers (Whipp and Pettigrew, 1991; Stata, 1989; Dertouzos *et al.*, 1989) argued that developing organizations have realized that, the approach in which a firm learns is the key to innovation and for making a beneficial enterprise. Organizations tend to enhance their efficiency and malleability at times of change, as exemplified by culture shifts, innovation, high morale and collaboration, specifically at the times of external challenge and uncertainty (Pentland, 1995).

RQ1: What is the role of organization learning on performance of south Indian automobile industries?

2. THEORETICAL BACKGROUND AND HYPOTHESIS

2.1. Organizational learning and Organizational performance

Organizational Learning (OL) is an innovative and indefinable concept and various authors have defined the learning organization in different perspectives. The definition of OL by Senge (1990) as a "Continuous testing of experience and its transformation into knowledge available to whole organization and relevant to their mission" (p.6). Yang *et al.* (2004) defined OL as a firm that exhibits a high degree of adaptability and renews itself by influencing the continuous learning cycles. Thus, OL is a collective activity, where it covers organizational, group or team level, and individual level of learning to reach organizations' shared vision to achieve performance (Power and Waddell, 2004; Wageman, 1997; Watkins and Marsick, 1993). However, the extent to which learning occurs depends upon the response capability against the ever-changing needs (Redding, 1997) so as to respond and adapt to the volatile changes, maintain competitive edge and foster continuous improvement. Although there are various definitions available on OL, this study adopted Senge's model (Senge, 1990) which emphasizes on the continuous conversion of knowledge available to the whole organization.

As per the statement of Senge (1990), learning organizations are those, wherein the individuals continuously develop their capability having the attributes of: creating desired findings, cultivating expansive patterns and novel thinking, freedom for collective ambition, and where people continuously perceive the learning through group. The learning organization element that differentiates learning from more traditional organizations is the mastering of specific 'component technologies' or fundamental disciplines. Senge (1990) identified five technologies, which are: personal mastery, team learning, systems thinking, mental models, building shared vision, and converge with new learning organizations. Further, Senge mentioned in this regard that individuals are agents, who operate upon the systems and structures of which they are a part. All the different factors are hence, 'concerned about the transfer of mind from seeing as different partitions to seeing it as a whole, from seeing people as vulnerable reactors to seeing them as active participants in shaping their actuality, and also from acting on the present to create the future' (Senge, 1990).

In this respect, several studies applied OL in technology, intensive industries as a main factor to maintain innovation. This Senge model has the capacity to react to the changes in the external environment and providing the source to alter and change the existing rules and strategies. Overall, the organizational learning is the basis for accomplishing and enhancing competitive advantage, corporate performance, and organizational innovation. Having given this background, the present study proposes that organizational learning provides knowledge and also create novel ideas and relieve from traditional knowledge. Figure 1 depicts the conceptual model of proposed relationships.

System thinking is one of the major modules of the organizational performance concept. Senge (1990) believes that systems thinking is the key that binds all the five concepts together as a coherent whole; whereas, the successful systems thinking is about being able to observe the whole or perspective of a situation and its interconnections to its environment; and this enables the inadvertent consequences of well-planned actions to take precautionary measure and minimise. In the Senge model, systems thinking have a positive relationship with the organizational performance. Empirical studies also show the presence of the positive relationship between systems thinking and performance of the organization (Senge & Sterman, 1992).

Mental Models are intensely established generalizations, assumptions, or even images or pictures that impact how we take action and understand the world. These models give a framework for the interpretation of activities and ideas, support in restructuring the current data, and help in the inculcation of new information(Argyris, 1990, 1993; Scharmer, 2009; Wheatley, 1992, 2005). Various empirical researches showed that there is an association between Mental Models and Organizational Learning (Lim and Klein, 2006; Mathieu *et al.*, 2000).

Communication shared vision means to articulate the different components of an organization allowing them to redirect their interest from an individual perspective to the advancement within the firm (Wheatley, 2001). Senge (1990) found that for the functional effectiveness of an organizational system, the members of an organization need to become a single unit that thinks alike rather than assuming individually. Shared vision refers to a common direction among the organization for learning. Involvement of people in establishing and implementing a joint vision leads to their motivation to learn their responsibility (Chermack *et al.*, 2006). Many personal visions of leaders have never got translated into shared vision electrifying an organization. Many empirical studies show that, the shared vision has the positive relationship with organizational performance (Chermack *et al.*, 2006; Calantone *et al.*, 2002).

