Improving Organizational Productivity through Improved Learning Transfer, Organizational Learning and Organizational Culture

THESIS

Submitted by

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This is to certify that the thesis titled “Improving Organizational Productivity through Improved Learning Transfer, Organizational Learning and Organizational Culture” submitted by Smt. Aindrila Chatterjee, who got her name registered on 09.11.2012 for the award of Ph.D. (Engg.) degree of Jadavpur University, is absolutely based up her own work under the supervision of Prof Bijan Sarkar and that neither her thesis nor any part of the thesis has been submitted for any degree/diploma or any other academic award anywhere before.

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Declaration

I, Smt. Aindrila Chatterjee, declare to the best of my knowledge that the work presented in this thesis is an original work of my own and that the that neither the thesis nor any part of the thesis has been submitted for any degree/diploma or any other academic award anywhere before.

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(Attached copy of the fee submission receipt)

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Abstract

The focus of this thesis is on the intangible factors that can improve organizational productivity by studying some of the factors that can affect the output elasticity of labor. It is seen from existing literature that two of the most important factors that impact productivity are organizational culture and human resource management (HRM) practices. My research focuses on organizational learning (emphasizing on learning transfer) as a part of HRM practices and organizational culture and their interplay on organizational performance.

I build on the following streams of existing literature:

- Knowledge creation: Socialization-Externalization-Combination-Internalization (SECI)
- Learning Transfer System Inventory (LTSI)
- Organization Culture and Competing Values Framework (CVF)

and study learning transfer, its association with knowledge creation and how it is impacted by organizational culture. I also study the impact organizational culture has on improving productivity through efficiency and finally what needs to go into designing a robust OL&D framework that can improve and impact productivity. My research is divided into the following broad topics:

- Learning Transfer and its validation in Indian context
- Learning Transfer and Knowledge Amplification
- Impact of Organization Culture on Learning Transfer
- Impact of Organization Culture on Organizational Performance
- Organizational Learning and Development (OL&D) Framework

Through mostly empirical and some theoretical research, I address a multitude of research questions and establish the following:

Validate the role of LTSI in the Indian context. I identify a total of nine transfer factors: six for specific-training and three for training-in-general. I see that many of the transfer factors vary with industry. Other dimensions like type of learning programme attended, seniority level, education level and years of experience also influence LTSI. I show how perceived organization culture impacts Learning Transfer Environment (LTE) and how the flexible organizations (Clan and Adhocracy) with higher Supervisor Support, Peer Support, and Performance Coaching impact learning transfer positively. Resistance to Change is higher in perceived internal facing (Clan and Hierarchy) organizations. I propose LTSI's role in knowledge amplification and how this helps in the ontological dimension of the knowledge creation cycle. I also show how balanced culture impacts organizational efficiency by running data envelopment analysis across two sets of DMUs (teams from Information Technology industry and Sales functions): the findings across both sets are similar with nuanced differences based on the nature of the jobs across the two sets. Lastly, I study the key underlying factors for successful Organizational Learning and Development (OL&D) and establish a framework that helps address questions at strategic, tactical and operational levels.

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Chapter 1: Introduction

Productivity is an economic measure of output per unit of input. Inputs include labor and capital, while output is typically measured in revenues and other gross domestic product (GDP) components such as business inventories. Productivity measures may be examined collectively (across the whole economy) or viewed industry by industry to examine trends in labor growth, wage levels and technological improvement. Organizations are always on the lookout to measure and improve productivity. i.e. the ratio of output to input. Productivity can be improved by utilizing processes, techniques and technology that allow more to be done in less time or with less input. An economic output is not a (mathematical) function of input, because any given set of inputs can be used to produce a range of outputs. To satisfy the mathematical definition of a function, a production function is customarily assumed to specify the maximum output obtainable from a given set of inputs. The production function, therefore, describes a boundary or frontier representing the limit of output obtainable from each feasible combination of input. A form of the production function, which was developed in 1927, and still used primarily for its accuracy, is the Cobb Douglas production function (Cobb and Douglas, 1928). It is a functional form of the production function, widely used to represent the relationship between the amounts of physical capital and labor, and the amount of output that can be produced by those inputs. The Cobb-Douglas form was developed and tested against statistical evidence by Charles Cobb and Paul Douglas during 1927–1947.

In its most standard form for production of a single good with two factors, the function is expressed as:

$$Y=AK^{\alpha} L^{\beta}$$

where:

Y = total production (the real value of all goods produced in a year)

L = labor input (the total number of person-hours worked in a year)

K = capital input (the real value of all machinery, equipment, and buildings)

A = total factor productivity

α and β are the output elasticity of capital and labor, respectively. These values are constants determined by available technology. Output elasticity measures the responsiveness of output to a change in levels of either labor or capital used in production, ceteris paribus (i.e. with other conditions remaining the same). For example, if α = 0.45, a 1% increase in capital usage would lead to approximately a 0.45% increase in output.

Marginal Productivity - is the change in output resulting from employing one more unit of an input. If $Y=AK^{\alpha} L^{\beta}$, marginal capital productivity (MP_K) can be found as (partial differentiation of Y with respect to K):

$$\delta Y/ \delta K = A\alpha L^{\beta} K^{\alpha -1} = A\alpha L^{\beta} / K^{1-\alpha}$$

Marginal labor productivity (MP_L) can be found as (partial differentiation of Y with respect to L):

$$\delta Y/ \delta L = A\beta K^{\alpha} L^{\beta-1} = A\beta K^{\alpha} / L^{1-\beta}$$

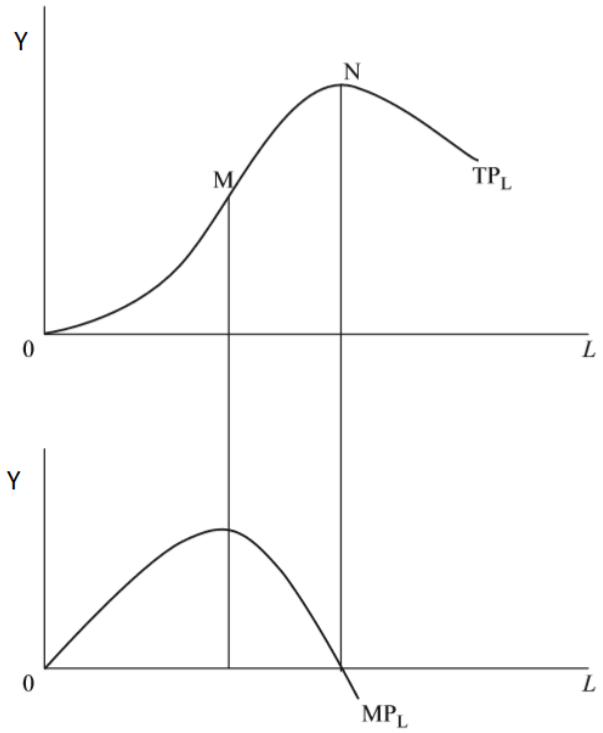


Figure 1: Total and Marginal Labor Productivity

The laws of returns to scale are a set of three interrelated and sequential laws: Law of Increasing Returns to Scale, Law of Constant Returns to Scale, and Law of Diminishing returns to Scale. If output increases by that same proportional change as all inputs change then there are constant returns to scale (CRS). If output increases by less than that proportional change in inputs, there are decreasing returns to scale (DRS). If output increases by more than the proportional change in inputs, there are increasing returns to scale (IRS). A firm's production function could exhibit different types of returns to scale in different ranges of output. Typically, there could be increasing returns at relatively low output levels, decreasing returns at relatively high output levels, and constant returns at one output level between those ranges.

If $\alpha + \beta < 1$, returns to scale are decreasing

If $\alpha + \beta = 1$, returns to scale are constant (i.e. doubling the usage of capital K and labor L will also double output Y)

If $\alpha + \beta > 1$, returns to scale are increasing. This means if either α or β is improved, productivity is also improved.

There are a lot of factors that affect productivity, e.g. material (wastage due to poor methods, technology, transportation), machines (poor methods, poor quality materials, planning, operations, maintenance, environment, etc.); land and buildings (poor layout, use of space, methods, planning, etc.); energy efficiency; technology (being ahead of the curve for automation, usage of technology, etc.) and manpower (poor methods, motivation, training, team work, communication, involvement, dissatisfaction, layout, planning, etc.). The focus of this research is on the intangible factors that can improve organizational productivity by studying some of the factors that can affect β or the output elasticity of labor.

Labor productivity is a worker's ability to transform a given amount of labor into a larger amount of output delivered. More capital per worker, more natural resources per worker, more human capital or skills per worker and better technology or overall know-how improve productivity. Productivity is very important to the economy, because it is closely related with the standard of living. Labor productivity is also associated with wages (Strauss and Wohar, 2004). The higher labor productivity is, the higher the wages companies can afford to pay their workers without sparking inflation; that is, without pushing up the prices of goods and services.

The tenets of labor productivity and capital productivity are different. Suppose an organization invests in a machine to raise its capital productivity, the machine will have

certain specifications whereby it can be predicted how much input will result in what output. Labor productivity, among other factors, deals with humans and their enigmatic minds. As John Milton said in *Paradise Lost*, 'The mind is its own place, and in itself can make a heaven of hell, a hell of heaven'. For centuries, scientists have studied what controls the human mind and there are still a lot of unanswered questions. An analogy can be made with the tip of the iceberg with 10% being known or seen and 90% being unknown or unseen.

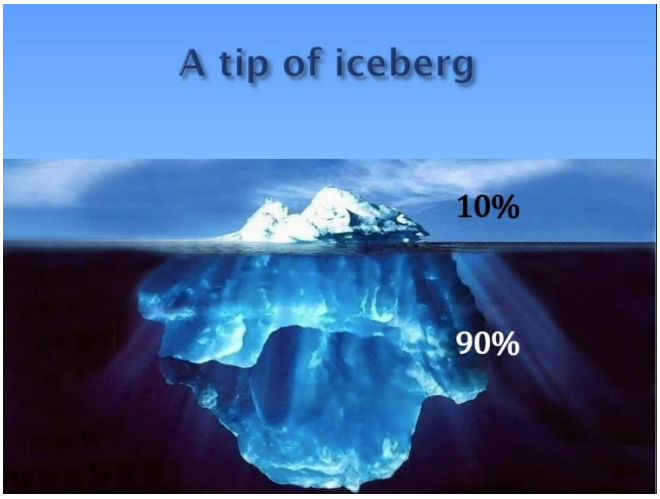


Figure 2: Human Mind and Tip of Iceberg

While human beings can be identified with anatomy, physiology and certain bio-metric features (e.g. height, weight, skin colour, hair colour, colour of iris, fingerprint, etc.), there is also another key aspect of his/her identity, that is the human mind. No one remembers the biometric details of people like Newton, Tagore, Swami Vivekananda, Einstein, Mother Teresa. Instead they are remembered for their thought leadership, for their scientific discoveries, their contribution to society - the key contributor of which is not their physical attributes but their mind and its intelligence. Among all living

creatures, only humans have an immense potential, capacity and capability to think and dream. As Marcus Aurelius said, ‘A man’s life is what his thoughts make of it’.

How is this related to productivity? It is related through the aspect of motivation and how people find meaning in their lives. However much physical resources humans might have, they will work only to the extent they are motivated to work. There are three different schools of thought regarding the root of human motivation: Sigmund Freud believed the source of motivation is pleasure, Alfred Alder believed the source is power and Victor E Fankl believed it is in finding the true meaning of one’s life, i.e. intrinsic motivators. Frankl’s *logotherapy* focuses on the three principles of Freedom of Will, Will to Meaning and Meaning to Life.

Human minds receive a lot of inputs in the form of auditory, kinesthetic, olfactory and gustatory stimuli. There are existing perception(s) that the human mind has which it has developed from cognition of its environment or earlier experience. The mind processes these stimuli to come up with a resultant navigation or behavior. Behavior is any action an organism uses to adjust to the environment. Human actions are not limited to observable actions (covert behavior); there are wide ranges of emotions, thought processes which are not seen or sensed (overt behavior). For example, a person walking (covert behavior) can also be thinking of something (overt behavior). Covert behavior is like the tip of an iceberg where only a fraction of it is visible. In context of an organization, it is important to know how humans will behave with different stimuli. E.g. is wage increase the only way to stimulate increased productivity? What other stimuli can have better impact on the human minds to make them work more productively?

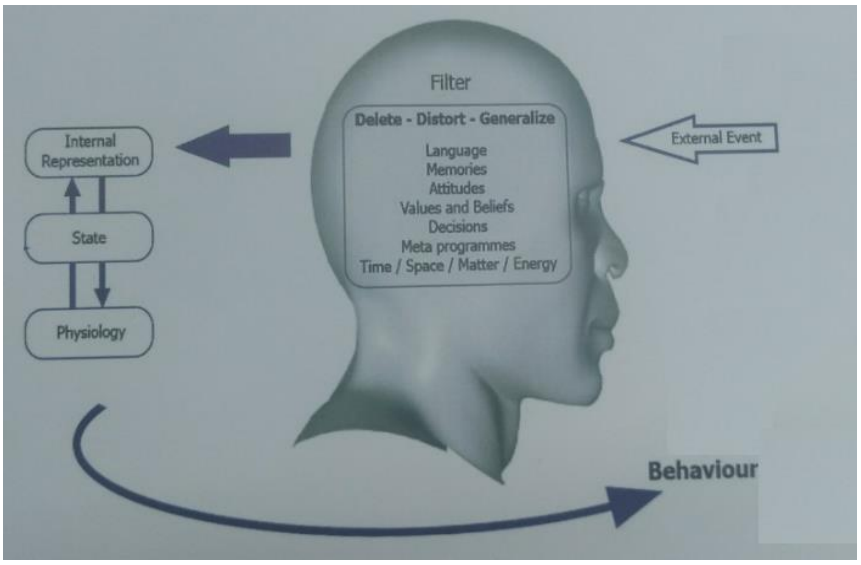


Figure 3: Human Mind Processing Inputs

Source: Neuro Linguistic Programme

Proponents of Neuro Linguistic Programming (NLP) claim there is a connection between neurological processes (*neuro*-), language (*linguistic*) and behavioral patterns learned through experience (*programming*), and that these can be changed to achieve specific goals in life (Bandler and Grinder, 1975). While there was some growth and practice of NLP (Hadnagy and Wilson, 2010), it never caused any paradigm shift in psychology. Unfortunately, for lack of scientific evidence supporting the claims made by NLP advocates, it has been discredited as a pseudoscience by sceptics and experts (Sharpley, 1987; Witkowski, 2010).

Pink (2009) places a strong focus on the changing nature of work and the workplace, on the importance and effectiveness of three intrinsic elements to motivation at work: autonomy, mastery and purpose. He argues that the evidence of scientific

studies on motivation and rewards suggests that, for any work task that involves more than the basic cognitive challenge, basic financial reward systems simply do not work. In fact, they can lead to worse performance. For simple, straightforward tasks, Pink concedes that traditional financial rewards or a carrot & stick approach to motivation work. These can be considered as "external" methods of motivation. He accepts that money is a motivator at work, but once people perceive that they are paid fairly, then they become much more motivated by intrinsic elements. Once people are paid fairly, they look for more meaning from their work.

A summary of Pink's key points on the three intrinsic elements of motivation is provided below:

autonomy is the desire to direct our own lives

mastery is the desire to continually improve at something that matters

purpose is the desire to do things in service of something larger than self, doing things that matter.

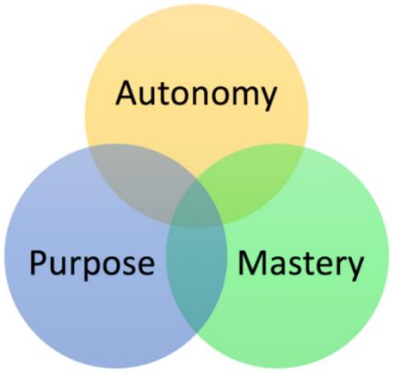


Figure 4: What Motivates Humans

Source: Drive - The Surprising Truth About What Motivates Us

The mental state of a completely focused motivated person is in a state of ‘flow’ which is a feeling of energized focus, full involvement, and success in the process of the

activity (Csíkszentmihályi, 1990). The human mind is positively energized and completely aligned with the task at hand, almost flowing in the process of performing and learning. When not in a state of flow, the mind tends to get frustrated and bored if the scale of challenges is not commensurate with the range of his/her capability or tends to worry and be anxious if the scale of challenges is much higher than capability.

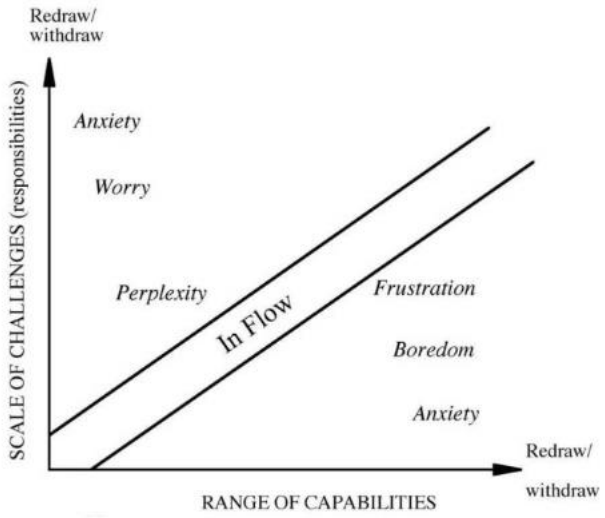


Figure 5: Challenge Skill Flow

Source: Flow: The Psychology of Optimal Experience

Motivation is intrinsically related with influence and persuasion. Humans can be motivated through influence and persuasion through what is famously know as Aristotle's rhetoric of Ethos-Pathos and Logos. They are the ingredients of persuasion and can be explained as follows: Ethos is ethical appeal, establishes credibility and authority of the person appealing. Pathos is emotional appeal, stirring strong feelings within people. Logos is logical appeal, constructing a message of well-reasoned

argument. Another element is Kairos which is the context of time and place and can be used suitably to influence or persuade the audience to take action (or be productive).

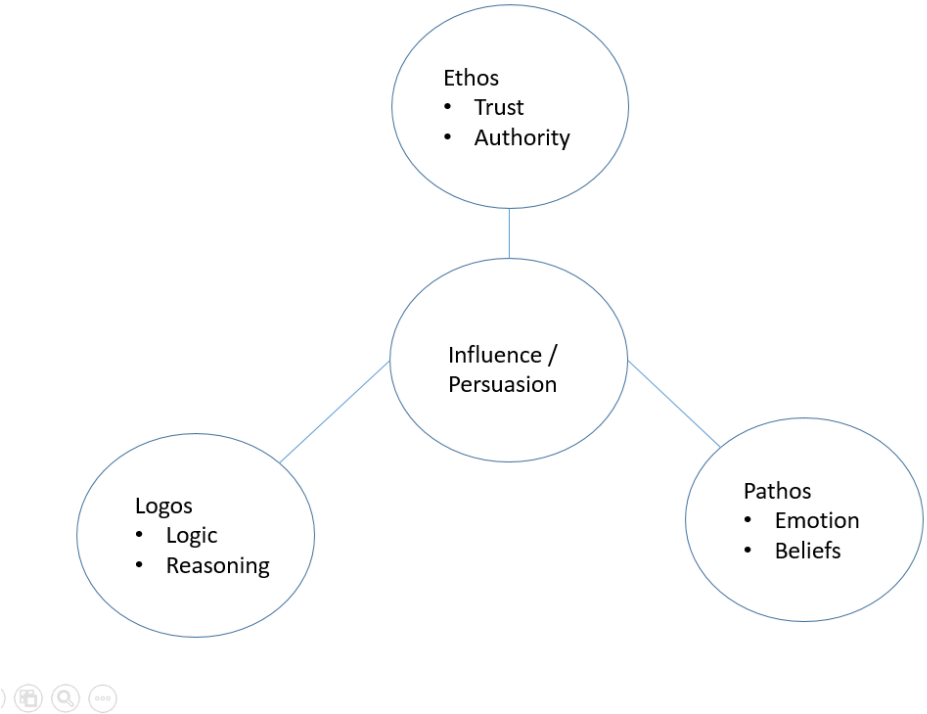


Figure 6: Ethos, Pathos and Logos

The other intangible aspect that improves productivity is knowledge and learning. Attitude, Skill and Knowledge (ASK) are three pillars which influence individual productivity. Human beings undergo a continuous process of learning, unlearning and re-learning as their ASK is built, reformed and rebuilt throughout their productive career. While individuals may have different learning styles (visual, auditory, verbal, kinesthetic, logical, social, solitary, etc.), as they mature, pedagogy or teacher and content focused learning gets replaced with andragogy or student centered learning and heutagogy or self-determined learning.