Team Learning is defined as the member's capacity to start dialogues, prevent the assumptions, start genuine talking and thinking with one another. Edmondson (2002) indicated that problems like poor psychological safety climate, significant power differentials, and the role abuse by team leaders are all considered as unfavorable for team learning. Further, the training activities (e.g. cross-training) in teams concentrate

on enhancing the effectiveness of team members in inside the team by systematically improving attitudes, skills and task-related knowledge. Whereas, the activities of the team-building (e.g. outward-bound activities) concentrate on improving and analyzing the interactions among the team members and processes through the provision of distinct mental and physical challenges in unknown places (Goldstein and Ford, 2002). Some evidence which supports the influence of team leader and its members' training on increasing the effectiveness of the team, even though in some areas the team-building activities are weaker (Akuzum, 2014; Janz *et al.*, 1997; Salas *et al.*, 2004; Liang *et al.,* 1995).

The term 'Personal Mastery' is the regulation of deepening our personal vision, continuous clarification, concentration over the energies, increases the level of patience, and experiencing the reality objectively. Therefore, it is considered as a keystone of the learning organization. Organization's commitment and capacity for learning depend on its members. Empirical evidences suggest that personal ability of the individual may impact the organizational performance either directly or indirectly by organizational learning (Garcia-Morales *et al.*, 2006; Aragón-Correa *et al.*, 2007; Blackler & McDonald, 2000). Therefore, it is predicted that Personal Mastery be related to Organizational Learning.

Till date, there is no evidence in measurement of effectiveness of organizational performance regarding to capability of learning. A few financial measures on previous studies like perceptual non-financial measures include adaptability/ flexibility, profitability, innovation, competitiveness and productivity, Return on Assets (ROA) and Return on Investment (ROI) and in few cases, a combination of both non-financial and financial measures (Labedz *et al.*, 2011; Panayides, 2007). Voss *et al*. (2006) assessed the association with the performance and innovation, unlike the others who investigated the organizational learning impact on performance (Barret Balloun, Weinstein, 2005). Empirical studies have shown that association is between the organizational learning and performance in for-profits organizations. In general, the performance is directly proportional to organizational learning, especially in strong competitive settings. In particular, it is considered that learning in organization may lead to skills (Fiol and Lyles, 1985), financial performance (Perez *et al.*, 2005; Lei *et al.,* 1999), values changes (Argyris & Schön, 1978), efficiency (Kontoghiorghes *et al.*, 2005; Wu and Fang, 2010; Hult *et al.*, 2003; Spicer and Sadler-Smith, 2006), structures and systems (Levitt & March, 1988), innovation and competitiveness (Nason, 1994), employee innovation, job satisfaction (Goh and Ryan, 2002; Rose *et al.*, 2009), employee satisfaction (Bontis *et al.*, 2002) and organizational innovation (Kontoghiorghes *et al.,* 2005; Hurley & Hult, 1998; Tanriverdi & Zehir, 2006; Wang, 2008; Aragón-Correa *et al.*, 2007; Garcia-Morales *et al.*, 2007; Mavondo *et al.*, 2005; Llorens-Montes *et al.*, 2005).

Research on organizational learning has been done in detail in developed countries than in developing countries. Very few studies have been done in developing and new industrialized countries and have demonstrated the contribution of organizational learning in innovation capability and the performance of firm. This research determined validity of the organizational learning concept using the application of conceptual

frameworks and also assessed the adaptation of it to a specific industry. An attempt was made to develop a fundamental basis for the empirical studies, which can be used to assess the concept of organizational learning. The study also examined whether organizational learning contributes to organizational success similar to market share and profitability.