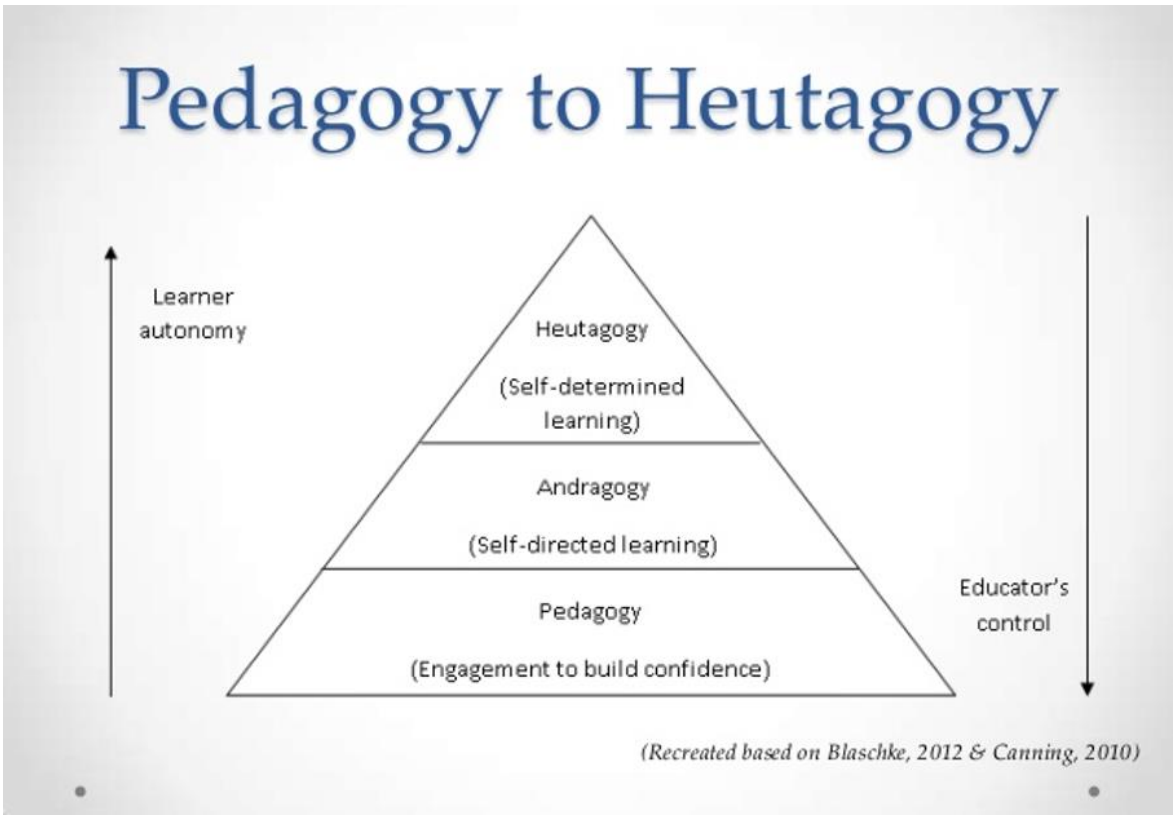


Figure 7: Pedagogy to Heutagogy

As the level of learner maturity and autonomy increases, development of individual knowledge and skill is determined by andragogy and heutagogy. Attitude to learning is determined by Steve Jobs' famous words: 'Stay Hungry, Stay Foolish'. Learning is a lifelong journey and human beings are lifelong students, picking up pearls of wisdom from every oyster they come across. Every place can be a learning place, every moment a learning moment and every person a pedagogue. The impact of learning is enhanced as individuals move from communication (knowledge) and practice (skill) to interaction and collaboration to enhance organizational knowledge and organizational learning which in turn can enhance productivity.

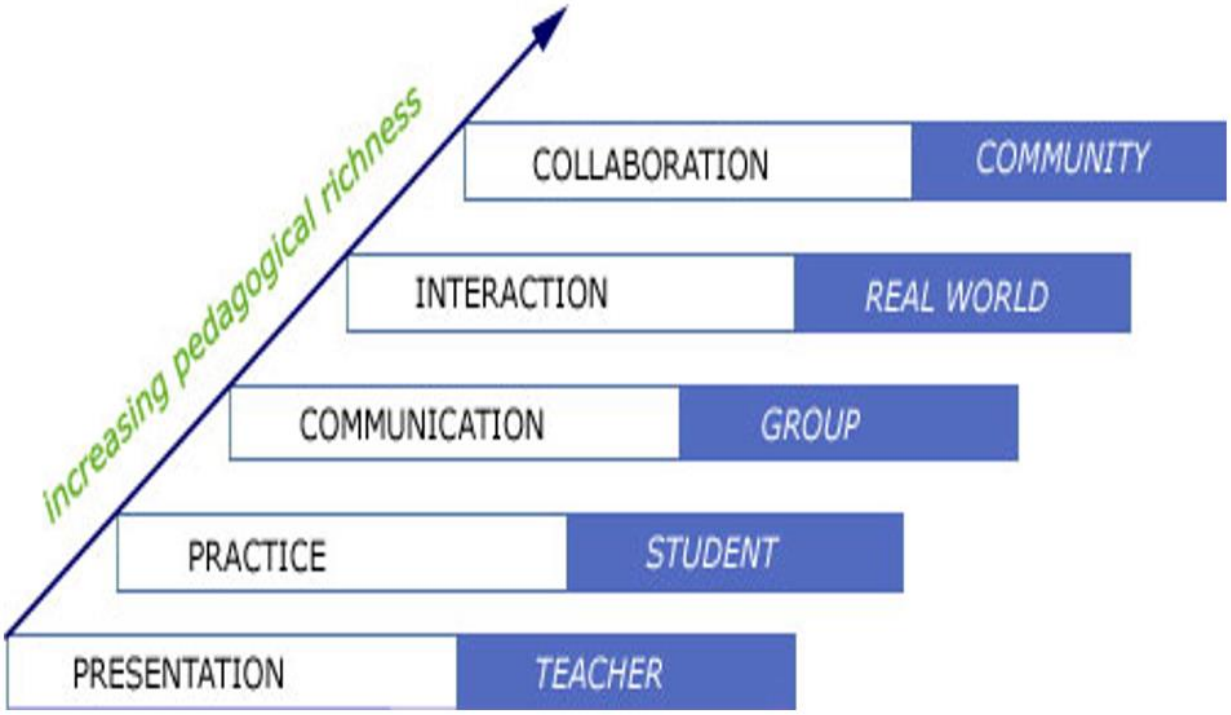


Figure 8: Evolving Pedagogical Richness

Bloom's Taxonomy (Bloom et. al.,1956) illustrates six levels within the cognitive domain, viz. knowledge – remembering of previously learned material, comprehension – ability to grasp the meaning of the material, application – ability to use learned material in new and concrete situations, analysis - ability to break down material into its component parts so that its organizational structure may be understood, synthesis - ability to put parts together to form a new whole and evaluation - ability to judge the value of material (e.g. statement, novel, poem, research report) for a given purpose. The taxonomy also mentions about the psychomotor domain (action based) and affective domain (emotion based) – receiving, responding, valuing, organizing and characterizing.

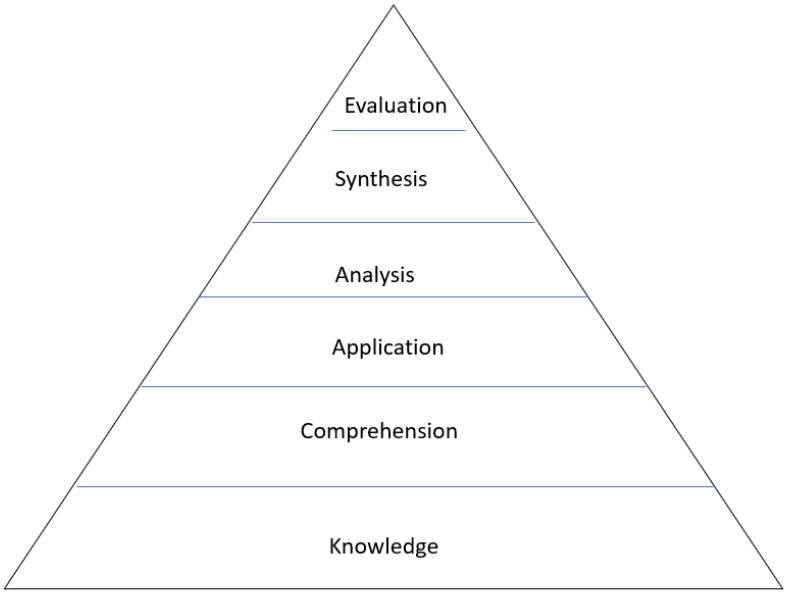


Figure 9: Bloom's Taxonomy – Cognitive Domain

In life's journey from less knowledge to more knowledge, human beings are the co-passengers of the same boat passing through the ocean of learning, knowledge and wisdom. Inner Engineering is an art and science that is associated with the comprehensive understanding of environment to engineer the transformation of attitude of mind. It enhances productivity not only in work, but of life as well. Thus, there are many intricate factors that can affect labor productivity or output elasticity of labor (β). Managing people and their enigmatic minds, channelizing their energy and motivating them to perform in the interest of an organization is a key aspect of increasing labor productivity.

To summarize, productivity is the intellectual labor of the human mind (Gurak, 1999). The author also states, "Productive knowledge (technology), which is the mental product of mind (the intellectual labor), is the genesis of all man generated prosperity,

e.g., value generation and growth" (pp. 10), thus indicating that there is an inherent relation between the human mind, knowledge and productivity. While researchers have studied this relation from subjects like psychology, cognitive science, this thesis examines it from the lens of management science. The broad purpose of this research is to establish an association between productivity, knowledge and how human perception of management constructs like organization culture, learning transfer, organization knowledge can influence this association.

Patterson *et al.*, (1997) study the causal links between people management and business performance. They examine how factors like employee attitudes (job satisfaction and commitment to their organizations), organization culture, human resource management practices and other managerial practices like competitive strategies, emphasis on quality, investment in research and development, and investment in technology, etc. influence company performance. They find that employee attitude (determined by satisfaction), organizational commitment, organization culture (concern for employee welfare being the most significant predictor), human resource management practices (job design - flexibility and responsibility of shop floor jobs and acquisition and development of skills - selection, induction, training and appraisal)) impact profitability and productivity significantly. Investment in research and development moderately impacts profitability and productivity. Managerial practices like competitive strategies, emphasis on quality and investment in technology have some impact, but not as high as the ones mentioned earlier. Figure 10 below diagrammatically represents the factors impacting profitability and productivity in an organization.

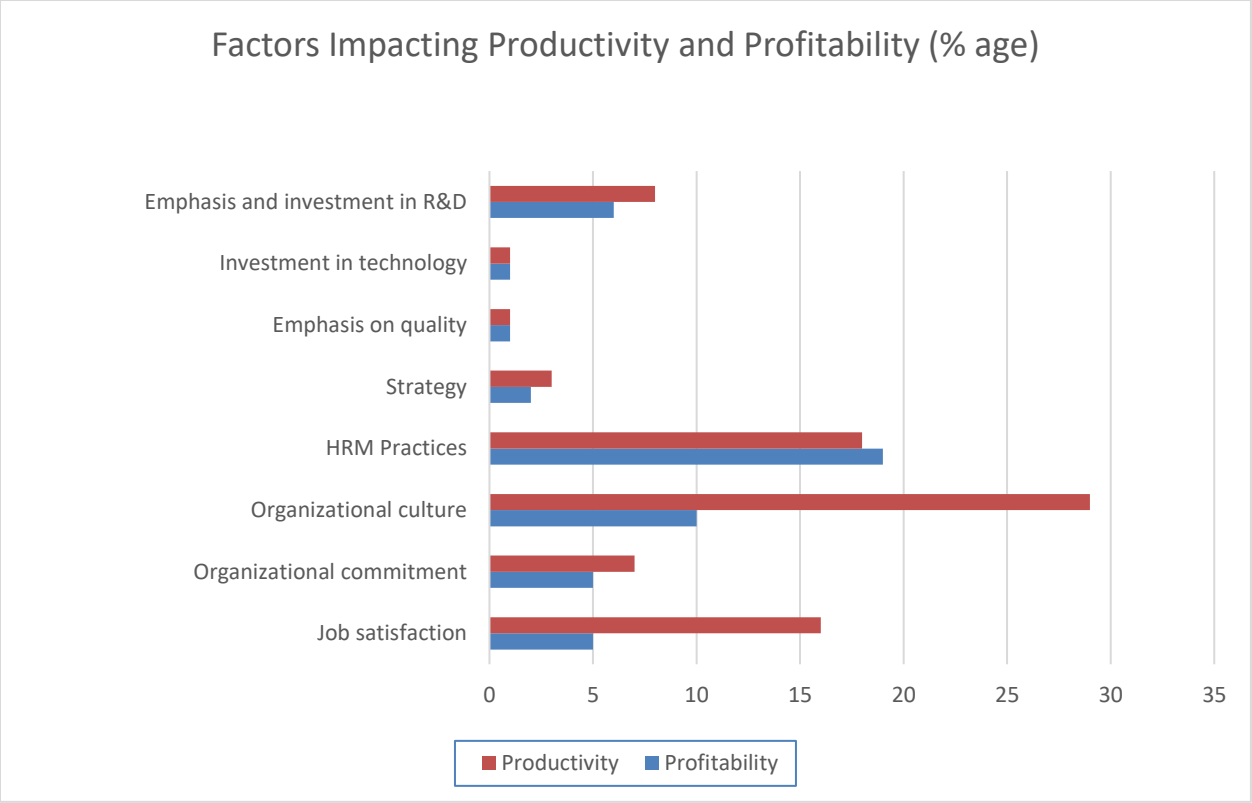


Figure 10: Factors Impacting Productivity and Profitability

Source: Adapted from Patterson *et al.*, (1997), *The Impact of People Management Practices on Business Performance*, London, IPD.

It is seen that two of the most important factors that emerge are organizational culture and human resource management (HRM) practices. My research studies two of these factors, viz. organizational learning (emphasizing on learning transfer) as a part of HRM practices and organizational culture and their interplay on organizational performance.

Chapter 2: Literature Survey

The human side of organizational performance is intrinsically associated with motivation. Social scientists have been studying motivation for decades, trying to find out what motivates human behavior, how and why. The two-factor theory (also known as Herzberg's motivation-hygiene theory and dual-factor theory) states that there are certain factors in the workplace that cause job satisfaction, while a separate set of factors cause dissatisfaction (Herzberg, Mausner and Snyderman, 1959). Maslow's (1943) Hierarchy of Needs says that individuals' most basic needs must be met before they become motivated to achieve higher level needs. The Hawthorne Effect (Landsberger, 1958) showed that employees became motivated to work harder as a response to the attention being paid to them, rather than the actual physical changes themselves. Vroom's (1964) Expectancy Theory proposes that people will choose how to behave depending on the outcomes they expect as a result of their behavior. It is also impacted by instrumentality – the belief that a reward will be received if performance expectations are met and valence – the value placed on the reward. Weiner's (1985) attribution theory is mainly about achievement. According to him, the most important factors affecting attributions are ability, effort, task difficulty, and luck.

Karl Popper is generally regarded as one of the greatest philosophers of science of the 20th century. Popper's theory hinges on the assumption that there are such things as critical tests, which either falsify a theory, or give it a strong measure of corroboration (Ackermann, 1976). According to Popper, a theory is scientific if it is falsifiable. The more a theory can stick out its neck and stand up to severe tests designed to prove it false (falsifiability), the more acceptable it is. According to the

American philosopher, Thomas S. Kuhn, falsification happens through revolution (Kuhn, 1970). He suggests that theories compete with and succeed one another in a process analogous to natural selection, thus bringing in the concept of a paradigm. Organizational Learning is considered a new paradigm of management (Burnes, Cooper and West, 2003).

The various industrial revolutions have seen the shift from mechanization (first revolution), mass production (second revolution), and computerized automation (third revolution) to cyber physical firms (fourth revolution). Every revolution has impacted productivity in a positive manner, it has also created new knowledge and seen the workforce applying the same. Knowledge content of work has increased with increased mechanization and automation and increased productivity comes from the application of new knowledge (Geoghegan and Ackoff, 1989). Dodgson (1993) says firms need to learn for adaptation and improved efficiency in times of change. Learning is seen as a purposive quest to retain and enhance competitiveness, productivity and innovativeness in uncertain technological and market circumstances. The efficiency goals of learning are commonly equated with productivity, e.g. productivity is argued to be assisted through ‘learning by doing’ (Arrow, 1962). Adler (1990) argues that manufacturing productivity improves by accumulation of knowledge and learning across various units and continued sharing of knowledge between the units. Dodgson (1991) has highlighted the importance of organizational learning in the field of biotechnology, the same has been highlighted in the field of information technology by Freeman and Perez (2000). Literature strongly points to the importance of organizational learning in improving productivity.

While knowledge translation can be in three states, viz. discovery, invention and innovation (Lane and Flagg, 2010), organization learning literature points to two broad areas of knowledge creation and knowledge transfer, which my research focuses on. More specifically, organizational learning involves creating, acquiring, interpreting, retaining and transferring knowledge (Garvin *et al.*, 2008), and these elements have received substantial research attention (Huber, 1991; Crossan *et al.,* 1999; Örtenblad, 2004; Alipour, Idris and Karimi, 2011). Knowledge creation and knowledge transfer have both received substantial attention by researchers individually as well. Knowledge creation has been addressed by the SECI process (Socialization Externalization Combination Internalization) proposed by Nonaka (1994) and Nonaka and Takeuchi (1995) as part of their epistemological dimension of knowledge creation. It emphasizes that knowledge creation is a "social process between individuals and not confined within an individual". The next section describes the SECI process.

Socialization Externalization Combination Internalization (SECI) Process

Ever since Nonaka (1994) first introduced the SECI process, it has received substantial research attention (Nissen, 2006; Bratianu and Andriessen, 2008; Harsh, 2009; Holste and Fields, 2010). The SECI model proposes that knowledge is continuously converted and created as users practice and learn. The process should be seen as a continuous, dynamic, swirl of knowledge. Nonaka and Takeuchi (1995) defined two dimensions of organizational knowledge creation. As per the ontological dimension, knowledge creation is a spiral process, starting at the individual level and moving up across sectional, departmental, divisional and organizational boundaries. As per the epistemological dimension, four modes of knowledge conversion happen when tacit and explicit knowledge interacts:

Socialization (Tacit to Tacit) – this process involves sharing tacit knowledge through face-to-face meetings, experience sharing, teleconferences, and brain storming. Some of it can happen through structured meetings and apprenticeships, a lot of it also happens through unstructured conversations like supervisors advising or admonishing, peers making suggestions, and colleagues accepting or rejecting new ideas based on their experience.

Externalization (Tacit to Explicit) – this process involves transforming tacit knowledge to explicit knowledge, thus enabling its communication. Activities like publishing and the offering of concepts, images, and written documents support this kind of interaction. When tacit knowledge is made explicit, knowledge is crystallized, shared by others, and becomes the basis of new knowledge.

Combination (Explicit to Explicit) – this process involves combining different types of explicit knowledge and sharing. Explicit knowledge is collected from inside or outside the organization and then combined, edited or processed to form new knowledge. The new explicit knowledge is then disseminated among the members of the organization.

Internalization (Explicit to Tacit) – this process involves learning by doing, imbibing the explicit knowledge as part of an individual's knowledge; continuous individual and collective reflection, and the ability to see connections and recognize patterns, and the capacity to make sense between fields, ideas, and concepts.

Figure 11 shows the knowledge creation spiral as it relates to the SECI process.

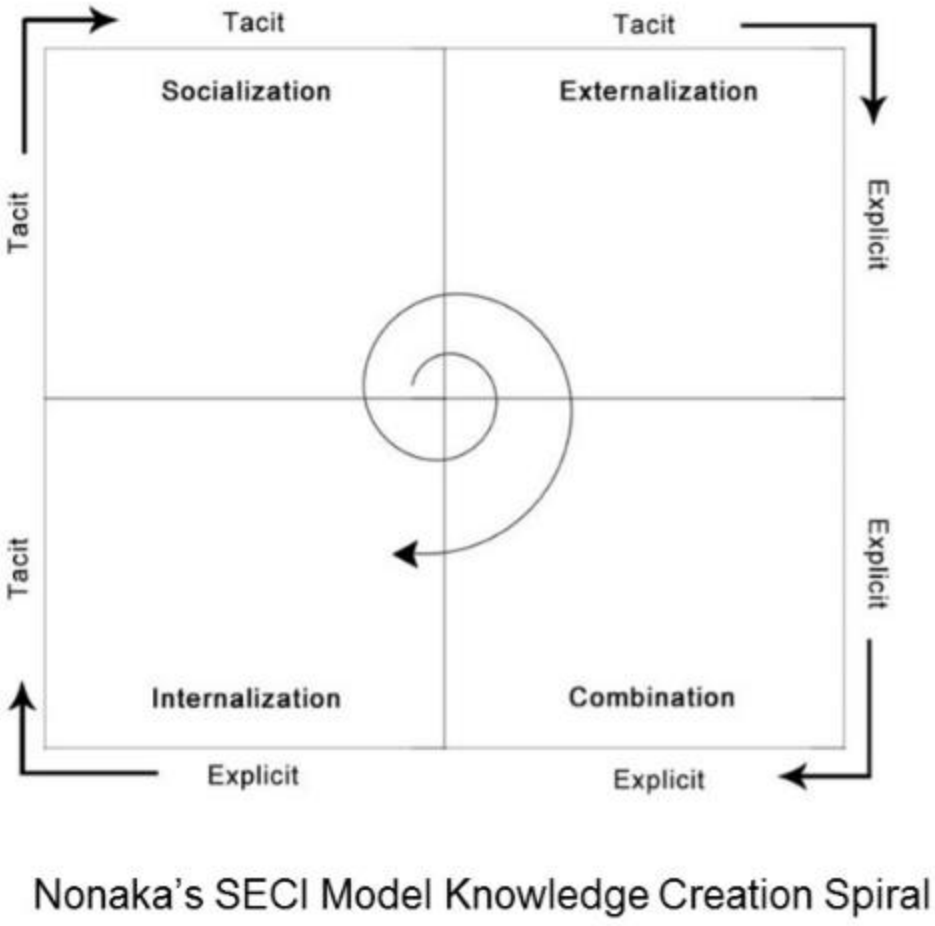


Figure 11: SECI Process Model

Learning Transfer System Inventory (LTSI)

The model for transfer of learning in organizations has been the focus of the Learning Transfer System Inventory (LTSI) (Holton *et al.*, 2000); LTSI has been validated in various contexts and cultures (Holton *et al.*, 2003; Bates and Holton, 2004; Khasawneh *et al.,* 2006; Holton *et al.*, 2007). Starting with Desse (1958) the field of learning psychology has emphasized the relevance of transfer of learning. Practically all educational and training programmes are built on the premise that human beings have

the ability to transfer what they have learnt from one situation to another. Research has demonstrated that learning transfer is complex and involves multiple factors and influences (Noe, 1986; Rouiller and Goldstein, 1993; Ford and Weisbein, 1997; Baldwin and Ford, 1988; Holton *et al.*, 2000).

The Learning Transfer System Inventory (LTSI) is an instrument which diagnoses the factors affecting transfer of learning. It is developed on the HRD Research and Evaluation Model (Holton, 1996) theoretical framework. At a broad level, the model assumes that learning outcomes are a function of ability, motivation and environmental influences at three outcome levels – learning, individual performance, and organizational performance. Secondary influences such as attitudes and personality that impact motivation are also included. The constructs of the LTSI were established on the basis of Holton's conceptual model of evaluation (Holton, 1996) and subsequent research (Holton, Bates, Seyler, & Carvalho, 1997) validated the model by identifying sixteen factors that affect learning transfer. Eleven constructs represent factors affecting a specific training program; five are classified as general factors because they are expected to affect all training programs. To date, the LTSI has mostly been used as a diagnostic tool; participants complete it at the end of a training intervention, and results are used to assess the quality of the transfer climate and indicate where changes might be made (Holton, Bates, & Ruona, 2000).The sixteen transfer factors and a brief description about them are available in Table 1.

Table 1: LTSI Scales

Scale Type	Scale Name	Scale Definition	Scale Description
Trainee Characteristics Scales	Learner Readiness	The extent to which individuals are prepared to enter and participate in a training program	This factor addresses the degree to which the individual had the opportunity to provide input prior to the training, knew what to expect during the training, and understood how training was related to job-related development and work performance.
	Performance Self-Efficacy	An individual's general belief that they are able to change their performance when they want to.	The extent to which individuals feel confident and self-assured about applying new abilities in their jobs, and can overcome obstacles that hinder the use of new knowledge and skills.
Motivation Scales	Motivation to Transfer Learning.	The direction, intensity and persistence of effort toward utilizing in a work setting skills and knowledge learned in training.	The extent to which individuals are motivated to utilize learning in their work. This includes the degree to which individuals feel better able to perform, plan to use new skills and knowledge, and believe new skills will help them to more effectively perform on-the-job
	Transfer Effort— Performance Expectations	The expectation that effort devoted to transferring learning will lead to changes in job performance.	The extent to which individuals believe that applying skills and knowledge learned in training will improve their performance. This includes whether an individual believes that investing effort to utilize new skills has made a difference in the past or will affect future productivity and effectiveness.
	Performance—Outcomes Expectations	The expectation that changes in job performance will lead to outcomes valued by the individual.	The extent to which individuals believe the application of skills and knowledge learned in training will lead to recognition they value. This includes the extent to which organizations demonstrate the link between development, performance, and recognition, clearly articulate performance

			expectations, recognize individuals when they do well, reward individuals for effective and improved performance, and create an environment in which individuals feel good about performing well.
Work Environment Scales	Feedback/Performance Coaching	Formal and informal indicators from an organization about an individual's job performance	The extent to which individuals receive constructive input, assistance, and feedback from people in their work environment (peers, employees, colleagues, managers, etc.) when applying new abilities or attempting to improve work performance. Feedback may be formal or informal cues from the workplace.
	Supervisor/Manager Support	The extent to which managers support and reinforce the use of learning on-the-job	This includes managers' involvement in clarifying performance expectations after training, identifying opportunities to apply new skills and knowledge, setting realistic goals based on training, working with individuals on problems encountered while applying new skills, and providing feedback when individuals successfully apply new abilities.
	Supervisor/Manager Sanctions	The extent to which individuals perceive negative responses from managers when applying skills learned in training.	This includes when managers oppose the use of new skills and knowledge, use techniques different from those taught in training, do not assist individuals in identifying opportunities to apply new skills and knowledge, or provide inadequate or negative feedback when individuals successfully apply learning on-the-job.
	Peer Support	The extent to which peers reinforce and support use of learning on-the-job.	This includes the degree to which peers mutually identify and implement opportunities to apply skills and knowledge learned in training, encourage the use of or expect the application of new skills, display patience with difficulties associated with applying new skills,

			or demonstrate appreciation for the use of new skills.
	Resistance/Openness to Change	The extent to which prevailing group norms are perceived by individuals to resist or discourage the use of skills and knowledge acquired in training.	This includes the work groups' resistance to change, willingness to invest energy to change, and degree of support provided to individuals who use techniques learned in training.
	Personal Outcomes-Positive	The degree to which applying training on the job leads to outcomes that are positive for the individual.	Positive outcomes include: Increased productivity and work effectiveness, increased personal satisfaction, additional respect, a salary increase or reward, the opportunity to further career development plans, or the opportunity to advance in the organization.
	Personal Outcomes—Negative.	The extent to which individuals believe that applying skills and knowledge learned in training will lead to outcomes that are negative.	Negative outcomes include: Reprimands, penalties, peer resentment, too much new work, or the likelihood of not getting a raise if newly acquired skills are utilized
Ability Scales	Opportunity to Use Learning	The extent to which trainees are provided with or obtain resources and tasks on the job enabling them to use the skills taught in training.	This includes an organization providing individuals with opportunities to apply new skills, resources needed to use new skills (equipment, information, materials, supplies), and adequate financial and human resources.
	Personal Capacity for Transfer	The extent to which individuals have the time, energy and mental space in their work lives to make changes required to transfer learning to the job.	This factor addresses the extent to which individuals' work load, schedule, personal energy, and stress-level facilitate or inhibit the application of new learning on-the-job.
	Perceived Content Validity	The extent to which the trainees judge the training content to accurately reflect job requirements.	This factor addresses the degree to which skills and knowledge taught are similar to performance expectations as well as what the individual needed to perform more effectively. It also addresses the extent to which instructional methods, aids, and equipment used

			in training are similar to those used in an individual's work environment.
	Transfer Design.	The extent to which training has been designed to give trainees the ability to transfer learning to job application and the training instructions match the job requirements	The extent to which the training program is designed to clearly link learning with on-the-job performance through the use of clear examples, methods similar to the work environment, and activities and exercises that clearly demonstrate how to apply new knowledge and skills.

A conceptual map of the LTSI conceptual map is shown in Figure 12:

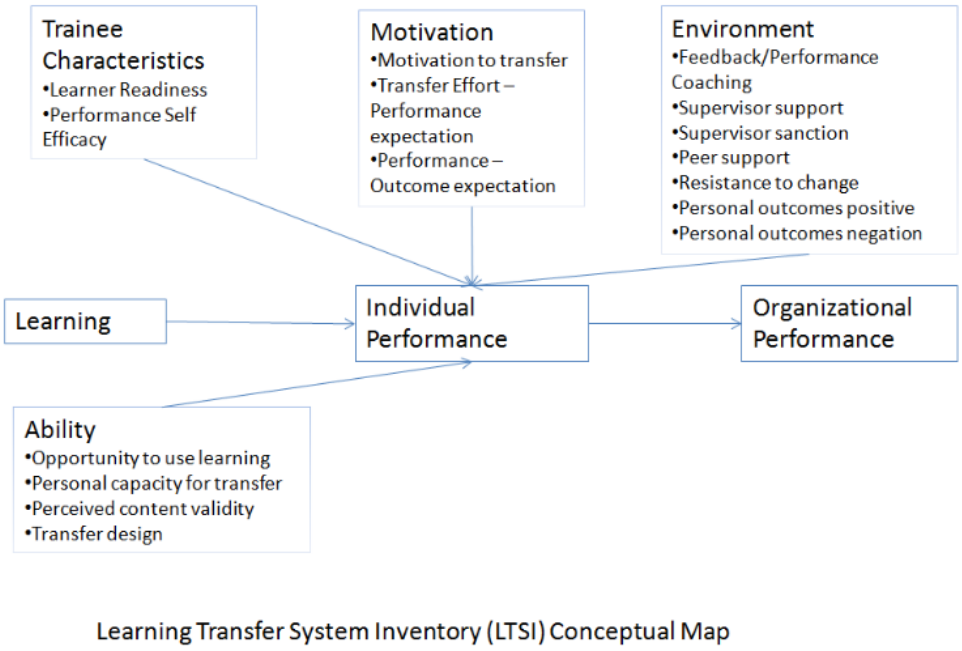


Figure 12: Learning Transfer System Inventory (LTSI) Conceptual Map

Organizational Culture and Competing Values Framework (CVF)

Another important determinant of organizational performance is organizational culture (Kopelman, Brief and Guzzo, 1990; Awadh and Alhahya, 2013). Research has been done on the effect of organizational culture on financial as well as non-financial

performance of organizations. Several research papers have evaluated performance of organizations based on culture parameters and have seen significant association between culture and performance (Reichers and Schneider, 1990; Kotter and Heskett, 1992). Denison (1984) studied the cultural performance of thirty-four organizations in the US, on the basis of characteristics that help in improving performance over time. He concluded that organizations that have participative cultures experience better performance than those that do not.

Organizational culture has the potential to enhance organizational performance through employee job satisfaction and the sense of certainty about problem solving (Kotter, 2012). If an organization's culture becomes incongruent with the changing expectations of internal and/or external stakeholders, the organization's effectiveness can decline (Ernst, 2001). Organizational culture and performance clearly are related, although the evidence regarding the exact nature of this relationship is mixed (Kopelman, Brief, & Guzzo, 1990). Researchers have presented empirical studies to characterize the organizational culture phenomenon and its impact on organizational processes and outcome (Carmeli and Tishler, 2004; Cooke and Rousseau, 1988; Denison and Mishra, 1995; Hofstede, Neuijen, Ohayr, and Sanders, 1990; Jermier, Slocum, Fry, and Gaines, 1991; O'Reilly, 1991; Powell and Dent-Micallef, 1997). However it has not been possible to discover one "best" organizational culture, either in terms of strength or type (Hellriegel & Slocum, 2011).

One of the well-established frameworks to understand organization culture is the Competing Values Framework (CVF), developed by Cameron and Quinn (1999). The questionnaire based on this framework, called Organizational Culture Assessment

Instrument (OCAI) is used to measure the predominant culture existing in an organization by administering it to multiple people from the same organization. For this research I have used the instrument to measure an individual's perception of his/her organization culture, since I do not have requisite number of people from one organization to measure the organization culture. It is the cumulative measure of many people's (from the same organization) perception that is used to determine the organization culture.

Cameron and Quinn (1999) offer a two by two matrix to represent organizational culture on two dimensions, viz. Internal vs. External focus and Stability and Control vs. Flexibility and Discretion. Figure 13 is a diagrammatic representation of the same:

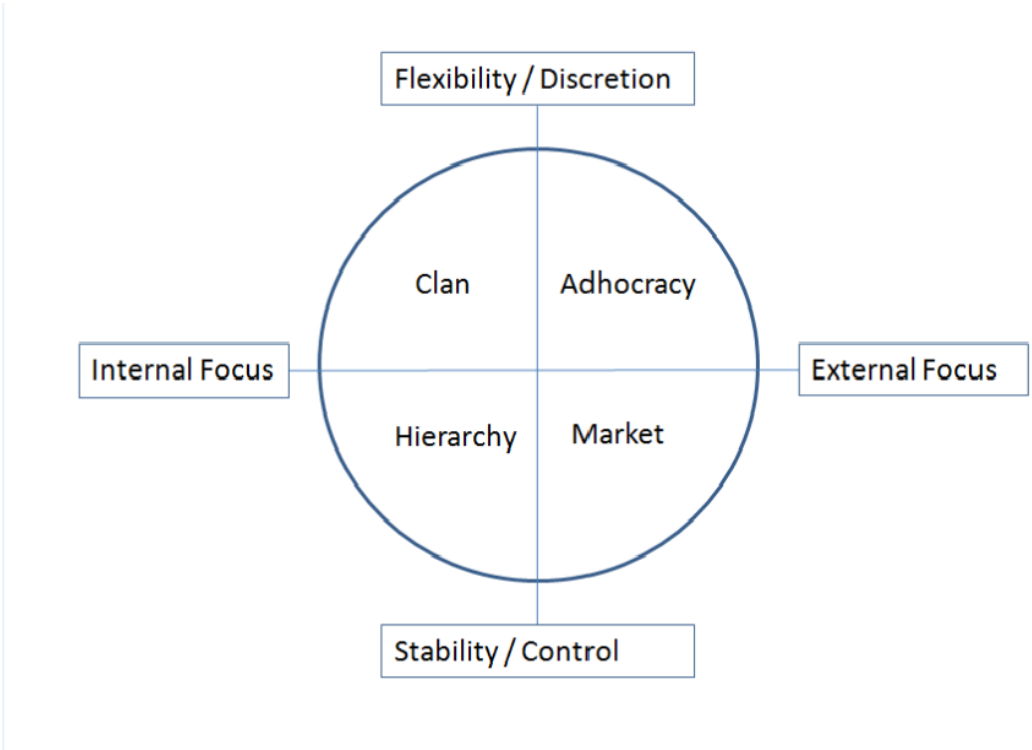


Figure 13: Competing Values Framework

Organizations can be characterized based on their cultural orientation as Clan, Adhocracy, Market or Hierarchy. A brief description of the culture types is discussed below:

Clan culture is internally focused with flexibility and discretion. It is characterized by a sense of cohesion, strongly shared goals and involvement of all employees.

Adhocracy culture is externally focused with flexibility and discretion. It is characterized by openness to change and orientation to outside world, adaptability and innovation.

Market culture is externally focused with stability and control. It is characterized by productivity, consistency, results, bottom line, clarity about customers and a sense of external mission combined with control.

Hierarchy culture is internally focused with stability and control. It is characterized by formal structures, policies, procedures and focus on consistency.

According to Cameron and Quinn, organization culture can be attributed to differences in six attributes, viz. Dominant Characteristics, Organizational Leadership, Management of Employees, Organization Glue, Strategic Emphases and Criteria of Success. The OCAI questionnaire associates different characteristics based on these attributes with each of the culture type, as indicated in Table 2.

Table 2: Characteristics of Clan, Adhocracy, Market, Hierarchy culture

Attributes	Clan	Adhocracy	Market	Hierarchy
Dominant Characteristics	The organization is a very personal place. It is like an extended family. People seem	The organization is a very dynamic entrepreneurial place. People are willing to stick their necks out and take risks.	The organization is very results oriented. A major concern is with getting the job done. People are very competitive and	The organization is a very controlled and structured place. Formal procedures generally

	to share a lot of themselves.		achievement oriented.	govern what people do.
Organizational Leadership	The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	The leadership in the organization is generally considered to exemplify entrepreneurship, innovating, or risk taking.	The leadership in the organization is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus.	The leadership in the organization is generally considered to exemplify coordinating, organizing, or smooth-running efficiency.
Management of Employees	The management style in the organization is characterized by teamwork, consensus, and participation.	The management style in the organization is characterized by individual risk-taking, innovation, freedom, and uniqueness.	The management style in the organization is characterized by hard-driving competitiveness, high demands, and achievement.	The management style in the organization is characterized by security of employment, conformity, predictability, and stability in relationships.
Organization Glue	The glue that holds the organization together is loyalty and mutual trust. Commitment to this organization runs high.	The glue that holds the organization together is commitment to innovation and development.	The glue that holds the organization together is the emphasis on achievement and goal accomplishment. Aggressiveness and winning are common themes.	The glue that holds the organization together is formal rules and policies. Maintaining a smooth-running organization is important.
Strategic Emphases	The organization emphasizes human development.	There is an emphasis on being on the cutting edge.	The organization emphasizes competitive actions and achievement.	The organization emphasizes permanence and stability.

	High trust, openness, and participation persist.	The organization emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	Hitting stretch targets and winning in the marketplace are dominant.	Efficiency, control and smooth operations are important.
Criteria of Success	The organization defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	The organization defines success on the basis of having the most unique or newest products. It is a product leader and innovator.	The organization defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	The organization defines success on the basis of efficiency. Dependable delivery, smooth scheduling and low-cost production are critical.

Chapter 3: Gaps in Studies and Need Matching with Gaps

Gaps in Studies

Most organizations today invest in their employees' learning and development. Generally, organizations provide different kinds of training programmes in different formats for different levels of their employees. However, very few organizations make the effort to ensure that the transfer of learning from the programmes to organizations takes place. Presently in most organizations learning transfer tends to be an un-orchestrated effort and happens as a by-product of learning, even though there is strong evidence that there are specific factors that can enhance or hinder the transfer of learning.

While investment in training continues to grow in India, very little research is available in the areas of training and learning and their impact in the workplace. The research in India tends to focus on Kirkpatrick's levels one (reaction) and two (learning) (Kirkpatrick, 1994). An important determinant of organization learning is the transfer of knowledge (Gravin, Edmondson, Gino, 2008) from training programs. According to Chiaburu and Lindsay (2008), training programmes are effective only to the extent that the skills and behaviors learned and practiced during instruction are transferred to the workplace. According to Holton, Bates, and Ruona (2000), organizations wishing to enhance return on investment from training investments must understand all the factors that affect transfer of training and then intervene to eliminate factors inhibiting transfer. The LTSI framework is useful in this context.

The LTSI has been validated in many countries and various situations. Several studies (Bates & Holton, 2004; Holton, Chen, & Naquin, 2003) have used the LTSI in different organizational settings. While LTSI has been suitably established in USA,

Holton, Bates, and Ruona (2000) suggest that it needs to be validated in various cultures and global contexts. Several such studies have been conducted; for example, Chen, Holton, and Bates (2005) validated the LTSI in Taiwan and found that fourteen of the then established fifteen factors identified were identical to those found in the original LTSI. Khasawneh, Bates, and Holton (2006) validated the LTSI in Jordan, finding that eleven of the twelve factors identified were the same as those in the original LTSI. Other studies have provided evidence of the cross-cultural validity of the instrument: Yamnill (2001) in Thailand; Bates, Kauffeld, and Holton (2005) in Germany. There were no studies pertaining to validation or usage of LTSI in India.