3. RESEARCH METHODOLOGY

In this current study, data was gathered from Indian automobile manufacturing industries. For data collection purpose, the random sampling method was used not only to choose a typical sample but also to reduce the sample bias in research. The questionnaires were given to 400 participants in South India. Only 335 participants completed with an 83.7 per cent response rate. The collection of data was carried out in the year 2012-2013 by the method of structured questionnaire and sent reminder mails to the respondents.

3.1. Research Instruments

This study used structured closed-ended questionnaire with 78-items as the research instrument, to estimate the employee's perceptions in learning organization. The questionnaire was developed based on the concept of five key disciplines, proposed by Senge's (1990) model. The questionnaire was classified into six segments, namely: systems thinking, mental model, building shared vision, team learning, and personal mastery, which are considered as independent variables; whereas, organizational performances (financial and non-financial measures) are taken as dependent variables in the study. The questionnaire comprises of four divisions, and the responses were gathered on a 5-point Likert Scale ranging from "1- Strongly Disagree" to "5-Strongly Agree", which was used for uniform grading of responses.

In order to expand the survey instrument, various relevant studies were used to determine the items that proved to have strong reliability and validity. The structured interview and pre-testing of the questionnaire was developed with help of managers and academic experts within the field, and they have certified the content validation of each of the constructs. The survey instrument was developed and refined using a two-step process. A committee of six academic experts in the automobile industry evaluated the questionnaire to assess the wording relevancy of specific items. Subsequently, the interview with the panels was held to assess any ambiguities in the questionnaire. The committee was chosen in such a way that, all the respondents were experienced business consultants and professionals having the experience of handling portfolios like distribution, purchasing or operation's functions of the respective automobile industry. This two-step process resulted in minor changes in the questionnaire at the end.

A questionnaire was sent in advance, and took 30 to 40 minutes to complete each questionnaire and in addition, respondents provided suggestions to enhance the lucidity, the time duration, and the format required for completion of the questionnaire. Based on the suggestions received from the experts, the questionnaire was refined. A

pilot study was initially carried out, and the findings were evaluated to reduce the systematic bias in the questionnaire. These steps effectively increased response rates in other operation's management researchers (Frohlich, 2002). The questionnaire was developed in the study keeping in mind of the research objectives. Large font sizes were used (Dillman, 2000) along with more free spaces and prepared basically for a self-administration purpose.

3.2. Sample

The survey population includes employees of top Indian automobile manufacturing industries according to the Society of Indian Automobile Manufacturers (SIAM) report. The participants were selected, based on the method of systematic random sampling. At the first stage, list of firms was obtained from SIAM and using a computer generated numbers, eight leading companies were identified. Further, after obtaining permission from the industry, a list of employees was obtained from the Human Resource Department (HRD) of each automobile sector based on systematic sampling method. Hence, every 3rd employee in the list was chosen again using the computer generated random sampling method. In subsequent stages, non-probability sampling method was followed, especially when the response rate was poor. The minimum sample size based on a 95 per cent confidence interval (z value = 1.96) was found to be 354. However, sample size was rounded to 400 for the convenience of the study. At the end of the process, only 335 respondents responded to the study.

4. DATA ANALYSIS

The collected data from the study sample was subjected to data analysis using SPSS software. In order to compute the mean and standard deviation, the study elements are tested by using descriptive statistics. Exploratory factor analysis and Cronbach's alpha were utilized to measure the reliability and validity on the dimensions. The determination of normality was checked using Skewness and Kurtosis. Factor analysis was used to identify dimensions and the underlying patterns of Structural Equation Modeling (SEM). The model is an integration of Confirmatory Factor Analysis (CFA) and econometric modeling that aimed to analyze the relationship between latent constructs, and it permits the concurrent testing for multiple endogenous variables. In order to identify statistical power, existing relationships, reliability and validity of all the items where standardized and missing values were replaced by sample mean. Impact of each factor was presented by the corresponding levels of significance and path coefficients. P value <0.05 were considered significant for the study.

5. RESULTS

5.1. Characteristics of the Participants

The demographic characteristics of participants (n=335), who responded to the study were as follows. Majority of the participants were in less than 30 years age group

(62.7%) with qualification of bachelor's degree (49.9%). The highest percentage of respondents had the designation of middle management (41.8%), followed by supervisory and technical persons with 30.1 and 19.7 per cent respectively. Further, 59.7 per cent of the participants had at least 5-10 years of experience in their current organization in general shifts (65.1%) system.