Learning Transfer does not happen by itself; it is dependent on a lot of factors. Transfer can happen only if the organization has a favorable transfer environment, which is one that affects motivation and performance of its people positively (Litwin and Stringer, 1968). It can be influenced by many variables including culture, climate, leadership, management practices, information acquisition, retrieval, and sharing, and organizational structures, systems and environment (Bates and Khasawneh, 2005). The process of learning-transfer within an organization is complex because of various influences (Edmondson, Dillon and Roloff, 2007), including work environment related elements (Baldwin and Ford 1988). Baldwin and Ford (1988) published a seminal transfer of training model, a model that is the most heavily cited work in the field (Blume, Ford, Baldwin and Huang, 2010). That model presented three training inputs that impacted training outputs (learning and retention) and transfer. These three training inputs included: (1) trainee characteristics, such as a person’s motivation and ability; (2) training design factors, including having identical stimulus and response elements in both the training

and work contexts, and (3) work environment elements, such as managerial support and the opportunity to use the skills gained within the training program. Empirical study of work environment factors on training transfer was missing in the Indian context.

Knowledge transfer leads to new knowledge creation (Cook and Brown, 1999; Alipour, Idris and Karimi, 2011; Paulin and Suneson, 2012). Although a variety of studies have been conducted on knowledge creation and knowledge transfer, most have focused on the source and state of knowledge. Limited attention has been paid to exploring the conditions and culture that facilitate knowledge creation and knowledge transfer within organizations (Alavi & Leidner, 2001; Weldy, 2009). Some studies have examined enablers and barriers to knowledge management in one or more areas of knowledge creation, knowledge sharing and knowledge transfer, pertaining to a specific industry or country (Gera, 2012; Fullwood *et al*., 2013; Ramachandran *et al*., 2013; Ramjeawon and Rowley, 2017). Proper conditions of knowledge flow are very important for organizational learning, and if knowledge flows are blocked, the knowledge gained in one unit cannot inform or improve practices in other parts of the organization (Dee and Leisyte, 2017). One of the key aspects of the work environment is organizational culture. There is substantial literature that focuses on the impact of the organizational culture on organization learning (Shallcross, 1975; Kiely, 1993; Amabile, 1998; Prather, 2000; Sternberg, 2003); however very little effort has been made to understand the relationship between organizational culture and organization-specific factors that affect the transfer of learning from training programs.

Organizational growth is dependent on both effectiveness and efficiency (Drucker, 1967). A growing research stream in organizational sciences views

organizational culture as a principal aspect of an organization's functioning and a critical driver of effectiveness (O'Reilly, 1991). Organizational culture manifests itself in a lot of management practices, shared fundamental beliefs and assumptions, values, attitudes, and behaviors of the organization's members. It has not been possible to discover one "best" organizational culture, either in terms of strength or type (Hellriegel & Slocum, 2011). An emerging stream of study talks about the importance of having a balanced culture (Denison, 1990; Cameron, 1986; Sorensen, 2002). A study by Yilmaz and Ergun (2008) in the manufacturing sector in Turkey examined the effect of four major organizational culture traits - involvement, consistency, adaptability, and mission (as discussed by Denison, 1990) on measures of firm effectiveness. They empirically tested the view that a balanced combination of the four traits enhances a firm's effectiveness. However, there has been no study on the impact of balanced culture on organizational efficiency.

Organizational Learning and Development (OL&D) can be a key catalyst for building capability of people (APSC, 2005) and improving organizational effectiveness and efficiency. There are other benefits like increase in job satisfaction, attraction and retention of employees (Mabey, Salaman, and Storey, 1998; Anderson, 2009; Towler and Dipboye, 2009; Mavin, Lee and Robson, 2010) as well. With investments growing in this area, the question is no longer "should we train" but rather "is the training worthwhile and effective?" (Mann, 1996). This has resulted in the emergence of the field of evaluation of learning and development (Lewis and Thornhill, 1994; James and Roffe, 2000; CIPD Learning and Development survey, 2008; Mavin, Lee and Robson, 2010; Gupta and Rani, 2013; Vijayasamundeeswari, 2013; Akilandeswari and

Jayalakshmi, 2014; Dutta and Manimala, 2014). There seems to be a convergence in view that while individual training programmes have been studied occasionally, there are few studies pertaining to overall OL&D practices.

Need Matching with Gaps

Two of the most important factors that emerge in context of improving productivity are organizational culture and human resource management (HRM) practices. This research focuses on practices that improve and impact learning transfer and knowledge creation. Literature survey indicates gaps in areas of research done on areas like learning transfer, interplay of knowledge transfer and knowledge creation, impact of organizational culture on learning transfer, impact of culture on organizational efficiency and productivity. The importance of OL&D and its strategic importance in businesses are unquestioned in today's world. For OL&D to be successful there is a need for organizations to focus on its robust design. Design is defined as a 'roadmap or a strategic approach to achieve a desired objective' and calls for in depth analysis of the building blocks. Based on the gaps in literature identified in the earlier part of this section, this research aims to address these needs as highlighted in the forthcoming sections.

Chapter 4: Aims and Objectives

The dynamic environment that houses today's firms needs them to be ahead of the learning curve in order to be competitive. Firms invest huge amounts on their employees' learning without any significant measures on the return of these investments. Interest to measure the impact is restricted to the small community of the learning and development professionals and till now has not really excited the finance fraternity to invest more in this marginal activity. Almost all firms are content to measure the reaction and sometimes learning and application in the form of action learning projects, but rarely the impact and ROI of learning. However, the lack of these measures does not deter the industry, in fact the executive education industry is expanding globally. Even during the downturn, while some firms curtailed their learning budgets, few firms felt this was the opportunity to build human capacity. A soon as the economy started rebounding, firms again started looking at how executive education could cater to their professionals' development. It is as if firms are implicitly saying 'Of course this works!' without knowing how or why it does. Since firms incur cost in executive education, there must be a positive benefit to cost ratio. All the benefits that learning and development claims to have like filling skill gaps, leadership development, strengthening teams, etc. must be leading to the improvement of something tangible, like productivity which is the ratio of output to input. The question is: 'what makes learning work?', and 'is there any way of improving it further?' Literature survey showed there were many constructs which had been and are being researched but it was not very clear how these were interconnected (the gaps identified). Hence the main

objective of the research is to find an interlinkage between some of these factors (organization learning, learning transfer and organizational culture) and how they affect firm productivity.

In today's age, though a lot of buzz is there around automation, artificial intelligence, machine learning, etc. in many industries human beings will continue to play a key part, thus impacting productivity. As existing literature indicates, several factors can affect labor productivity, e.g. financial incentives, working conditions, training/executive education, tools, technology, systems, processes, organization culture, to name a few. The output elasticity of labor (β) is defined as the responsiveness of output to a change in levels of labor used in production, other conditions remaining same. For example, if $\beta = 0.45$, a 1% increase in labor usage would lead to approximately a 0.45% increase in output. If the sum of labor and capital productivity is more than one ($\alpha + \beta > 1$), returns to scale are increasing. This means if either α or β is improved, productivity is also improved. The focus of this research is on the intangible factors that can improve organizational productivity by studying some of the factors that can affect β or the output elasticity of labor.

This research can be said to be exploratory and explanatory. Exploratory research is study of a phenomena which may help the researcher's need for better understanding, may test the feasibility of a more extensive study, it is broad in focus and rarely provides definite answers to specific research issues. Explanatory research's primary goal is to understand or explain relationships. It uses correlations to study relationships between dimensions or characteristics off individuals, groups, situations, or events to explain 'how' and 'why' questions.

Having identified the existing gaps in current literature and the tools and instruments that would be used to explore the field, the research questions were identified, which would aim to quantify the broader research objective. LTSI had not been validated in India yet, hence first study is validation of LTSI in the Indian context. A deeper analysis of the constructs of LTSI led to comparing it with the SECI process and its role in knowledge amplification in an organization. There was a lot of literature on organization culture and how it impacted learning but there was no empirical study on the same topic. This led to the third question on the role of organization culture on learning transfer. While studying organization culture, again a gap was identified in terms of an existence of empirical research on role of organization culture on performance efficiency, which led to the fourth question of how does organization culture impact organizational performance? The fifth essay came about as a result of a Strength-Weakness-Opportunity-Threat (SWOT) study of the state of learning and development in India and a culmination of the findings from the earlier research questions. What are some beast practices followed? Is it possible to design a framework so that some of the theoretical findings could be put to some practical usage in the industry?

Through these questions, this research studies learning transfer, its association with knowledge creation and how it is impacted by organizational culture. It also studies the impact organizational culture has on improving productivity and finally what needs to go into designing a robust OL&D framework that can improve and impact productivity. The aim of this research is to address the following research questions under 5 broader topics:

A. Learning Transfer and its validation in Indian context

1. What LTSI factors are relevant for executive training in India?
2. Are there significant differences based on the type of learning programme attended (for e.g. leadership, strategy, general management or functional excellence)?
3. Are there significant differences based on seniority levels of participants (middle, senior, and top management)?
4. Are there significant differences based on education level of the participants (graduate, post graduate, post doctoral)?
5. Are there significant differences based on years of experience of participants (less than 10 years, 10-15 years, 15-20 years, more than 20 years)?
6. Are there significant differences based on the industry the participants belong to?

B. Learning Transfer and Knowledge Amplification

1. Does LTSI play a role in knowledge amplification as part of the Organizational Knowledge Creation Spiral?

C. Impact of Organization Culture on Learning Transfer

1. For each of the relevant learning transfer factors, what is the impact of individual perception of organization culture?

D. Impact of Organization Culture on Organizational Performance

1. Is the efficiency of an origination affected by organization culture?
2. Does having a balanced culture impact efficiency?
3. Are the results similar or different across different units and industries?

E. Organizational Learning and Development (OL&D) Framework

1. What are the key underlying factors of successful OL&D?
2. Are there any best practices followed in successful organizations?
3. Can a holistic framework be created that can help design OL&D at strategic, tactical and operational levels?

This research studies the effect and interplay of some of these factors related to organizational culture, organizational learning and learning transfer and how it affects labor productivity. The focus is on aspects of labor productivity other than direct man-hours and technological advancement.

Chapter 5: Scope of Present Research

The studies pertaining to the 5 essays have been carried out in India. Indian firms have started looking at learning and development of their professionals very seriously in the past few decades. The market for executive education has shown an upward trend. As the needs of the organizations have evolved, there has been demand for well-designed programmes based on cutting edge research in the field of management. The setting of three of the studies (1, 3 and 4) is the executive education department of a premier business school in India. This setting gives access to corporate executives across industries and levels of seniority. Participants who come to these programmes are quite senior in the corporate careers, are fluent in English and were quite open to filling the surveys when they were explained the reason for the same. Being senior in hierarchy, they were also able to provide the details of their team members which was required for one of the studies. The participants were predominantly ‘men’, hence no findings based on gender difference could be drawn from the studies. The lack of female participants is reflective of the Indian job market, which is dominated by men.

Executive programmes are run in two distinct formats: ‘open and ‘custom’. For the first and third questions, participants of open programmes were chosen to be able to draw generic conclusions about the parameters studied. For the fourth question on impact of organization culture on performance, respondents were chosen from two groups, IT sector and Sales function to be able to compare the findings across two sectors and analyse based on the similarities and differences in findings. The sales group were participants of a sales specific functional programme held at the business

school across several years. The participants from the IT sector were selected from among participants, friends and family. The researcher's prior experience in the IT sector helped her identify the right level of participants. The scope of the last question was broader and included junior, middle, senior and top management from various organizations and industries (mostly in the private sector), across functions. They were customers of the learning and development departments of their respective organizations. They were either participants of open and custom programmes or drawn from friends and family. This sample ensured external validity of the findings and recommendations from the last research question. Further details about the samples have been given in the respective essays.

The duration has been over a period of 5 years from 2013-2018. During this period, broadly the macro-economic factors have not changed much so as to impact the studies. The results of the studies can be extended to economies and cultures like India and similar levels of corporate executives. For developed economies, there may be some nuanced differences since the pre-dominant organization culture in such countries may be different. Such studies can be taken up as future research to extend the findings globally. It would also be interesting to see if having more female respondents has any effect on the findings.

Chapter 6: Methods and Analysis

This section describes the research work undertaken for each area to address the research questions. Though interrelated, some of the studies were carried out independently of each other. Under each section, the results, scope for future research, implications for practice as well as limitations are presented. A summary snapshot for each area is also provided at the end. The next section, ***Summary of Findings*** consolidates the findings from these studies and highlights the overall implications of the studies.

A. Learning Transfer and its validation in Indian context

This research attempts to validate the Learning Transfer System Inventory, LTSI (Holton, Bates & Ruona, 2000), in the context of executive training in India. Exploratory factor analysis was used to identify and validate factors that comprise LTSI. A factor structure similar to that of Holton and colleagues was identified, with all sixteen factors of LTSI (either by themselves or in combination with other factors) found to be valid in the Indian context. Additionally, other factors like type of programme, seniority level, education level, years of experience and industry background were seen to have a limited influence on the transfer factors

Research Methodology

This section discusses the population and sample, the instrument, the data collection process, and the type of analyses used.

Population

One of the means of imparting learning to managers and executives in organizations is through short-term training and executive education. The population of

interest in this study are participants of “open” executive education programmes at a premier business school in India. Participants come from top, senior and middle management categories belonging to the private, public, government or social sectors. Around two thousand participants are trained every year through these programmes at this school.

Sample

To ensure that participants were chosen from a diverse range of industries, seventeen open programmes (where participants come from across different sectors and organizations) were selected, and participants from these programmes were administered the survey. A sample of two hundred and thirty-two (232) was available for the analysis. The participants represented various Indian industries like agriculture, automobile, banking and finance, chemicals, consumer products, electronics, energy, food and beverage, government, health, information technology, manufacturing, materials and construction, media, mining and metals, real estate, retail, services, telecom, textile, trading, travel and transportation.

Instrument

LTSI version 4 was administered to the sample. It has a total of forty eighty items; thirty-three items relate to the specific training program in question, while fifteen items are classified as general items because they are expected to affect all training programs. The LTSI version 4 employs a scale of 1 to 5, 1 being “strongly disagree” and 5 being “strongly agree” for all the items

Data Collection and Analysis

The LTSI version 4 was administered towards the end of each training programme, typically on the penultimate day of the training. Because the LTSI has not been used in India previously, exploratory (rather than confirmatory) factor analysis was used in the analysis. The measure of sampling adequacy (MSA) was used to determine the appropriateness of the use of factor analysis. No inadequate MSA values were found, thus supporting its use. Analysis of variance (ANOVA) was used to explore whether differences in learning transfer exist based on type of programme, and participant characteristics such as seniority level, education level, years of experience and industry.

Results

This section describes the results of the analyses related to the six research questions that this study addresses.

Research Question 1: What LTSI Factors are Relevant for Executive Training in India?

The results of the factor analysis of the forty-eight items are presented. The findings of the specific-training-program scales and the training-in-general scales are presented separately. Items retained are those with factor loadings greater than 0.35 (there are many suggestions in the literature for choosing the loading criteria for inclusion. Given the sample size of 232, I chose 0.35 as the criterion). All factors have eigen values of 1 or more.

All the sixteen LTSI factors were found to load in the India context, some more

prominently than others. A total of nine factors were identified, six for training specific and three for training- in-general factors. Some of the items loaded very clearly on the existing LTSI factors, some were a combination of two or more existing factors. Factor names have been retained wherever the loading is clear. In other cases, based on the combination of factors loading, new names have been given.

Training-specific factors: Items 1 to 33 deal with specific training programs and the analysis reveals 6 factors with eigen values greater than 1. The first factor is a combination of four LTSI factors. All constructs of Motivation to Transfer and Transfer Design load on this factor and one each of Perceived Content Validity and Opportunity to Use Learning. I have named this factor as ***Motivation-Design-Opportunity***. This factor covers the Ability and Trainee Characteristic items, indicating that a person's own belief about using the learning's from a programme and the programme's design are important factors along with the opportunity provided in impacting learning transfer.

The second factor loads on two LTSI factors, Supervisor Support and Peer Support. This factor captures the extent to which supervisors and managers support and reinforce the application of learning on the job. I have named this factor as ***Support from Team***.

The third factor loads on two LTSI factors: Personal Capacity for Transfer and Personal Outcome (-) ve which is the individual's belief about the time available to invest and the perception of application of learning leading to negative outcomes in workplace. I have named this factor as ***Personal Propensity***.

The remaining three factors load very clearly on LTSI factors: Factor 4 is ***Supervisor Sanction***, which is the individual's fear that applying learning will lead to

negative response from the manager. Factor 5 is ***Personal Outcome (+)ve*** which is the degree to which application of learning leads to positive outcomes for an individual. Factor 6 is ***Learner Readiness*** which is the extent to which an individual is prepared to participate in a training programme.

Table 3 summarizes the findings on the training-specific factors.

Table 3: Training Specific Transfer Factors

Factors	Questions	LTSI Factors	Transfer factor	Alpha
F1 (S)	2, 3, 4	Motivation to Transfer	Motivation-Design-Opportunity	0.89
	30, 31, 32	Transfer Design		
	29	Perceived Content Validity		
	33	Opportunity to Use Learning		
F2 (S)	21, 22, 26	Supervisor Support	Support from team	0.83
	19, 20	Peer Support		
F3 (S)	12, 15, 16	Personal Outcome (-)ve	Personal propensity	0.78
	11, 14	Personal Capacity to Transfer		
F4 (S)	23, 24, 25	Supervisor Sanction	Supervisor sanction	0.79
F5 (S)	5, 6, 7	Personal Outcome (+)ve	Personal outcome (+)ve	0.77
F6 (S)	1, 8, 9	Learner Readiness	Learner Readiness	0.75

Six items did not load on any of the factors found significant for this audience. They are:

Question 10 - I don't have time to try to use this training on my job.

Question 13 - I will be able to try out this training on my job.

Question 17 - The resources needed to use what I learned in this training will be available to me

Question 18 - My colleagues will appreciate my using the new skills I learned in this training.

Question 27 - The instructional aids (equipment, illustrations, etc.) used in this training are very similar to real things I use on the job.

Question 28 - The methods used in this training are very similar to how we do it on the job.

Training-in-General factors: Questions 34 to 48 were analyzed for the training-in-general factors. Three factors were seen to have eigen values greater than 1. Factor 7 (the first training- in-general factor) is a combination of three LTSI factors: Transfer Effort – Performance Expectation, Performance – Outcome Expectation and Performance Self Efficacy. The combined effect is an individual's belief that s/he can change performance if she/he wants to, the expectation that the effort given for learning transfer will result in changes in job performance and that these changes will result in positive outcome for the individual. I have named this factor as ***Performance Perception***.

Factors 8 and Factor 9 (the second and third training in general factors) clearly load on Resistance to Change which is how supportive or non-supportive the peer group of an individual is to changes that might be the outcome of application of learning and Performance Coaching which is formal and informal indicators from an organization about an individual's job performance respectively.

Table 4: Training in General Transfer Factors

Factors	Questions	LTSI Factors		Alpha
F7 (G)	34, 35, 38	Transfer Effort – Performance Expectation	Performance Perception	

	36, 37, 39	Performance – Outcome Expectation		0.84
	46, 47	Performance Self Efficacy		
F8 (G)	40, 41, 42	Resistance to Change	Resistance to Change	0.80
F9 (G)	43, 44, 48	Performance Coaching	Performance Coaching	0.80

Only one item, question 45 (“I never doubt my ability to use newly learned skills on the job”) does not load on any factor.

In conclusion, I extracted nine factors. Five factors—Supervisor Sanction, Personal Outcome (+)ve, Learner Readiness, Resistance to Change, Performance Coaching were identical to factors found in Holton, Bates, and Ruona (2000). Other items loaded on combination of different factors. Ultimately, using a cut-off for factor loadings of 0.35, forty-one (out of forty eight) items loaded on nine factors.

Research Question 2: Are there Significant Differences based on the Type of Learning Programme?

ANOVA (Univariate Analysis of Variance) was used to determine whether the type of training programme affected the results. The programme types were categorized as Strategy, Leadership, Functional and General Management, each having 27, 82, 104, 19 data points respectively.

The results showed that one of the factors: Personal Outcome (+)ve was significantly different across programme type with $p = 0.0095$ (see Table 5).

Table 5: Analysis based on Programme Type

Factor	Overall	Strategy	Leadership	Functional	General Management	F	p
Motivation-Design-Opportunity	4.05	4.12	4.12	3.96	4.15	1.78	0.15
Support from team	3.50	3.43	3.54	3.53	3.28	0.92	0.43
Personal propensity	2.06	1.99	1.99	2.16	1.86	1.47	0.22
Supervisor sanction	1.80	1.62	1.80	1.89	1.70	0.80	0.49
Personal outcome (+)ve	3.32	3.58	3.12	3.35	3.63	3.91	0.0095
Learner Readiness	3.44	3.50	3.44	3.42	3.49	0.14	0.94
Performance Perception	4.12	4.21	4.05	4.12	4.26	1.77	0.15
Resistance to Change	2.17	2.11	2.18	2.25	1.80	1.67	0.17
Performance Coaching	3.07	3.11	3.00	3.09	3.10	0.25	0.86

Personal Outcome (+)ve is the degree to which applying training on the job leads to outcomes that are positive for the individual. It includes increased productivity and work effectiveness, increased personal satisfaction, additional respect, a salary increase or reward, the opportunity to further career development plans, or the opportunity to advance in the organization and is a training specific factor.

The Bonferroni, Scheffe and Sidak multiple comparison tests indicate that there is significant difference between Strategy and General Management programmes compared to Leadership programmes at 95% confidence level. This indicates the population in question values the takeaways from Strategy and General Management

programmes more than Leadership as they help them achieve positive outcome when they apply the learning back in workplace.

Research Question 3: Are there Significant Differences based on Seniority Levels of the Participants (Middle, Senior, and Top Management)?

ANOVA was used to determine whether seniority level of participants affected the results on the LTSI. The levels were classified as Middle, Senior and Top, each having 59, 111, 47 data points respectively. The results showed that one of the factors: Learner Readiness, was significantly different across seniority level with p = 0.08 (see Table 6), i.e. at 90% confidence.

Table 6: Analysis based on Seniority

Factor	Overall	Middle	Senior	Top	F	p
Motivation-Design-Opportunity	4.06	4.07	4.09	3.96	1.19	0.31
Support from team	3.49	3.48	3.50	3.49	0.03	0.97
Personal propensity	2.06	2.00	2.03	2.2	1.17	0.31
Supervisor sanction	1.83	1.64	1.88	1.94	2.31	0.10
Personal outcome (+)ve	3.33	3.44	3.28	3.33	0.78	0.46
Learner Readiness	3.43	3.51	3.47	3.22	2.60	0.08
Performance Perception	4.12	4.10	4.12	4.12	0.07	0.93
Resistance to Change	2.19	2.17	2.21	2.15	0.09	0.91
Performance Coaching	3.07	2.99	3.01	3.29	2.25	0.11

Learner readiness is the extent to which individuals are prepared to enter and participate in a training program, the degree to which the individual had the opportunity to provide input prior to the training, knew what to expect during the training, and understood how training was related to job-related development and work performance.

The Bonferroni, Scheffe and Sidak multiple comparison tests indicate that there is no significant difference between Middle, Senior and Top levels at even the 90% confidence level. Thus, no conclusion can be reached as to how seniority level impacts Learner Readiness.

Research Question 4: Are there Significant Differences based on Education Level of the Participants (Graduate, Post Graduate, and Post-Doctoral)?

ANOVA was used to determine whether the education level of participants affected the results on the LTSI. The levels were classified as Graduate, Post Graduate and Post Doctoral, each having 128, 99 and 5 data points respectively. The results showed that one of the factors: Personal Propensity, was significantly different across education level with p = 0.08 (see Table 7), i.e. at 90% confidence level.

Table 7: Analysis based on Education Level

Factor	Overall	Graduate	Post Graduate	Post Doctoral	F	P
Motivation-Design-Opportunity	4.05	4.07	4.03	3.90	0.32	0.72
Support from team	3.50	3.53	3.47	3.32	0.45	0.64
Personal propensity	2.06	2.07	2.00	2.72	2.51	0.08

Supervisor sanction	1.80	1.79	1.79	2.13	0.42	0.65
Personal outcome (+)ve	3.32	3.30	3.37	2.94	0.81	0.44
Learner Readiness	3.44	3.49	3.39	3.2	0.84	0.43
Performance Perception	4.12	4.13	4.10	4.15	0.21	0.81
Resistance to Change	2.17	2.20	2.11	2.53	0.82	0.44
Performance Coaching	3.06	3.14	2.98	2.73	1.45	0.23

The Bonferroni, Scheffe and Sidak multiple comparison tests indicate that there is significant difference between post doctoral and post graduate at 90% confidence level. However the data collected for post doctoral is too small to draw any conclusion.

Research Question 5: Are there Significant Differences based on Years of Experience of Participants (Less than 10 years, 10-15 years, 15-20 years, More than 20 years)?

ANOVA was used to determine whether years of experience of participants affected the results on the LTSI. The levels were classified as Less than 10 years, 10-15 years, 15-20 years, more than 20 years, each having 40, 44, 49 and 66 data points respectively.

The results showed that one of the factors: Personal Propensity, was significantly different across years of experience with p = 0.01 (see Table 8), i.e. at 95% confidence level.

Table 8: Analysis based on Experience

Factor	Overall	0-10 yrs	10-15 yrs	15-20 yrs	>20 yrs	F	P

Motivation-Design-Opportunity	4.04	3.94	4.00	4.07	4.09	0.72	0.54
Support from team	3.49	3.60	3.30	3.54	3.51	1.71	0.17
Personal propensity	2.07	2.20	1.89	2.29	1.95	3.66	0.01
Supervisor sanction	1.83	2.05	1.82	1.83	1.70	1.42	0.24
Personal outcome (+)ve	3.34	3.53	3.18	3.54	3.18	3.27	0.02
Learner Readiness	3.42	3.29	3.56	3.50	3.34	1.44	0.23
Performance Perception	4.11	4.07	4.11	4.07	4.18	0.73	0.54
Resistance to Change	2.19	2.26	2.27	2.26	2.03	1.11	0.34
Performance Coaching	3.03	2.87	2.91	3.06	3.20	1.86	0.14

Personal Propensity is a combination of two LTSI factors: Personal capacity for transfer and Personal outcome (-)ve which is the individuals' belief about the time available to invest and the perception of application of learning leading to negative outcomes in workplace.

The Bonferroni, Scheffe and Sidak multiple comparison tests indicate that there is significant difference between 15-20 years and 10-15 years as well as more than 20 years at 90% confidence level. The questions loading on this factor have a negative connotation. The lower value of the 15-20 years' experience group indicates that for this group, they are less likely to believe they do not have the time to apply learning and that doing so will lead to negative outcomes in workplace.

Research Question 6: Are there Significant Differences based on the Industry that the Participants belong to?

ANOVA was used to determine whether the industry of the participants affected the results on the LTSI. The different industries and number of data points for each industry type are: BFSI (34), Consumer Goods (7), Energy (13), Health (15), IT/Service (69), Manufacturing (68), Real Estate (25), Others (31).

The results showed that four of the factors: Motivation-Design-Opportunity (p=0.04), Support from Team (p=0.09), Learner Readiness (p=0.04) and Performance Perception (p=0.07) differ across various industries at 90% confidence level (see Table 9).

Table 9: Analysis based on Industry

Factor	Overall	BFSI	Consumer Goods	Energy	Health	IT/Services	Mfg	Real Estate/Infra	Others	F	P
Motivation-Design-Opportunity	4.05	4.14	4.32	4.04	4.04	4.09	4.13	3.71	3.97	2.15	0.04
Support from team	3.50	3.54	3.66	3.48	3.93	3.43	3.61	3.46	3.28	1.76	0.09
Personal propensity	2.06	1.86	1.99	2.15	2.23	2.01	2.19	2.21	1.97	1.02	0.41
Supervisor	1.80	1.63	1.76	1.82	1.78	1.77	1.87	2.13	1.73	0.92	0.49

sanction											
Personal outcome (+)ve	3.32	3.16	3.43	3.44	3.27	3.50	3.40	3.07	3.14	1.47	0.18
Learner Readiness	3.44	3.38	3.91	3.59	3.67	3.59	3.20	3.21	3.38	2.19	0.04
Performance Perception	4.12	4.29	4.48	4.13	4.06	4.09	4.14	4.03	4.00	1.92	0.07
Resistance to Change	2.17	1.91	2.19	2.15	2.31	2.15	2.18	2.35	2.30	0.81	0.58
Performance Coaching	3.07	3.12	3.24	3.05	3.38	2.88	3.17	3.03	3.14	1.02	0.42

The Bonferroni, Scheffe and Sidak multiple comparison tests indicate that there is no significant difference between industries for Learner Readiness and Performance Perception at the 90% confidence level. For **Support from team,** results indicate that the Health industry has values higher than other industries. Similarly, for **Motivation-Design-Opportunity,** the Real Estate industry has values lower than other industries.

The industry to which the participants belong seems to be an important characteristic across which the transfer factors seem to vary in the Indian context. This factor certainly deserves more attention in further research.

Limitations of the study

It is important to acknowledge the limitations in the study. First, the data set is not entirely representative of all Indian organizations. Participants who attend executive training at the premier business school (where the data were collected) tend to come from large, elite organizations. As such, this study does not represent executives of all Indian organizations, many of which are small and medium sized companies. I hope other researchers will attempt to extend this study to executives of such types of organizations. In some cases, though ANOVA results indicated difference across certain variables, further analysis could not be done due to insufficient data. More data would have helped in analyzing and drawing stronger conclusions.

Results and Discussion

All the sixteen LTSI factors were found to load in the context of executive training in India, some more prominently than others. A total of nine factors were identified, six for specific-training and three for training-in-general. Some of the items loaded very clearly on the existing LTSI factors, some were a combination of two or more existing factors. Factor names have been retained wherever the loading was clear. In other cases, based on the combination of factors loading, new names have been given. Many of the transfer factors vary with industry. Some transfer factors depend on other dimensions like type of learning programme attended, seniority level, education level and years of experience.

Organizational learning is gaining importance in Indian organizations. This study focuses on one aspect of organizational learning, viz. learning transfer. With validation such as this, the instrument can be used for diagnostic purposes so that organizations can focus on the factors that encourage learning transfer in the workplace.

Learning Transfer and its Validation in Indian Context

Validates LTSI in the context of executive training in India
Studies the impact of programme type, seniority level, education level, years of experience and industry on learning transfer

Population and Sample

- Participants of “open” executive education programmes at a premier business school in India.
- Sample size = 232

Instrument:

- LTSI version 4

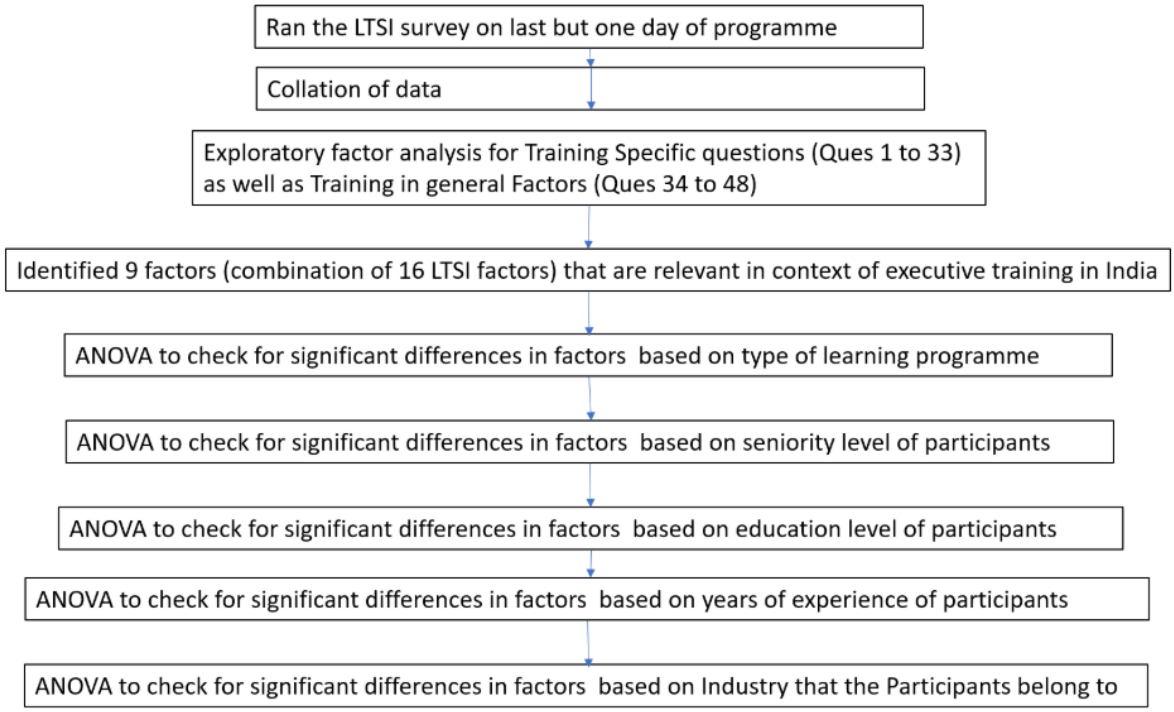
Analysis:

- Exploratory factor analysis
- ANOVA

Conclusion:

- Transfer Factors identified
- Impact of Programme type, Seniority, Education Level, Years of Experience and Industry on transfer factors seen

Details of analysis carried out:



B. Learning Transfer and Knowledge Amplification

Knowledge creation has received substantial attention by researchers, ever since the Socialization Externalization Combination Internalization (SECI) process was introduced. Learning Transfer System Inventory (LTSI) focuses on learning transfer and has been validated across many countries, including India, as the earlier section shows. The purpose of this study is to explore the theoretical underpinnings between LTSI and SECI, and LTSI's role in knowledge amplification as part of the Organizational Knowledge Creation Spiral.

This study focuses on exploring the theoretical underpinnings of the two established models of knowledge creation (using SECI) and transfer (using LTSI) in context of conditions and environment which support organizational knowledge creation. A theoretical framework is created combining SECI and LTSI, which enhances the understanding of the ontological dimension of knowledge creation, often called the knowledge creation spiral. It will also be useful to researchers interested in exploring the finer details of organizational learning, as well as for assessing whether an organization's environment supports knowledge creation and the implementation of Knowledge Management Systems (KMS).

The importance of the interaction of explicit and tacit knowledge has been emphasized throughout the organizational learning and knowledge management literature (Cook and Brown 1999; Tsoukas and Valdimirou 2001; Garcia *et al.*, 2002; Nissen, 2006; Bratianu and Andriessen, 2008; Harsh, 2009; Holste and Fields, 2010). Andreeva and Ikhilchik (2011) further distinguish between the following elements of the

SECI model: cognitive processes, management tools, and societal-organizational conditions that, according to Nonaka and Takeuchi (1995), 'facilitate the cognitive processes and channel them according to organizational objectives. They propose that the basic cognitive processes of knowledge conversion—transformations between tacit and explicit knowledge—are natural mental processes of any human being. The authors distinguish between conditions and tools based on whether they are conducive to managerial intervention. While application of *tools* depends mainly on the free will and decision of the manager, the societal-organizational *conditions* evolve because of influence of multiple factors, with managerial actions being just one among them (and sometimes minor ones). As an example, they say job rotation as organizational practice falls into "tools" category, and high commitment of employees to organization refers rather to "conditions." They feel while this distinction is somewhat arbitrary—tools are often influenced by conditions and vice versa, they believe that such separation between management tools and social and organizational conditions is useful for the purposes of analysis.

SECI and LTSI

For studying the two models, LTSI version 4 is considered. The instrument has a total of 48 items, of which 33 items relate to eleven constructs that pertain to specific training programs, while 15 items are classified as general items because they pertain to five constructs that affect all training programs. The items are examined in the context of various types of tacit and explicit knowledge conversions involved, and each LTSI construct is mapped to the SECI framework. The constructs are also mapped into three

elements (basic cognitive processes, societal/organizational conditions, and management tools) as suggested by Andreeva and Ikhilchik (2011).

A detailed analysis of LTSI constructs indicates that they are based on social processes that result from the interplay of tacit and explicit knowledge. The LTSI constructs measure how likely learning transfer will take place after a participant has attended a training programme. Many of these items measure the perceptions of the participant on factors that are likely to promote or not promote learning transfer. Perceptions are shaped by various experiences and interactions that the individual may have had involving tacit knowledge and explicit knowledge. For example, an employee may have been inspired by a colleague whose performance improved after s/he applied new learning from a training program on the job and being subsequently rewarded. Such interaction would have influenced the individual positively and s/he is likely to rate the concerned factors high. A deeper analysis of this perception formation reveals several interactions between tacit and explicit knowledge. For example, when performance improvement happens, it can be considered explicit knowledge; similarly, any reward to employees can also be considered explicit knowledge. However, a person's experience would be considered tacit knowledge. If I analyze each of the constructs, I can see the interplay of tacit and explicit knowledge. Accordingly, I can map each construct to one of the following: socialization, externalization, combination or internalization, based on the nature of the underlying knowledge conversion as indicated in Table 10. Further, following Andreeva and Ikhilchik's (2011) approach (as discussed earlier) I categorize each construct as one of three elements of the SECI model: cognitive processes (CG), or management tools (MT), or societal-organizational

(SO) conditions. For example, a person being rewarded for his/her performance improvement can be considered as a management tool (MT), as it is based on the decision of the manager (Andreeva and Ikhilchik, 2011). In the LTSI construct column, 'S' indicates training specific transfer factors, 'G' indicates training in general transfer factors.

Table 10: LTSI mapping to SECI and Elements of Knowledge Creation

Q#	LTSI item	LTSI construct	S/E/C/I	Element	Explanation
Q1	Prior to this training, I knew how the program was supposed to affect my performance.	1.Learner Readiness (S)	I	MT	Information about a training programme and expectation from it is shared formally and explicitly. In the participant's mind, conversion happens from explicit to tacit form, hence ***Internalization***. This is a specific managerial level action; hence the element is **management tools**.
Q8	Before this training, I had a good understanding of how it would fit my job-related development.		I	MT	
Q9	I knew what to expect from this training before it began		I	MT	
Q45	I never doubt my ability to use newly learned skills on the job	2.Performance Self Efficacy (G)	I	CG	This factor is about an individual's internal belief, confidence and self-motivation. These are thoughts that have been internalized in a person based on prior experience or incidents, hence ***Internalization***. Internal conviction is a person's perception; hence the element is **cognitive process**.
Q46	I am sure I can overcome obstacles on the job that hinder my use of new skills or knowledge		I	CG	
Q47	At work, I feel very confident using what I learned in training even in the face of difficult or taxing situations		I	CG	
Q2	This training will increase my personal productivity.	3.Motivation to Transfer (S)	I	CG	Training is imparting of explicit knowledge, motivation to apply that learning at work is use of tacit knowledge. Conversion happens from explicit to tacit form, hence ***Internalization***. Motivation is a person's internal conviction or perception; hence the element is **cognitive process**.
Q3	When I leave this training, I can't wait to get back to work to try what I learned		I	CG	
Q4	I believe this training will help me do my current job better		I	CG	