5.2. Reliability and Validity Tests

By using the constructs, the reliability and validity tests were measured with multivariate measures. In order to estimate the internal consistency of the multivariate scales, the Cronbach's reliability (Nunnally, 1978) was used. The reliability of various dimensions of organizational learning ranged from 0.78 – 0.918. Thus, the testing instrument is highly applicable for the present sample in the study. The results (Table 1) reported that, all the dimension of Cronbach's alpha is greater than 0.7, that pointed out the higher level of reliability for the survey instrument in the study (Cuieford, 1965). Additionally, the item-to-total correlations for each measure were tested and found to be at least 0.78. Kerlinger (1999) recommended that the item-to-total correlation was larger than 0.6, believed to have high-criterion validity. This finding concludes that the criterion validity of each scale is well suitable for the present study.

Table 1
Reliability Analysis (N=335)

Factors	*No. of items*	*Mean ± SD*	*Cronbach's alpha*
Systems Thinking	15	3.48±0.54	0.856
Mental models	28	3.47±0.55	0.918
Building Shared Vision	8	3.85±0.52	0.780
Team Learning	8	4.09±0.51	0.791
Personal Mastery	10	3.65±0.54	0.826
Organizational learning (Overall)	69	3.71±0.41	0.951
Organizational performance	9	4.01±0.60	0.918

Further, Table 2 presents the coefficient of correlation between the five latent factors and organizational performance. Overall, the findings showed the low correlation between the independent variable of OL and dependent variable of organizational performance in spite of its statistical significance. The correlation values of the study indicates that the inter correlations between the sub variables of OL were found to be within the range of 0.167 to 0.679. Thus, it was found the adequacy of the testing instrument is required for the further proceedings.

To validate the theoretical model to the learning organization suggested by Senge (1990), CFA with AMOS was applied. CFA needs an expectation of the non-existence of collinearity among variables. Collinearity occurs when "absolute values of one or more of the zero-order correlation coefficients among independent variables are relatively high, say 0.70 or larger" (Mueller, 1996). The correlation matrix in the Table

Table 2
Pearson Correlation Coefficient between Dimensions of Learning and Organizational Performance

Dimensions of OL & OP	*Systems Thinking*	*Mental Models*	*Building Shared Vision*	*Team Learning*	*Personal Mastery*	*Organizational Performance (OP)*
Systems Thinking	1.000	0.679**	0.488**	0.371**	0.552**	0.225**
Mental Models	-	1.000	0.550**	0.517**	0.616**	0.167**
Building Shared Vision	-	-	1.000	0.551**	0.461**	0.255**
Team Learning	-	-	-	1.000	0.315**	0.212**
Personal Mastery	-	-	-	-	1.000	0.232**
Organization Performance(OP)	-	-	-	-	-	1.000

Note: 1. ** Denotes significant at 1% level
2. * Denotes significant at 5% level

2 shows no relationship was found greater than 0.70. Hence, the collinearity problem did not occur in the study.

5.3. Analysis of the Structural Equation Model

Analysis part deals with the construction and analysis using the structural equation model. Table 3 demonstrates the model fit, which was assessed using global fit (seven different fit indices) and 'r' to identify the degree to which the hypothesized model is consistent with the data in hand. In other words, the degree to which the implicit matrix of co variances, (based on the hypothesized model), and the sample covariance matrix, based on data seems to fit (Bollen, 1989). The structural model, the quality of fit was acceptable representation of the sample data (S-B x^2 (355)= 0.198, p=0.91, AGFI **(**Adjusted Goodness of Fit Index =0.998), GFI (Goodness of Fit Index)=1.000, which is much larger than the 0.90 criteria as suggested by Hu and Bentler (1999) and Joreskog and Sorbom (1981). Similarly, CFI=1.000, RMSEA **(**Root Mean Square Error of Approximation) =0.000 and RMR (Root Mean Square Residuals) =0.001, values are lower than the 0.05 critical value (Steiger, 1989).