Q34	My job performance improves when I use new things that I have learned.	4.Transfer Effort-Performance Expectation (G)	E	CG	Tacit knowledge gets applied on work and performance improves; recognized performance improvement is explicit knowledge. Conversion happens from tacit to explicit knowledge, hence ***Externalization***. This is an individual's belief that investing effort to utilize new skills has made a difference in the past or will affect future productivity and effectiveness; hence the element is **cognitive process**.
Q35	The harder I work at learning, the better I do my job		E	CG	
Q38	The more training I apply on my job, the better I do my job.		E	CG	
Q36	For the most part, the people who get rewarded around here are the ones that do something to deserve it	5.Performance-Outcome Expectation (G)	C	SO	Being rewarded is explicit knowledge about good performance getting converted into another explicit form, i.e. reward. Explicit to explicit knowledge conversion, hence ***Combination***. This is the extent to which organizations demonstrate the link between development, performance, and recognition, clearly articulate performance expectations, recognize individuals when they do well, reward individuals for effective and improved performance, and create an environment in which individuals feel good about performing well. Hence the element is **societal-organizational conditions**.
Q37	When I do things to improve my performance, good things happen to me		C	SO	
Q39	My job is ideal for someone who likes to get rewarded when they do something really good.		C	SO	
Q43	People often make suggestions about how I can improve my job performance	6.Performance Coaching (G)	S	SO	Suggestions and advice are usually given by people based their own tacit knowledge of a situation. Such advice gained gets converted to tacit knowledge of the advisee. Tacit to tacit knowledge conversion, hence ***Socialization.*** It is the organizational environment that will determine how much individuals receive constructive input, assistance, and feedback from people in their work environment. Hence the
Q44	I get a lot of advice from others about how to do my job better.		S	SO	
Q48	People often tell me things to help me improve my job performance.		S	SO	

					element is **societal-organizational conditions**.
Q21	My supervisor will meet with me regularly to work on problems I may be having in trying to use this training	7.Supervisor Support (S)	E	MT	When supervisor discusses performance improvement or application of learning to a specific task, it is usually more SMART (specific, attainable, measurable, realistic and time bound), hence explicit. Supervisor's advice (tacit knowledge) gets converted to improvement goal (explicit knowledge). Tacit to explicit knowledge conversion, hence ***Externalization.*** This is managers' involvement in clarifying performance expectations. Hence the element is **management tools.**
Q22	My supervisor will meet with me to discuss ways to apply this training on the job.		E	MT	
Q26	My supervisor will help me set realistic goals for job performance based on my training.		E	MT	
Q23	My supervisor will oppose the use of techniques I learned in this training.	8.Supervisor Sanction (S)	S	MT	Opposition or threats regarding application of new learning's, are usually communicated either verbally or through attitude. It is rarely communicated explicitly (only in extreme situations). People get a sense of the message and form an opinion. This is a situation of tacit threats getting converted to tacit fears. Tacit to tacit knowledge conversion, hence ***Socialization.*** This is manager's involvement in opposing or threatening. Hence the element is **management tools.**
Q24	My supervisor will think I am being less effective when I use the techniques taught in this training.		S	MT	
Q25	My supervisor will probably criticize this training when I get back to the job.		S	MT	
Q18	My colleagues will appreciate my using the new skills I learned in this training.	9.Peer Support (S)	S	SO	With peer support, tacit encouragement and recognition gets converted to implicit motivation. Tacit to tacit knowledge conversion, hence ***Socialization.*** It is the organizational environment that will determine how much support individuals receive from peers in their work environment. Hence the
Q19	My colleagues will encourage me to use the skills I have learned in this training		S	SO	
Q20	At work, my colleagues will expect me to use what I learned in this training.		S	SO	

					element is **societal-organizational conditions**
Q40	Experienced employees in my group ridicule others when they use techniques they learn in training.	10.Resistance to Change (G)	S	SO	In this situation, tacit discouragement, disinterest and apathy get converted to implicit reluctance to try new things. Tacit to tacit knowledge conversion, hence ***Socialization.*** It is the organizational environment that will determine how much resistance individuals receive from peers in their work environment. Hence the element is **societal-organizational conditions.**
Q41	People in my group are not willing to put in the effort to change the way things are done.		S	SO	
Q42	My workgroup is reluctant to try new ways of doing things.		S	SO	
Q5	Successfully using this training will help me get a salary increase.	11.Personal Outcome + ve (S)	C	MT	Getting reward or recognition is explicit knowledge about performance or proper usage of training getting converted into another explicit form, i.e. reward. Explicit to explicit conversion, hence ***Combination***. Being rewarded is a managerial action; hence the element is **managerial tools**.
Q6	If I use this training I am more likely to be rewarded		C	MT	
Q7	I am likely to receive some recognition if I use my newly learned skills on the job		C	MT	
Q12	Employees in this organization will be penalized for not using what they have learned in this training.	12.Personal Outcome - ve (S)	C	MT	Usage of training is usually documented, hence explicit knowledge. Non usage of training is usually absence of such documentation, hence again explicit knowledge. Being reprimanded or penalized (more than a mere warning from the manager) is explicit knowledge. Explicit to explicit conversion, hence ***Combination***. Being reprimanded is a managerial action; hence the element is **managerial tools**.
Q15	If I do not use new techniques taught in this training I will be reprimanded		C	MT	
Q16	If I do not utilize this training I will be cautioned about it.		C	MT	
Q13	I will be able to try out this training on my job.	13.Opportunity to use Learning (S)	I	SO	Reflecting and applying learning/knowledge on the job is converting explicit knowledge to individual or
Q17	The resources needed to use what I learned in		I	SO	

	this training will be available to me.				tacit knowledge. Learning by doing is a form of ***Internalization***. This is the organization providing individuals with opportunities to apply new skills, resources needed to use new skills. Hence the element is **societal-organizational conditions.**
Q33	I will get opportunities to use this training on my job		I	SO	
Q10	I don't have time to try to use this training on my job.	14.Personal Capacity to Transfer (S)	I	SO	These are related to an individual's perception of his/her capacity to transfer knowledge. These are perceptions or beliefs that have been internalized in a person based on prior experience or incidents, hence **Internalization**. This is the extent to which individuals have the time, energy and mental space in their work lives, which is determined by the organizational environment. Hence the element is **societal-organizational conditions.**
Q11	Trying to use this training will take too much energy away from my other work.		I	SO	
Q14	There is too much happening at work right now for me to try to use this training.		I	SO	
Q27	The instructional aids (equipment, illustrations, etc.) used in this training are very similar to real things I use on the job.	15.Perceived Content Validity (S)	I	CG	Training is explicit knowledge, understanding how to apply it in workplace is tacit knowledge. Conversion happens from Explicit to tacit form, hence ***Internalization***. This is an individual's perception about validity of content. Hence the element is **cognitive process**.
Q28	The methods used in this training are very similar to how we do it on the job.		I	CG	
Q29	I like the way this training seems so much like my job.		I	CG	
Q30	It is clear to me that the people conducting this training understand how I will use what I learn.	16.Transfer Design (S)	I	CG	Training is explicit knowledge, understanding how to apply it in workplace is tacit knowledge. Conversion happens from Explicit to tacit form, hence ***Internalization***. This is how an individual gains knowledge from a training programme. Hence the element is **cognitive process**.
Q31	The trainer(s) used lots of examples that showed me how I could use my learning on the job.		I	CG	
Q32	The way the trainer(s) taught the material		I	CG	

	made me feel more confident I could apply it in my job.				

Table 10 shows that both learning transfer (shown by LTSI constructs) and knowledge creation (described by SECI) are social processes which are influenced by human psychology, internal operations, interaction of the people involved with the organization environment, as well as the interactions of the organization with the external environment. These social processes lead to an interplay between explicit and tacit knowledge and become the building block for knowledge creation and learning transfer. It is only when such transfer happens that new learning or knowledge will be created within the organization (Cook and Brown, 1999; Alipour, Idris and Karimi, 2011; Paulin and Suneson, 2012). Figure 14 shows the mapping between the LTSI constructs to the SECI process and the three elements. For instance, the LTSI constructs that underlie Tacit to Explicit knowledge conversion are expected to be, Transfer Effort-Performance Expectation, Supervisor Support, and Opportunity to Use Learning. Based on the explanations in Table 10, I have also categorized these constructs as CG (cognitive processes), MT (management tools) and SO (societal-organizational conditions), respectively.

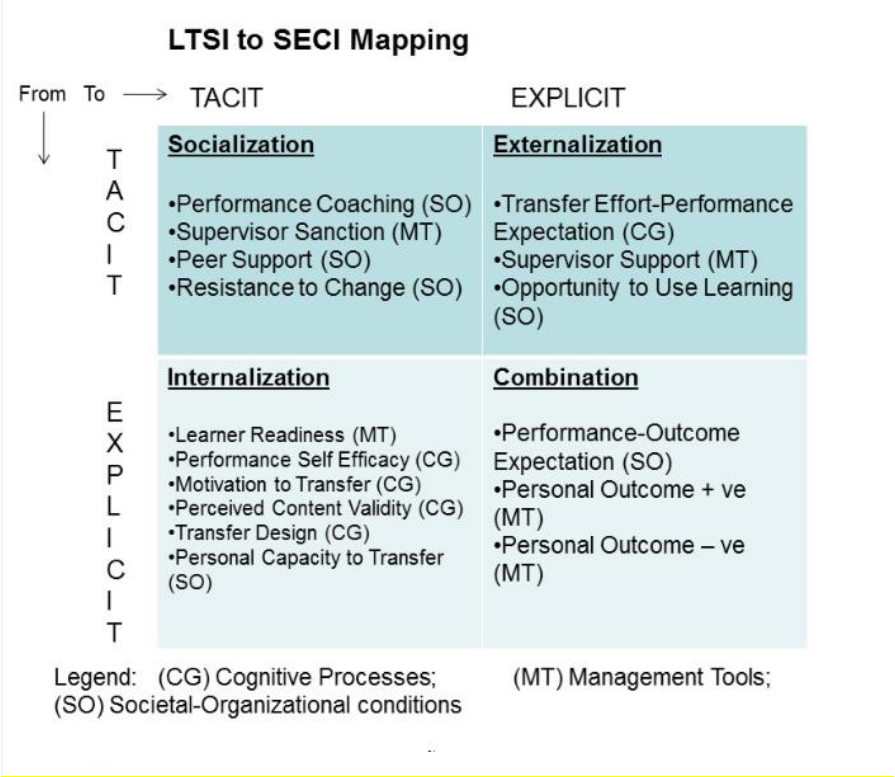


Figure 14: LTSI to SECI Mapping

Discussion of the Theoretical Framework

Nonaka *et al.'*s (2000) knowledge creation model consists of three elements: (i) the SECI process; (ii) 'ba', the shared context for knowledge creation; and (iii) knowledge assets. Knowledge creation process is a spiral that grows out of these three elements and links the epistemological and ontological dimensions. The model has been explained, criticized and extended by many authors (Garcia *et al.*, 2002; Nissen, 2006); Bratianu and Andriessen, 2008; Harsh, 2009; Holste and Fields, 2010).

"Knowledge is the whole body of cognition and skill which individuals use to solve problems. It includes both theoretical and practical everyday rules and instructions for action. Knowledge is based on data and information, but unlike those two, it is always bound to persons. It is constructed by individuals, and represents their beliefs about

causal relationships" (Probst, Raub, & Romhardt, 2000, p. 24). There are many factors in an organization that combine with existing data and information to create knowledge that gets embedded in individuals. The framework shows that the LTSI factors (through their dynamic explicit-tacit knowledge conversions) augment the SECI process of knowledge creation.

I propose that once individual level knowledge creation takes place through the epistemological SECI process, the learning transfer factors (as described in the LTSI model) help magnify or amplify the creation and transfer of knowledge. The various intra-level knowledge creation processes in the ontological dimension, like individual(s)-group, group(s)-organization, inter-organization are affected by the LTSI factors, which can also be mapped to explicit-tacit knowledge interactions, like SECI. Thus, the organizational knowledge creation spiral is not only comprised of the elements of SECI, ba and knowledge assets, but it also draws on the learning transfer factors offered in LTSI. Presence or absence of these factors is likely to impact the transfer, and hence, impact the creation of new knowledge in the organization. As such, I propose that LTSI plays a significant role in the ontological dimension of organizational knowledge creation. Figure 15 illustrates the role of LTSI in the organizational knowledge creation spiral.

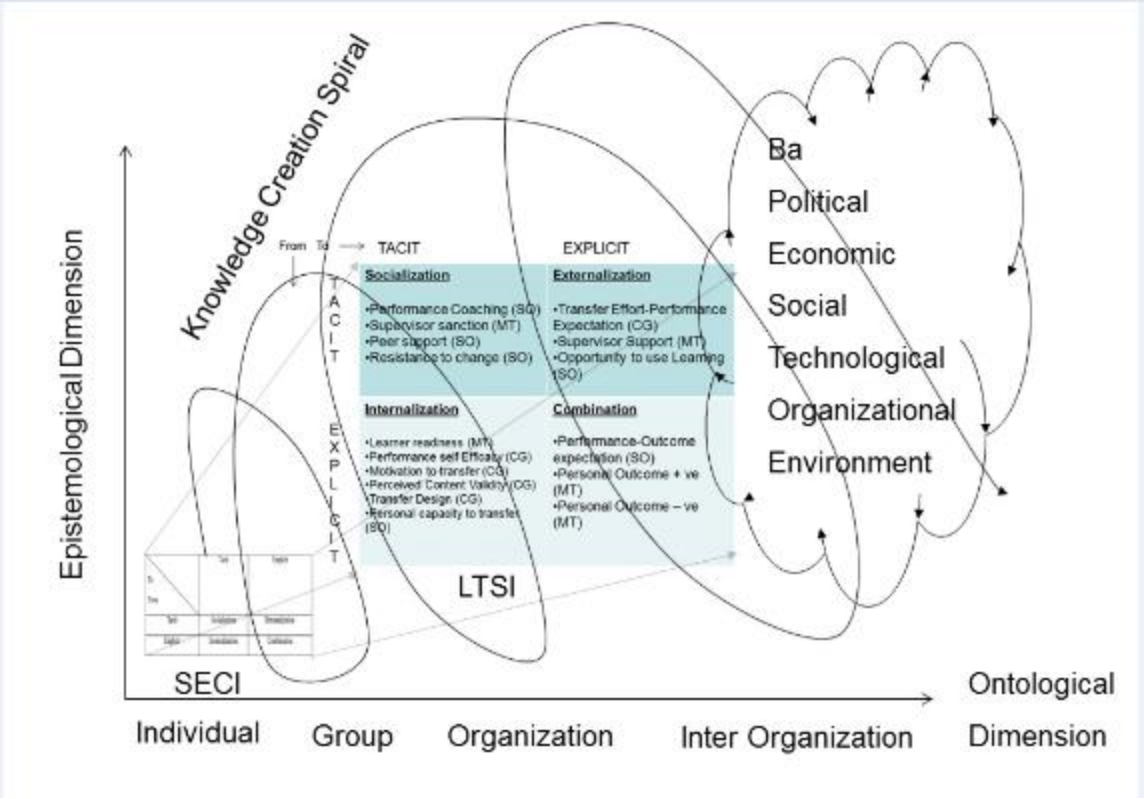


Figure 15: Organizational Knowledge Creation Spiral

Implications for Practice

With the growing importance of knowledge management in organizations today, systems known as Knowledge Management Systems (KMS) are designed to manage organizational knowledge (Jennex and Olfman, 2004). Successful KMS should perform the functions of knowledge creation, storage/retrieval, transfer, and application well (Jennex and Olfman, 2004). I suggest for KMS to be successful, other than tangible factors like users, quality, quantity and format of knowledge, usage of memory, etc. intangible factors also play an important role. For example, if an environment is lacking in factors such as supervisor or peer support, or opportunity to use new learning or the environment is very high on resistance to change, even with the presence of all tangible

factors, transfer of knowledge will not take place. The LTSI factors are the intangible influencers which can enhance knowledge transfer once the systems are in place. The presence of these factors promotes the use of KMS, thereby increasing their performance as well (Davenport *et al.*, 1998). The proposed framework can help gauge the propensity of an organization's environment for transferring and thus creating knowledge. If, after running the survey, one or more factors are found to have low value(s), suitable actions can be taken to improve the same. For example, if peer support in a team is found to be low, suitable action can be taken to remedy the situation, so that the socialization aspect of knowledge creation improves (Figure 14). Thus far, LTSI as an instrument has only been used to measure transfer from training programmes. The framework suggests that the scope of LTSI may be extended to organizational knowledge creation.

Limitations of the Study

The mapping of LTSI constructs to SECI is a subjective assessment, which needs to be validated by future researchers. Even though the SECI model remains at the core of knowledge conversion theory within the area of knowledge management and is likely to appeal to virtually all cultures (Andreeva and Ikhilchik, 2011), I do not know whether other factors like organization culture and type of industry may affect this mapping. Further, the lack of empirical validation of the SECI model in the literature (Gourlay, 2006) was challenge in completing this research, as most of the explanations, criticism and extensions of the SECI model are theoretical in nature.

Scope for Further Research

The LTSI instrument has been validated across 17 countries and translated into 14 different languages (Holton *et al.*, 2003; Bates and Holton, 2004; Khasawneh *et al.*, 2004; Holton *et al.*, 2007). On the other hand, SECI while widely accepted as a theoretical model for knowledge creation, lacks significant empirical validation (Gourlay, 2006) in the literature. By associating both these models I have provided a framework that can facilitate additional research on the SECI model, because the framework links SECI model to LTSI constructs which are actionable items, and they are conducive for measurement. The LTSI model also benefits from this because I have taken the LTSI constructs and broken them into fundamental knowledge conversion processes and elements. However, as indicated earlier, the mapping of LTSI constructs to SECI is a subjective assessment and can be validated by future researchers. The Delphi method can be potentially used for the same.

The theoretical framework offered in this paper offers various interesting research questions. For example, will LTSI constructs that are related to MT (management tools) have a stronger impact on learning transfer, and thus knowledge creation, in comparison to say, SO (societal and organizational conditions) because MT relates to items that can be implemented at the discretion of the manager? Will the presence or absence of MT (management tools) have an impact on improving or deteriorating SO (societal and organizational conditions)? Are constructs that are mapped to SO (societal and organizational conditions) or CG (cognitive processes) be impacted by the type of industry, organizational culture, or national culture? Moreover, Figure 14 offers interesting research questions. In each of the four quadrants (i.e. four types of

knowledge conversion), which LTSI construct is more/less relevant? Do LTSI constructs that are categorized as MT (management tools), SO (societal-organizational conditions) and CG (cognitive processes) have any systematic effects that differ based on the type of knowledge conversion? Another interesting aspect is the role of unlearning and relearning in organizational learning (Azmi, 2008; Tsang, 2017). It would be interesting to see if the LTSI factors play a role in helping organizations to unlearn and relearn as well. Research on these and other questions will provide deeper insights into the world of knowledge transfer, knowledge creation, and organizational learning.

Discussion

This paper focuses on two critical components of organizational learning, knowledge creation and learning transfer. The LTSI constructs classified as MT or SO are tools and conditions that can be used to enhance transfer and thus create new knowledge in organizations. The theoretical framework (combining SECI and LTSI) thus bridges an existing gap in literature (Alavi and Leidner, 2001; Weldy, 2009). It brings together knowledge creation and transfer in context of conditions and environment which can potentially explain the ontological dimension of knowledge creation in organizations. The framework can be used by researchers as well as by practitioners to study and improve organizational learning and knowledge management.

Learning Transfer and Knowledge Amplification

Analyses LTSI's role in knowledge amplification as part of the Organizational Knowledge Creation Spiral

Analysis:

Theoretical study of the relationship between knowledge creation process and learning transfer factors

Conclusion:

Established LTSI's role in knowledge amplification as part of the Organizational Knowledge Creation Spiral

C. Impact of Organization Culture on Learning Transfer

This research is an empirical study of the relationship between organization culture - operationalized as individual perception of the organizational culture, and the work environment related learning transfer factors in organizations, which I call Learning Transfer Environment (LTE). To measure perceptions of organization culture, I use the Organizational Culture Assessment Instrument (OCAI), and categorize organizations as Clan, Adhocracy, Market or Hierarchy. To measure LTE, I use a subset of the Learning Transfer Inventory (LTSI) items, including items such as feedback and coaching received, supervisor and peer support, supervisor reprimand, resistance or openness to change and personal outcomes (positive/negative).

My results reveal that many of the LTE factors are systemically related to perceptions of organization culture type. Some organization culture types support certain learning transfer factors more than others. Specifically, flexible organizations (defined as predominantly Clan and/or Adhocracy cultures) have a more supportive LTE than stable organizations (defined as predominantly Market and/or Hierarchy cultures).

Holton (1996) describes the work environment related transfer factors as being made up of seven constructs, viz. Performance Coaching, Supervisor Support, Supervisor Sanctions, Peer Support, Resistance to Change, Personal Outcomes Positive and Personal Outcomes Negative. These seven factors are what I consider as Learning Transfer Environment (LTE). The term LTE has been introduced for better readability, instead of referring to these factors as Work Environmental related factors of Learning Transfer System Inventory (LTSI).

Holton, Bates, Bookter and Yamkovenko (2007) provide specific details on the LTE factors. For example, Supervisor Support for Transfer, Supervisor Sanctions, and Performance Feedback deal with employee-supervisor relationship. Essentially these factors address managers' involvement in clarifying performance expectations after training, identifying opportunities to use new knowledge and skills, setting realistic goals based on training, and working with individuals on problems encountered. Supervisor Sanctions indicate the degree of opposition to application of new skills and knowledge, lack of assistance to identify opportunities to use new skills and providing negative or inadequate feedback when individuals successfully apply learning on the job. The Peer Support and Openness to Change Factors assess the work-group-related factors that influence training transfer. The Peer Support factor aims to establish whether peers mutually implement opportunities to apply skills and knowledge learned in training, encourage each other to use new skills, and display patience and appreciation for the use of new skills. The Openness to Change factor addresses the extent to which work groups are willing to invest energy to change and provide support to individuals who use new techniques learned in training. The reward system in place in organizations and the rewards an employee expects for successful training completion and implementation of new knowledge and skills on the job are important constructs that influence the amount of transfer on the job. These are measured by two factors: Performance Outcomes Positive and Performance Outcomes Negative. Positive outcomes delineated here include increased productivity at work, increased personal satisfaction, respect, increase in salary or other types of

rewards, and promotion. Negative outcomes include reprimands, penalties, peer resentment, and lack of rewards.

The goal of this study is to examine how LTE of organizations is affected by perceived organization culture. Perception of an organization's culture is determined by aspects like dominant characteristics, organizational leadership, management of employees, organization glue, strategic emphases and criteria of success (Cameron and Quinn, 1999). The hypothesis is that these will have an influence on how some of the LTE factors are perceived by individuals. This in turn will influence three outcome levels: learning, individual performance, and organizational performance (Holton, Bates and Ruona, 2000). Figure 16 is a diagrammatic representation of the hypothesis.

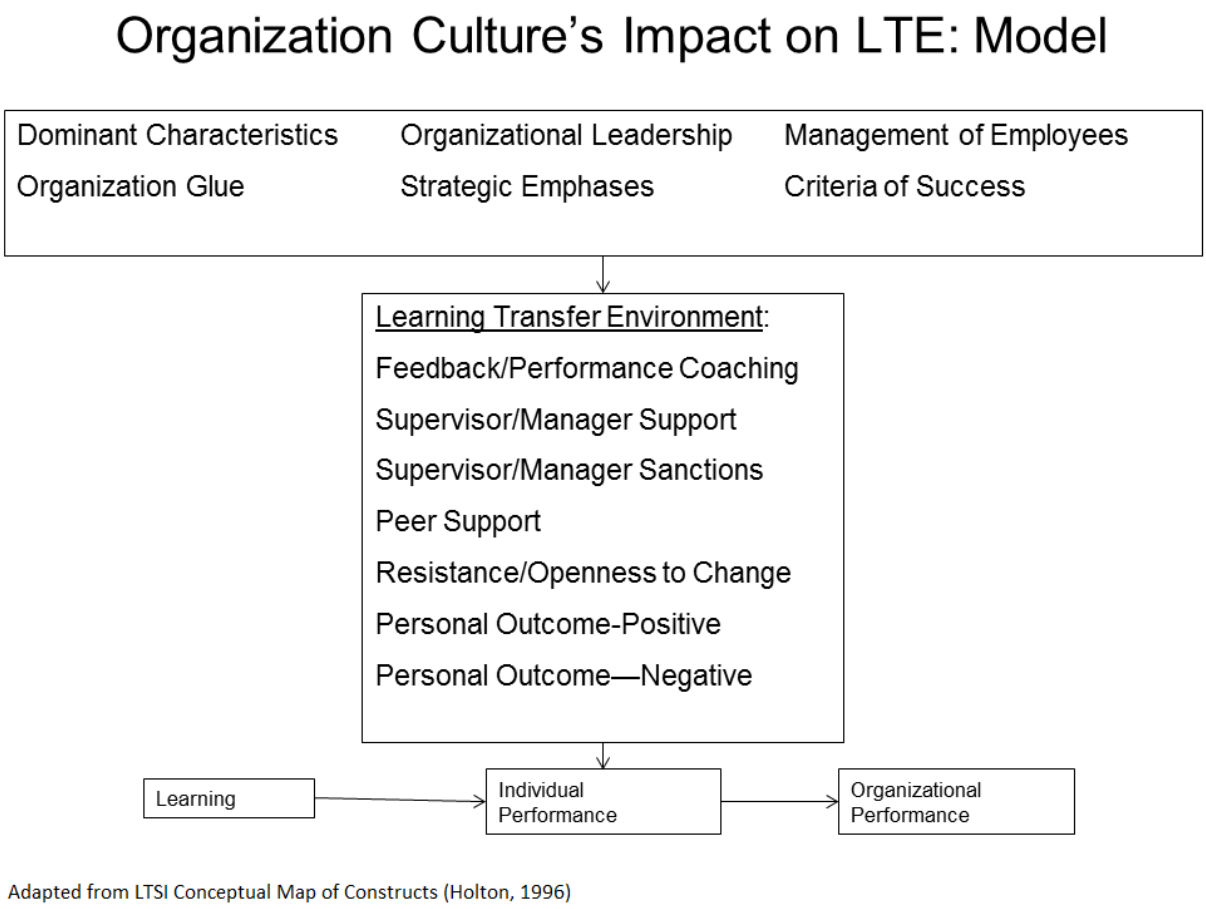


Figure 16: Organization Culture's Impact on LTE: Model

Four of the seven factors that comprise the LTE, viz. Performance Coaching, Supervisor Support, Peer Support and Personal Outcomes-Positive indicate a positive work environment factor where managers support learning, give constructive feedback, peers are amenable to changes brought about by implementing new learnings at the workplace. They are likely to be high in flexible culture types like Adhocracy and Clan which are more encouraging in accepting and implementing new knowledge or learnings in the workplace and have very high people connect. Following are the hypotheses:

H1: Performance Coaching will be higher in flexible cultures than in other cultures

H2: Supervisor Support will be higher in flexible cultures than in other cultures

H3: Peer Support will be higher in flexible cultures than in other cultures

H4: Personal Outcomes Positive will be higher in flexible cultures than in other cultures

Resistance to Change is the extent to which individuals perceive group norms in workplace resisting or discouraging the use of skills and knowledge acquired in training. This factor is likely to be high in Hierarchy culture which is a very controlled and structured place. Formal procedures generally govern what people do. Any change will be time taking and may not seem worth the effort. It is likely to be high in internal focused cultures like Clan and Hierarchy, and less in external focused cultures like Adhocracy and Market which are more entrepreneurial and market focused in nature.

H5: Resistance to Change will be higher in internal focused cultures than in external focused cultures

The remaining two factors are Supervisor/Manager Sanctions deal with the extent to which individuals perceive negative responses from managers when applying skills learned in training, and Personal Outcomes-Negative deals with the extent to which individuals believe that applying skills and knowledge learned in training will lead to outcomes that are negative. Organizational culture will have no impact on these factors since no culture will explicitly discourage application of learning on the job.

H6: Supervisor Sanctions will not be impacted by organizational culture

H7: Personal Outcomes-Negative will not be impacted by organizational culture

Research Methodology

This section discusses the population and sample, the instrument, the data collection process, and the type of analyses used.

Population.

My focus is on short-term executive training, and I use participants of "open" executive education programmes at a premier business school in India. Participants in the programmes come from top, senior and middle management categories belonging to the private, public, government or social sectors.

Sample

To ensure that participants are chosen from a diverse range of industries, seventeen open programmes were selected, and participants from these programmes were administered the survey. The programmes were in the areas of strategy, leadership, general management and functional excellence like finance, marketing, information technology, risk management. All the programmes ran in a fiscal year of the school and were selected based on the nature of topics covered, seniority level of the participants and duration of at least three days. This sample comprised of senior executives, and of the 200 participants approached, I received 159 completed responses for the analysis. The remaining forty-one were either non filled or partially filled, hence could not be used for the purpose of the study. The participants represented various industries (ninety eight percent from private sector, two percent from government sector and none from the non-

profit sector) like agriculture, automobile, banking and finance, chemicals, consumer products, electronics, energy, food and beverage, government, health, information technology, manufacturing, materials and construction, media, mining and metals, real estate, retail, services, telecom, textile, trading, travel and transportation. Ninety percent respondents were male, ten percent female. Fifty nine percent of the participants were graduates, thirty-eight were post graduates and the rest were post-doctoral. In terms of years of experience, 3.5% were in the rage of 0-5 years, 12% in the range of 5-10 years, 17.5% in the range of 10-15 years, 20% in the range of 15-20 years, 26% in the range of 20-25 years and the rest were unspecified.

Instruments Used and Analysis

The specific instruments used were the LTSI and the OCAI. LTSI version 4 was used; in this instrument, thirty-three items relate to the specific training program in question, while fifteen items are classified as general items because they are expected to affect all training programs. The LTSI version 4 employs a scale of 1 to 5, 1 being “strongly disagree” and 5 being “strongly agree” for all the items. The OCAI consists of six questions. Each question has four alternatives. Hundred points are to be divided among these four alternatives, depending on the extent to which each alternative is relevant to the participant’s own organization. A higher number of points are to be given to the alternative that is most relevant to one’s organization.

The LTSI questionnaire was administered to the executive training participants towards the end of each training programme, typically on the penultimate day of the training. The OCAI questionnaire was administered online before participants came to

the programme. Exploratory factor analysis was used in the analysis of learning transfer. For every individual in the sample, I collected LTSI scores as well as OCAI scores. The steps for the analysis:

- A factor analysis on the LTSI data shows that there are ten factors with eigenvalues greater than 1. After doing the oblimin rotation I checked for questions with factor loadings greater than 0.45 since I had a sample size of around 150 (Hair, Anderson, Tathan, and Black (1998)). Six of the seven factors pertaining to LTE clearly load. The one factor that did not load was Personal Outcomes-Positive. Table 11 shows the summary of the results.

Table 11: LTSI Transfer Environment factors loading

Factors	Eigen Value	Questions	LTSI Factors
F2 (S)	4.70	21, 22, 26	Supervisor Support
F3 (S)	2.40	23, 24, 25	Supervisor sanctions
F4 (G)	2.12	43, 44, 48	Performance Coaching
F5 (S)	1.86	12, 15, 16	Personal outcomes (-)ve
F8 (S)	1.31	18, 19, 20	Peer Support
F9 (G)	1.12	40, 41, 42	Resistance to Change

For every factor in LTSI, I added the scores of all the questions that load on that factor and arrived at the sum of scores for that factor. The measure of sampling adequacy (MSA) was used to determine the appropriateness of the use of factor analysis. No inadequate MSA values were found, thus supporting its use. Analysis of variance (ANOVA) and paired T tests was used to explore whether differences in learning transfer exist based on perception of predominant culture types of organizations.

- I calculated the Clan (C), Adhocracy (A), Market (M) and Hierarchy (H) scores for everyone's organizations. I denoted an organization being perceived as C/A/M/H based on the scores. In the process, I had 12 data points where the scores were not sufficiently differentiated to be classified as a specific culture type.
- I also classified the organizations perceived as being internal (I) or external focused (E) as well as flexible (F) or stable (S). For this classification, a difference of at least 10 points was considered. (The way the OCAI is designed, the sum of F and S or I and E scores must be 100. I followed a convention that I would classify an observation as F or S and I or E if the difference between the F and S or I and E score was at least 10. I did not classify the observations where the difference was lesser). There were some firms which could not be classified, given that they did not have a 10-point difference. Table 12 indicates the summary of data as per each classification. There were 52 data points where the difference in the culture scores was not significant enough to classify as I or E and 51 data points where the difference in the culture scores was not significant enough to classify as F or S.

Table 12: Summary of data

Classification	By Culture Type	By Internal/External focus	By Flexibility/Stability focus
Details	Clan(C) – 65 Adhocracy(A) – 10 Market(M) – 43 Hierarchy(H) – 29	Internal focus (I) – 68 External focus (E) – 39	Flexible (F) – 58 Stable (S) – 50
Not clear	12	52	51
Total	159	159	159

- I completed a comparison of means of each perceived culture type using ANOVA. Where the difference was significant, instead of using the inbuilt pairwise methods available in the software (sidak, bonferroni and scheffe in the one-way command), I analyzed using paired T tests. This is because although these options are easy to use, many researchers consider the methods to be too conservative for pairwise comparisons (https://www3.nd.edu/~rwilliam/stats1/Oneway-Stata.pdf, pp.2). I also completed the analysis by distinguishing “internal” or “external” focus as well as “stable” or “flexible” using paired T tests.

Results: Support for the Hypotheses

My broad hypothesis that perceived organization culture impacts learning transfer environment is supported. These transfer factors are seen to be statistically different for different perceived cultures. The summary of results is shown in Table 13. The ANOVA

and paired t test results for each of the six LTE factors that loaded are given in Table 14. The paired t test results for the comparison between external and internal focused cultures as well as stable and flexible cultures is also given. An explanation or interpretation of the results for the hypotheses follows.

Table 13: Results Summary

Factor	**Proposition**	**Validated / Not Validated**	**Culture Type Level**	**Internal vs External focus**	**Stable vs Flexible**
Performance Coaching	Impacted by organization culture.	Validated	Different M is less than C, A, H	Not different	Different (F>S)
Supervisor Support	Impacted by organization culture.	Validated	Different A is greater than C, M, H	Not different	Different (F>S)
Peer Support	Impacted by organization culture.	Validated	Different A is more that C, M, H	Not different	Different (F>S)
Resistance to Change	Impacted by organization culture.	Validated	Different A is less that C, M, H	Different (I>E)	Not different
Supervisor Sanctions	Culture has no impact.	Validated	Not different	Not different	Not different
Personal outcomes negative	Culture has no impact.	Validated	Not different	Not different	Not different

Table 14: Results of Paired t tests

Transfer Factor	Mean, SD, N values at Culture Type level	P value for One Way Anova	Paired t test (p value) where significant	Mean, SD, N values at Internal / External level	Paired t test (p value) where significant	Mean, SD, N values at Flexible / Stable level	Paired t test (p value) where significant
Performance Coaching	A – 10.2, 3.0, 10 C – 9.2, 2.3, 65 H – 9.6, 2.3, 29 M – 8.4, 2.6, 43	0.09	C-M:0.04 A-M:0.03 M-H:0.02	E – 9.4, 2.6, 39 I – 9.2, 2.3, 68	NA	F – 9.6, 2.4, 58 S-8.6, 2.4, 50	0.01
Supervisor Support	A – 11.8, 1.3, 10 C – 9.6, 2.6, 65 H – 9.5, 2.6, 29 M – 10.0, 2.5, 43	0.08	A-C:0.005 A-H:0.005 A-M:0.01	E – 10.0, 2.8, 39 I – 9.7, 2.3, 68	NA	F – 10.1, 2.4, 58 S-9.3, 2.2, 50	0.03
Peer Support	A – 13.4, 1.4, 10 C – 11.4, 1.7, 65 H – 10.9, 1.9, 29 M – 11.1, 2.0, 43	0.00	C-A:0.00 A-M:0.00 A-H:0.00	E – 11.5, 2.0, 39 I – 11.4, 1.7, 68	NA	F – 11.6, 1.7, 58 S-10.9, 1.9, 50	0.02
Resistance to Change	A – 5.0, 2.4, 10 C – 6.9, 2.7, 65 H – 6.9, 3.0, 29 M – 6.3, 2.0, 43	0.15	C-A:0.02 A-M:0.04 A-H:0.04	E – 5.3, 2.1, 39 I – 7.0, 2.6, 68	0.00	F – 6.7, 2.9, 58 S-6.5, 2.2, 50	NA
Supervisor Sanctions	A – 4.8, 1.6, 10 C – 5.0, 2.3, 65 H – 5.4, 3.0, 29 M – 5.3, 2.3, 43	0.8	NA	E – 5.3, 2.3, 39 I – 5.0, 2.3, 68	NA	F – 5.2, 2.4, 58 S-5.2, 2.2, 50	NA
Personal outcomes negative	A – 5.3, 1.7, 10 C – 5.6, 2.4, 65 H – 6.2, 3.0, 29 M – 5.7, 2.4, 43	0.68	NA	E – 5.1, 2.0, 39 I – 5.7, 2.6, 68	NA	F – 5.3, 2.2, 58 S-5.6, 2.5, 50	NA

H1: Performance Coaching will be higher in flexible cultures that in other cultures

My hypothesis was this factor is impacted by perceived organization culture and will be high in Adhocracy and Clan cultures which are more encouraging in accepting and implementing new knowledge or learning in the workplace and have high people connect.

Results (Table 13) indicate this factor is affected by perceived culture type. There is no significant difference between Clan, Adhocracy and Hierarchy cultures, however in Market culture, it is significantly lower. It does not vary with internal or external focus. However flexible organizations (Clan and Adhocracy) have higher values than stable ones (Market and Hierarchy).

The reason this factor is perceived low by employees in Market culture can be potentially explained as follows: Performance Coaching is the extent to which individuals receive constructive input, assistance, and feedback from people in their work environment (peers, employees, colleagues, managers, etc.) when applying new abilities or attempting to improve work performance. Market cultures are extremely competitive and results driven. It is possible instead of giving constructive feedback; employees may remain quiet or even secretly cherish a peer's failure. The other reason could be people do not have the time to discuss and give feedback, since they are always driven by meeting targets and achieving results.

H2: Supervisor Support will be higher in flexible cultures that in other cultures

My hypothesis was that this factor is impacted by perceived organization culture. I expected Supervisor Support will be high in Adhocracy and Clan cultures which are more encouraging in accepting and implementing new knowledge or learning in the workplace and have high people connect. Results (Table 13) show that this factor is

affected by perceived culture types. It is seen to be higher in Adhocracy type than in the other culture types. It does not vary with internal or external focus. However flexible organizations (Clan and Adhocracy) have higher values than stable ones (Market and Hierarchy).

In Adhocracy/entrepreneurial cultures, supervisors give more freedom to learn and apply learnings in the context of work. The management style in the organization is characterized by individual risk-taking, innovation, freedom, and uniqueness. For implementing a new learning, a supervisor's go ahead is enough. Employees and their supervisors often do not have to go through long processes to make any changes. Long drawn processes and bureaucracy can often act as deterrents for learning transfer. Hence employee's perception of supervisor support may be high for Adhocracy culture.

H3: Peer Support will be higher in flexible cultures that in other cultures

I hypothesized that this factor is likely to be high in perceived Adhocracy and Clan cultures which are more encouraging in accepting and implementing new knowledge or learning in workplace and have high people connect, for the same reasons as mentioned for performance coaching and supervisor support.

Results (Table 13) show peer support to be higher in Adhocracy type than in the other culture types. It does not vary with internal or external focus. However flexible organizations (Clan and Adhocracy) have higher values than stable ones (Market and Hierarchy).

A possible explanation could be that in Adhocracy/entrepreneurial cultures, peers are more supportive and willing to give feedback on new initiatives. Since the environment supports risk taking, fear of failure is less. The commitment to innovation in these

organizations ensures everyone's participation in creating anything new. Hence peer support is rated highly in Adhocracy type cultures.

H4: Personal Outcomes Positive will be higher in flexible cultures that in other

This hypothesis could not be tested since the factor did not load.

H5: Resistance to Change will be high in internal focused cultures and less in external focused culture

I hypothesized that this factor is likely to be high in Hierarchy culture which is a very controlled and structured place. Formal procedures generally govern what people do. Any change will be time taking and may not seem worth the effort. It is also likely to be less in Adhocracy culture which is more entrepreneurial in nature.

The factor is affected by perceived organization culture. Results (Table 13) show this factor to be significantly lower in Adhocracy type than in the other culture types. It does not vary with organizations being stable or flexible. However internally focused organizations (Clan and Hierarchy) are likely to have more resistance to change than externally focused organizations (Adhocracy, Market).

H6: Supervisor Sanctions will not be impacted by organizational culture

My hypothesis was that no culture will discourage application of learning on the job; hence this will be a perceived culture agnostic transfer factor. Results show that this is a perceived culture agnostic transfer factor.

H7: Personal Outcomes Negative will not be impacted by organizational culture

My hypothesis is that no culture will discourage application of learning on the job; hence this will be a perceived culture agnostic transfer factor. Results (Table 13) show that this is a perceived culture agnostic transfer factor.

The summary of results is shown in Figure 17. The results indicate that perceived flexible organizations (Clan and Adhocracy) create a supportive learning transfer environment. Factors like Supervisor Support, Peer Support and Performance Coaching are higher in these organizations. Resistance to Change is more in perceived internal facing (Clan and Hierarchy) organizations. These results complement the findings of another study that was done to study organization cultures behavior on tacit knowledge sharing behavior (Suppiah and Sandhu, 2011). Their study finds stable organizations (Market and Hierarchy) to be non-supportive of sharing tacit knowledge and I have found perceived flexible organizations (Clan and Adhocracy), which have characteristics opposite of stable organizations, support a positive transfer environment more than stable organizations (Market and Hierarchy). Figure 17 is a diagrammatic representation of the research findings.