The Table 4 shows the variables in SEM analysis. Systems Thinking (standardized path coefficient = 0.248, robust *t*-value = 4.205; p<0.001), Mental Model (standardized path coefficient = 0.182, robust *t*-value = 3.100; p<0.001), Building Shared Vision (standardized path coefficient = 0.294, robust *t*-value = 4.822; p<0.001) Team Learning (standardized path coefficient = 0.249, robust *t*-value = 3.954; p<0.001), Personal Mastery (standardized path coefficient = 0.259, robust *t*-value = 4.360; p<0.001) positively influences Organisational Performance (OP). Findings indicated that organizational learning has a whole, accounted for 31.7 per cent variance to predict organizational performance in Indian automobile manufacturing firms (See Figure 2).

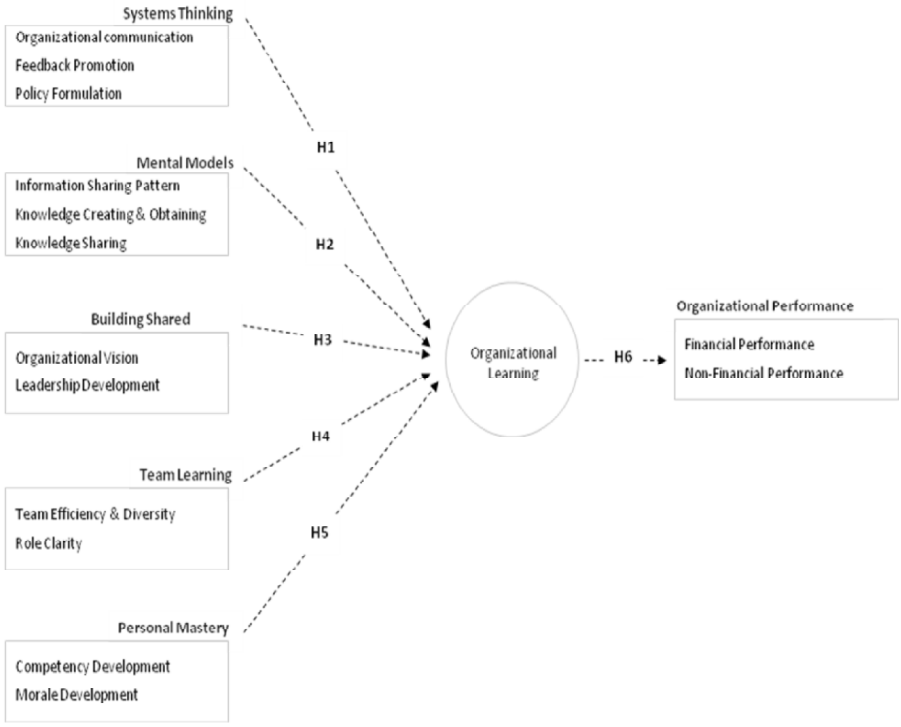

Figure 1: Conceptual Model

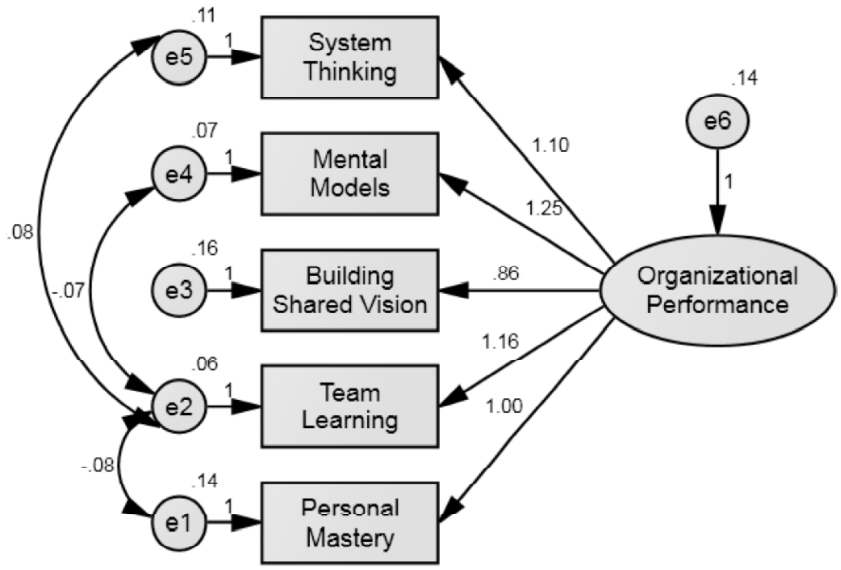

Figure 2: Dimension on overall Organizational Performance (South Indian Automobile Industries)

Table 3
Model fit summary

Variable	*Value*	*Suggested value*
Chi-square value	0.198	
P value	0.906	P-value >0.05 (Hair *et al.*, 2006)
GFI	1.000	>0.90 (Hair *et al.*, 2006)
AGFI	0.998	> 0.90 (Daire *et al.*, 2008)
CFI	1.000	>0.90 (Hu and Bentler, 1999)
RMR	0.001	< 0.08 (Hair *et al.*, 2006)
RMSEA	0.000	< 0.08 (Hair *et al.*, 2006)

Table 4
Structural Equation Model Analysis for dimensions of Organizational Learning and Organizational performance

Variables			*Unstandardised co-efficient*	*S.E*	*Standardized co-efficient*	*'t' value*	*P value*
Systems Thinking	←	Organizational Performance	0.248	0.059	0.225	4.205	<0.001**
Mental Models	←	Organizational Performance	0.182	0.059	0.167	3.100	<0.001**
Building Shared Vision	←	Organizational Performance	0.294	0.061	0.255	4.822	<0.001**
Team Learning	←	Organizational Performance	0.249	0.063	0.212	3.954	<0.001**
Personal Mastery	←	Organizational Performance	0.259	0.059	0.232	4.360	<0.001**
Organizational Learning	←	Organizational performance	0.072	0.030	0.120	2.369	0.018*

Note: 1. ** Denotes significant at 1% level
2. * Denotes significant at 5% level

6. DISCUSSION AND CONCLUSION

The important assert made by Indian learning organization, particularly Automobile Industries is that developing a capability in learning can improvise the performance of organization. This empirical study finding indicated the positive and significant relationship between organizational learning and organizational performance variables. It lends support to the claim that, having learning capability has positive rewards for a firm in relation to a number of desired performance outcomes. This study results are similar with the results of prior studies concerning a causal relationship existing among variables of organizational learning (Such as Systems thinking, Mental model, Building shared vision, Team learning and Personal mastery) and organizational performance (Wang *et al.*, 2010; Jyothibabu *et al.*, 2010; García-

Morales *et al.*, 2008), particularly establishment of positive and significant relationship (García-Morales *et al.*, 2008; Bontis *et al.*, 2002; Jiménez-Jiménez and Sanz-Valle, 2011).

In an organization, learning is the basic feature of competitiveness and associated with the acquisition of knowledge and improvement of performance. In organizational learning, people are constantly developing their capacities to attain favorable results. New modes of learning were developed based upon the needs within the organization (Fallah and Amirtash, 2010; Senge, 1990). In the present study, the findings from SEM analysis revealed that building a shared vision has greater influence on organizational performance followed by personal mastery, team learning, systems thinking, and mental model. The findings of the present study provided different viewpoints regarding the variable impact of organizational learning on performance in organization. The building of shared vision and personal mastery enhances the organizational performance to yield higher profits and extends the product range (Alegre and Chiva, 2008; Van Gils and Zwart, 2004). Empirical evidences suggest that personal ability of the individual may impact the organizational performance either directly or indirectly by organizational learning (Garcia-Morales *et al.*, 2007; Blackler and McDonald, 2000; García-Morales *et al.*, 2006). There is a desire to gain organizational knowledge, which establishes the importance of organizational learning and creates a shared vision that can unite the members to the learning organization (King and Marks, 2008; Treleaven, 2004; Wheatley, 2001; Yukl, 2006). Team learning practice is related to activities, which are planned to improve the addition of attitudes, skills, and knowledge sharing collectively by members of a team (Ellis *et al.*, 2003; Edmondson, 2002).

The present study emphasized the positive association between organizational performance and learning. This study finding is in line with previous empirical studies, where the organizational learning has a positive influence on the performance of organization (Kassim *et al.*, 2013; Škerlavaj *et al.*, 2007; Bontis *et al.*, 2002). In a study by Jyothibabu *et al.* (2010), learning as a team or as a group mediates the organizational performance and studies does showed a causal relationship between organizational learning and performance (McElroy, 2000; García-Morales *et al.*, 2008; Liao *et al.*, 2001; Wang *et al.*, 2010). Organizations learn more effectively from failures rather than successes as the knowledge gained from failure depreciates gradually than from success. The experiences obtained from the failures influence the learning of the organization effectively. Thus, the adopted conceptual framework, although validated and implemented in South Indian Automobile industry, it can also be generalized to other various geographical areas.

The basis for developing new concepts and solutions are based on the progression of manufacturing systems placed in firm's plant. This study utilized the theoretical frameworks on organizational learning for adaptation in the automobile industry and also determined the validity of the concept. Hence, this present study offers the foundation for testing the validity of the concept of organizational learning.

Development of organizational learning attributes in the present study includes systems thinking, mental model, building shared vision, team learning, and personal mastery. A different innovative organizational learning factor creates impact upon the function within an organization and suggested suitable recommendations for the Indian automobile companies. Hence, the current pragmatic research has clearly indicated the positive impact of Systems Thinking, Mental Model, Building Shared vision, Team Learning, and Personal Mastery on organizational performance.

7. PRACTICAL IMPLICATIONS

This empirical study result provides stronger business suggestions for managers to develop the learning capability of the firm by increasing the manpower resources and investing time. Further, the study findings recommend that the firm can improve their learning capabilities by enhancing work satisfaction to their employees, increasing competitiveness and improving their innovation capacity. As a result of building the individual's learning capability, organization performance gets increased. Thus the managers have to assess the non-financial and financial performance in support of their argument that, learning capability yields tangible results.

Despite the fact that, this study finding mainly enabled to validate the model in Indian automobile organization. However, the study has two limitations in this respect. The first limitation is that the participants provided empirical information and therefore there are chances of encountering biases. Another limitation is that the information is gathered only from South Indian automobile industries. Hence, the firm's characteristics observed might be completely distinct from those in other countries or regions. Therefore, the current findings should not be assumed to constitute the common case. Yet, the study may give a basic reference for the organisations found in other regions or countries, where there are similar environmental factors that reflect south Indian culture.

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SUPPLEMENTARY MATERIAL: QUESTIONNAIRE USED FOR THE STUDY

Appendix: List of Measurement Items

Second Order Factors	*Constructs*	*Variables*	*Variable Statement*
Systems Thinking	Organizational Communication	OC1	Less Intensity of conflicts among members in the organization
		OC2	Less Intensity of conflicts between top management and team members
		OC3	Proper communication between all employees in inter and intra department
		OC4	Good communication between NPD department, production, marketing, administration
		OC5	Good communication between organization and customer is vital
	Feedback Promotion	FP1	Organization allows feedback to facilitating organizational learning
		FP2	Information with regards to how performance can be improved is provided by organization
		FP3	A Learning plan is carried out wherein feedback from the most recent performance appraisal is taken into account
		FP4	Organization allows question methods by which the facilitation of organizational learning will happen
		FP5	Feedback organizational learning process is promoted by organization and any suggestions are noted
	Policy Formulation	PF1	Presence of clear objectives and guidelines
		PF2	Presence of policy suggestion to manage OL and risks which may arise
		PF3	Presence of fluidity in structure of the organization
		PF4	Enactive liaison activities with functional department by cross functional development teams
		PF5	Forming teams as a model and conducting experiments and sharing results
Mental Models	Information Sharing Pattern	ISP1	Constant communication across levels or between department
		ISP2	Participative organization
		ISP3	Managers and Supervisors share information openly
		ISP4	Business information is shared with employees
		ISP5	High degree of employee involvement
		ISP6	No boundary interference between units to solve joint problems

contd.

Second Order Factors	*Constructs*	*Variables*	*Variable Statement*
	Knowledge Creating and Obtaining	KCO1	Gathering information from sales and production sites
		KCO2	Sharing Experience with suppliers and customers
		KCO3	Engaging in dialogue with customers
		KCO4	Finding new strategies and marketing opportunities
		KCO5	Creative and essential dialogues
		KCO6	The use of deductive and inductive thinking
		KCO7	The use of metaphors in dialogue for concept creation
		KCO8	Exchanging various ideas and dialogues
		KCO9	Planning strategies by using published literature, computer simulation and forecasting
		KCO10	Creating manuals and documents on products and services
		KCO11	Building database (to be viewed by all) on product and service
		KCO12	Enactive liaison activities with functional department by cross functional development team
		KCO13	Forming teams as a model and conducting experiments, and sharing results with entire departments
		KCO14	Searching and sharing, and new values and thoughts
		KCO15	Has produced many novel and useful ideas (services/products)
		KCO16	Fosters an environment that is conductive to our own ability to produce novel and useful ideas (services/products)
		KCO17	Spends much time for producing novel and useful ideas as important activities
	Knowledge Sharing	KS1	Factual knowledge (know-what) from work is shared
		KS2	Business Knowledge about the customers, products, suppliers and competitors is shared
		KS3	Internal reports and other official documents with my coworker is shared
		KS4	Work experience with my co-workers is shared
		KS5	Know-how or tricks of the trade from work is shared
Building Shared Vision	Organizational Vision	OV1	Effective mission and vision statement during project initiation is vital
		OV2	Organizational vision provides support during personnel training
		OV3	Effective vision and mission contributes to integration of different project quality management activities

contd.

Second Order Factors	*Constructs*	*Variables*	*Variable Statement*
		OV4	Effective vision and mission to support quality management and assurance
	Leadership Development	LD1	Organization uses clear development rationale for job moves and career paths to leadership positions
		LD2	Organization promoted mentoring from experienced leaders to identify leadership development
		LD3	Coaching of leaders from projects / assignments inside and outside current job is promoted
		LD4	180/360/Peer feedback is used to promote effective leadership development
Team Learning	Team Efficiency and Diversity	TED1	Ability to work with uncertain objective is promoted
		TED2	Ability to work with Top management is promoted
		TED3	Ability to understand human implications of a new system is promoted
		TED4	The need for team members to understand the strength and weakness of others is promoted
	Role Clarity	RC1	Role of each member of the team is defined clearly
		RC2	Role ambiguity involved in the project is clearly addressed
		RC3	Communications between those involved in the manufacturing, supply, QA, Top management is documented
		RC4	Role Clarity among team members to understand the requirements of organization's need for expertise
Personal Mastery	Competency Development	CD1	Job rotation helps in enhancing the competency to achieve organization goal as well as individual goal
		CD2	Competency mapping is given adequate importance in your organization and will help in the promotion of job effectiveness
		CD3	Interpersonal competencies are required to perform your job better
		CD4	Behavioral competency in terms of imitativeness, developing team, motivation of subordinates, mentoring and coaching is strongly promoted in my organization
		CD5	Planning and organizing, time management, achievement orientation and decision management related job competencies are well promoted in my organization
	Morale Development	MD1	Good incentives and salary increments are vital for good performance

contd.

Second Order Factors	*Constructs*	*Variables*	*Variable Statement*
		MD2	Development needs addressable including training and opportunity to specialize
		MD3	Offer of variety of tasks to be implemented
		MD4	Offer of opportunities for promotion and career planning
		MD5	Offer of a sense of belonging
Organizational Performance	Financial Performance	FP1	Over the past year, the percentage of profit increased significantly
		FP2	Over the past year, the percentage return of investment is increased
		FP3	Overall financial performance relative to competitors increased
		FP4	Overall performance of the business unit increased
	Non-Financial Performance	NFP1	The number of customer complaints within the last period has increased strongly
		NFP2	The customer churn rate relative to our competitor increased
		NFP3	Speed of dealing with customer complaints (comparatively to competition) is low
		NFP4	We retain existing clients and manage to attract new ones
		NFP5	Reputation of our company in eyes of the customers has improved