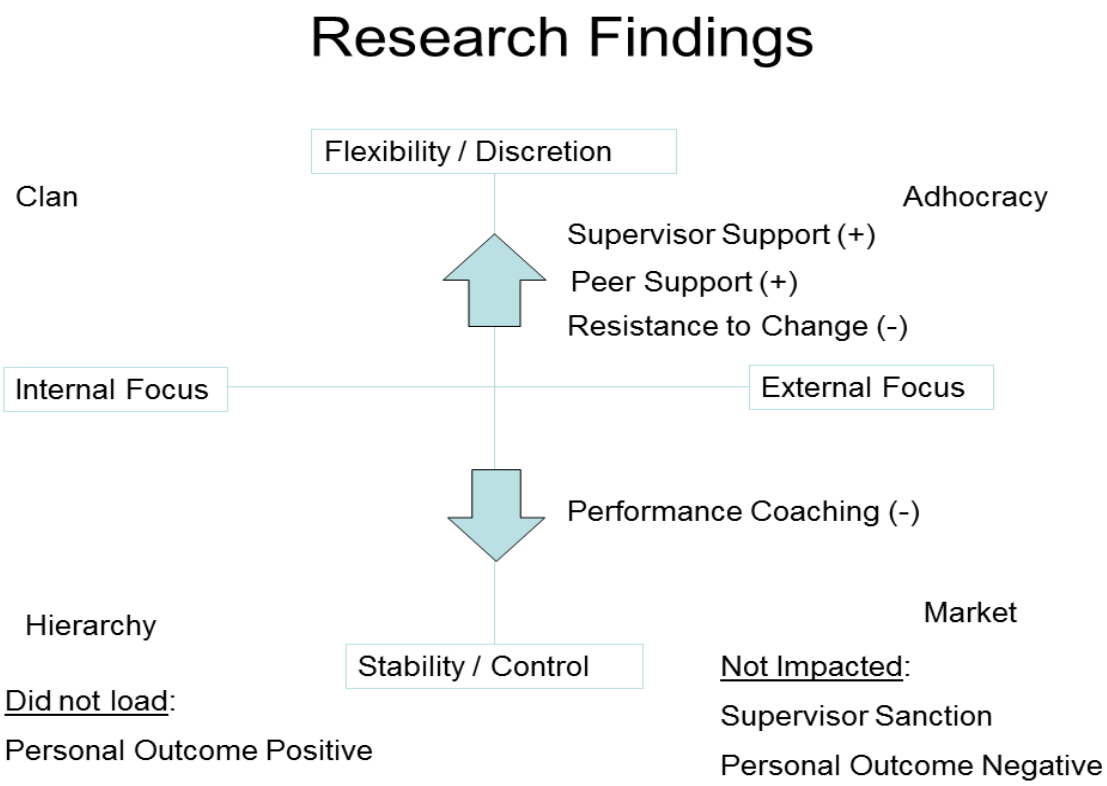


Figure 17: Impact of Perception of Organization Culture on LTE

Theoretical Contributions

There have been a number of studies on work environment factors, including top management, supervisor and peer support (Facteau et al., 1995), task constraints and opportunity to perform (Ford et al., 1992), learning transfer climate (Bates and Khasawneh, 2005) and factors affecting training transfer within the work environment (Williams, 2008; Noorizan *et. al*., 2015). In addition, three studies provide evidence of criterion validity and suggest that several work environment factors measured by the LTSI, especially for interpersonal supports, were powerful

predictors of individual job performance following training (Holton, Bates, Bookter and Yamkovenko, 2007; Holton, Bates and Ruona, 2000) and motivation to transfer (Holton, Bates, Ruona and Leimbach, 1998). Most of these studies show how the work environment factors impact learning, individual performance, organizational performance, innovation, motivation, etc. These studies consider the environment factors as independent variables. Literature survey however does not indicate any studies where effect of organization culture is studied on these environment factors as dependent variables.

There have been extensive studies on impact of organizational culture on areas such as organizational change initiatives, implementation of total quality management, job satisfaction, firm performance, etc. (Yu and Wu, 2009). Two such studies related to the area of research are on tacit knowledge sharing behavior (Suppiah and Sandhu, 2011) and knowledge management initiatives (Kangas, 2009). The first study finds stable organizations (Market and Hierarchy) to be non-supportive of sharing tacit knowledge. The second study reveals the importance of assessing organizational culture type as it relates to continuous knowledge management initiatives. By generating the right organizational culture and continuous knowledge management initiatives, leaders will enhance value and help increase an organization's competitive advantage. Another study by Kim, Hahn and Lee (2015) finds that the degree of employees' psychological attachment towards an organization stimulates their intention to perform as they learn.

Learning and its transfer in organizations depends on the subtle interplay of a lot of factors that go on in the minds of the learners. Organizational culture is known to

impact learning (Shallcross, 1975; Kiely, 1993; Amabile, 1998; Prather, 2000; Sternberg, 2003). It is important to understand this impact and how it can be used to an organization's advantage. Thus, the research offers an addition to the contributions already available within this field, by empirically showing the impact of perceived organization culture on work environment related transfer factors (LTE). It can be the foundation for other research questions as indicated in the next section.

Scope for Further Research

The findings in this paper offer various interesting research questions. e.g. Does perception of organization culture affect other transfer factors like trainee characteristics, motivation and ability as well? Does organization climate impact these factors? In this research, participants were from different organizations; what kind of results would emerge if all participants were from same organization? Some organizations may not have a particular organization culture type: how would such organizations impact the transfer environment and/or other factors? The present research is limited to mostly senior executives. What would be the outcome if different levels of the workforce are considered? Would the results be different for millennials? Does gender have any impact on this research? Research on these and other questions will provide deeper insights into the world of knowledge transfer, organizational culture and organizational learning. I hope other researchers will attempt to extend this study and answer some/all of these research questions.

Limitations

It is important to acknowledge the limitations in the study. First, the data set is not entirely representative of all types of organizations. Participants who attend executive training at the premier business school (where the data was collected) tend to come from large, elite organizations. As such, this study does not represent executives of all types of organizations, like small and medium sized companies. Also, participants of this study are top and senior executives; this study does not include middle or junior personnel. I hope other researchers will attempt to extend this study to executives of such types of organizations as well as include all levels of workforce. One of the factors of LTE, namely Personal Outcomes-Positive did not load with the dataset. Hence it was not possible to validate the hypothesis that Personal Outcomes-Positive is also impacted by organization culture. I hope such impact can be tested in future studies.

Discussion

Tannenbaum and Yukl (1992) suggest that research defining and accurately measuring factors affecting transfer of learning is important in helping human resource development and learning and development departments move beyond the question of whether training works, to why training works. If relationship between LTE and organizational culture can be established, it will be possible to recommend to organizations which transfer factor(s) they should focus on depending on their culture scores. Organizations can reap benefits by enhanced learning transfer, leverage knowledge assets, get better returns on dollars spent on training or executive education and subsequently enhance organizational learning. Studies on transfer climate reveal that

a suitable climate can also significantly increase innovation (Bates and Khasawneh, 2005). Strengthening an organization's LTE through cultural levers can result in significant enhancement of learning, individual performance and organizational performance (Holton, 1996).

It is not only important for organizations to design and manage mechanisms for learning transfer, it is also important to manage the perception of organization culture in the employees' mind as being flexible. This can be done by involving employees in organization wide initiatives, developing a strong sense of cohesion, having a shared vision, being flexible to changes, adaptable, agile and innovative. Employees will then be motivated to transfer learning. The perception of senior managers (participants in this study were from top/senior levels) on organizational culture can play a critical role in learning transfer. Often in organizations, employees emulate their senior leadership. If this level plays an active role in transfer of learning, it is possible that other levels will also follow them. Organizations can reap benefits by enhanced learning transfer and subsequently enhance organizational learning.

My hypothesis in this study is that perceived organization culture impacts the LTE or learning transfer environment. My hypothesis is broadly validated. In general, it is seen that perceived flexible organizations (Clan and Adhocracy) support learning transfer and factors like Supervisor Support, Peer Support, and Performance Coaching are higher in these organizations. Resistance to Change is higher in perceived internal facing (Clan and Hierarchy) organizations.

The LTSI holds significant promise in its ability to diagnose barriers to transfer, provide support for data-driven interventions to address those barriers, and isolate critical

factors for evaluating training effectiveness. The transfer environment is affected by organizational culture (Holton, Chen, & Naquin, 2003). By researching the interplay between two established frameworks, one on learning transfer environment and the other on organizational culture, my empirical research shows that individual's perception of organizational culture impacts the LTE. While this can pave way for further academic research related to organization culture, learning transfer, transfer environment and organizational learning, it can also help practitioners to improve the learning transfer environment based on their prevailing organizational cultures.

Impact of Organization Culture on Learning Transfer

Studies the impact of individual perception of organization culture for relevant learning transfer factors

Population and Sample

- Participants of “open” executive education programmes at a premier business school in India.
- Sample size = 159

Instrument:

- LTSI version 4
- OCAI

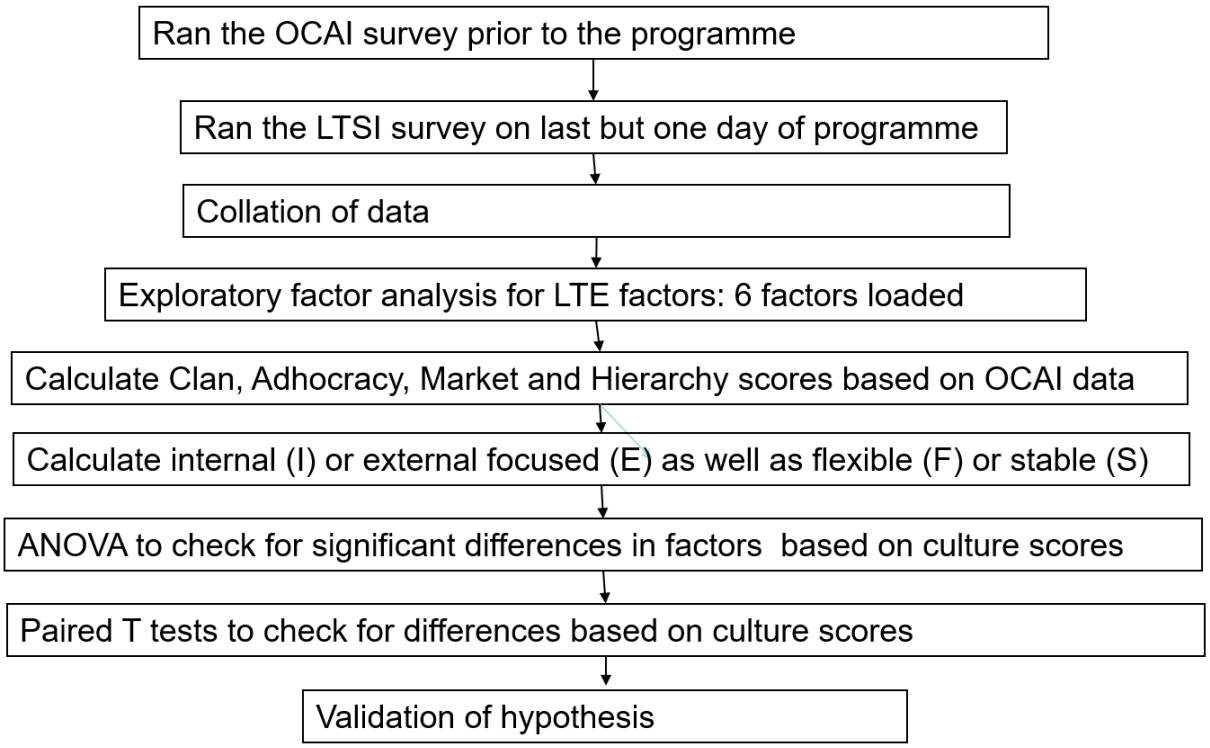
Analysis:

- Exploratory factor analysis
- ANOVA
- Paired T tests

Conclusion:

- Flexible organizations (Clan and Adhocracy) create a supportive learning transfer environment.
- Factors like Supervisor Support, Peer Support and Performance Coaching are higher in these organizations.
- Resistance to Change is more in perceived internal facing (Clan and Hierarchy) organizations.

Details of analysis carried out:



D. Impact of Organization Culture on Organizational Performance

Management practices are often driven by organizational culture, and research has shown that organizational culture impacts the performance of organizations (Awadh and Alhahya, 2013). Further, research indicates that a “balanced culture” within organizations helps manage pressures of internal integration and external flexibility (Denison, 1990; Cameron, 1986). This research addresses the ‘‘balanced culture’’ hypothesis in the context of organizational efficiency. It focuses on Decision Making Units (DMUs) inside organizations and examine if their efficiency as measured by Data Envelopment Analysis (DEA) is related to culture, as measured by the Organizational Culture Assessment Instrument (OCAI). The OCAI survey enables us to score each DMU against the culture orientations (clan, adhocracy, market and hierarch). Results (from a survey run on 156 participants) reveal that differences in efficiencies are systematically related to differences in culture scores. Specifically, it is seen that most efficient units have the most balanced culture as perceived by its members. Such units have the right mix of focus on people (clan), process (hierarchy), innovation (adhocracy) and competition (market). My findings extend past research that has shown a relationship between balanced culture and organizational effectiveness. My results indicate that a balanced culture is systematically related to organizational efficiency.

Organizational growth is dependent on both effectiveness and efficiency (Drucker, 1967). A growing research stream in organizational sciences views organizational culture as a principal aspect of an organization’s functioning and a critical driver of

effectiveness (O'Reilly, 1991). Organizational culture manifests itself in a lot of management practices, shared fundamental beliefs and assumptions, values, attitudes, and behaviors of the organization's members. My study aims to extend and expand research that links organizational culture with efficiency in organizations.

A study by Yilmaz and Ergun (2008) in the manufacturing sector in Turkey examined the effect of four major organizational culture traits - involvement, consistency, adaptability, and mission (as discussed by Denison, 1990) on measures of firm effectiveness. They empirically tested the view that a balanced combination of the four traits enhances a firm's effectiveness. This study extends the same hypothesis of balanced culture to organizational efficiency. It empirically examines the relationship between organizational culture as measured by the Competing Values Framework (CVF) developed by Cameron and Quinn (1999) and efficiency as measured by Data Envelopment Analysis (DEA) developed by Charnes, Cooper and Rhodes (1978). Two groups of decision making units (DMUs) are used in the study, one group from the Information Technology (IT) industry, and another group of DMUs from various industries, but all connected to the Sales Function (SF).

The efficiency of the DMUs is measured on parameters like revenue, profit before tax, number of employees, utilization of employees and investment in learning. Culture of each DMU is measured by the Organizational Culture Assessment Instrument (OCAI), based on the CVF. The DMUs are measured in terms of four cultural orientations (clan, adhocracy, market and hierarchy). I research whether having a balanced organizational culture impacts efficiency of the DMUs and whether most

efficient DMUs show any systemic relation with the culture scores. I study both the IT and SF DMUs separately for similarities and differences in emerging patterns.

Data Envelopment Analysis (DEA)

Data Envelopment Analysis (DEA) is a linear programming methodology formally developed by Charnes, Cooper and Rhodes (1978), It is used to measure the efficiency of multiple decision-making units (DMUs) having similar inputs and outputs and has been used extensively for empirical studies (Zhu, 2016).

DEA has been used for both production maximization and cost minimization data. Utilizing the input and output variables, the DEA software searches for points with the lowest unit input for any given output, connecting those points to form the efficiency frontier. Any DMU not on the frontier is considered inefficient. A numerical coefficient (theta) is given to each firm by the software, defining its relative efficiency. Different variables that could be used to establish the efficiency frontier are: number of employees, service quality, environmental safety, fuel consumption, revenue, profit, expenditure, etc. The main advantage of this method is its ability to accommodate a multiplicity of inputs and outputs. It is also useful because it takes into consideration returns to scale in calculating efficiency, allowing for the concept of increasing or decreasing efficiency based on size and output levels. DEA has been recognized as a valuable analytical research instrument and a practical decision support tool (Liu et al, 2013)

Purpose of Study and Research Questions

This study explores the relationship between organizational efficiency and organization culture. The study has been done for two groups: a set of fourteen units in

the information technology sector (IT) and a set of nine sales units which are industry agnostic (SF). The purpose of the study is to see whether organization culture has any impact on organizational efficiency, whether having a balanced culture has any impact on efficiency and whether the same results hold for the two groups studied.

The OCAI questionnaire has been used to measure the organization culture as perceived by members of the units. DEA has been used to measure the efficiencies of the DMUs (IT and SF). The DEA tool requires some outputs and inputs, which have to be the same across all units of measurement. For my research the outputs are revenue and profit before tax. The inputs I have considered are number of people in the unit, utilization of the people (as a percentage) and the investment in learning and development (as a percentage of revenue). Both OCAI and DEA can be used at multiple levels starting from the smallest unit like a project team to a function, business unit, organization, even industry. Following are the study's research questions:

1. Is the efficiency of an origination affected by organization culture?
2. Does having a balanced culture impact efficiency?
3. Are the results similar or different across the two groups of units (IT and SF) studied?

I hypothesize that organizational culture impacts efficiency. I also hypothesize the having a balanced culture impacts efficiency and that these hypotheses will hold true across both groups of units (IT and SF).

Research Methodology

This section discusses the population and sample, the instrument, the data collection process, and the type of analyses used.

Population.

The research focuses on two groups of DMUs – units in the information technology sector (IT) and in the sales function (SF). The population of interest in this study is senior leaders with profit and loss responsibilities. This means that these leaders take business decisions in running their units and they are responsible for the revenue, profit before tax, number of team members, utilization as well as learning investments in their respective units. The reasons for choosing these two groups were the similarity in outputs and inputs that can be applied to both groups of DMUs, the fact that both invest highly on training or learning and development, availability of data and the readiness to share information on condition of anonymity.

Sample

The senior IT Leaders were based across two cities in India which have a high concentration of the IT companies. There were 14 IT leaders, each heading the 14 DMUs. Each leader also gave details of 5 – 10 team members, all of whom were given the OCAI questionnaire. The sample size for the IT Industry is 93. The revenue in the DMUs ranged from 4 Million USD to 100 Million USD. The team size ranged from 10 to 4500.

The sales leaders were mainly participants of a Sales Management executive education programmes at a premier business school in India. They represent senior management belonging to industries like pharma, real estate, education, finance, services, retail and representing both B2B and B2C organizations across India. There

were 9 sales leaders, each heading the 9 DMUs. Each leader also gave details of 5 – 10 team members, all of whom were given the OCAI questionnaire. The sample size for the Sales function is 63. The revenue in the DMUs ranged from 4 Million USD to 15 Million USD. The team size ranged from 6 to 3000. The total number of people surveyed is 156.

Boussofiane et al. (1991) stipulate that to get good discriminatory power out of DEA models the lower bound on the number of DMUs should be the product of the number of inputs and the number of outputs. This reasoning is derived from the issue that there is flexibility in the selection of weights to assign to input and output values in determining the efficiency of each DMU. For example, if there are 3 inputs and 2 outputs (as in this research), the minimum number of DMUs should be 6 for some discriminatory power to exist in the model. This study has 14 IT DMUs and 9 SF DMUs as part of my study.

Instruments

Organizational Culture Assessment Instrument (Cameron and Quinn, 1999) was administered to measure the individual's perception of his/her organization's culture. The OCAI consists of six questions. Each question has four alternatives. Hundred points are to be divided among these four alternatives, depending on the extent to which each alternative is relevant to the participant's own organization. A higher number of points are to be given to the alternative that is most relevant to one's organization.

Data Collection and Analysis

Each leader was given a questionnaire which requested for information on revenue, profit before tax, number of team members, their percentage utilization and the investment in learning and development at their unit level. Each leader was also requested to give details of five to ten team members who work in their unit. The leader and their team members were administered the OCAI survey.

DEA command available in Stata was used to analyze the DMU level data with revenue and profit before tax as outputs and the rest of the parameters as inputs. The software allocated efficiency scores for each of the DMUs. Two separate analyses were done for the IT DMUs and the SF DMUs. Post the analysis, there were eight DMUs which were allocated an efficiency score of 1 in the first group (IT) and three in the second (SF) by the software. The units were also manually grouped as High, Medium or Low efficiency based on the following assumption:

Theta less than 0.4 – Low

Theta between 0.4 to 0.8 – Medium

Theta more than 0.8 - High

Tables 15 and 16 summarize the output of the DEA analysis.

Table 15: Summary of DEA Analysis for IT DMUs

DMU	DEA Efficiency Score (Theta)	Efficiency Level (Manual Grouping)
DMU1	1	High
DMU2	1	High
DMU3	0.59	Medium
DMU4	1	High
DMU5	0.25	Low
DMU6	0.2	Low
DMU7	1	High
DMU8	0.32	Low
DMU9	1	High

DMU10	1	High
DMU11	0.55	Medium
DMU12	0.4	Medium
DMU13	1	High
DMU14	1	High

Table 16: Summary of DEA Analysis for SF DMUs

DMU	DEA Efficiency Score (Theta)	Efficiency Level (Manual Grouping)
DMU1	0.25	Low
DMU2	0.68	Medium
DMU3	0.2	Low
DMU4	0.42	Medium
DMU5	0.9	High
DMU6	1	High
DMU7	0.5	Medium
DMU8	1	High
DMU9	1	High

The OCAI questionnaire was administered to the leaders and their team members in both groups. The culture scores were calculated for each DMU. The average culture score against each dimension was calculated based on the efficiency scores of the DMUs. Tables 17 and 18 show the summary data.

Table 17: Summary of scores for IT DMUs

Efficiency	Clan	Adhocracy	Market	Hierarchy
0.2	204	89.5	127.5	179
0.25	186	131	152	131
0.32	116.67	154.17	220.83	108.33
0.4	118	125	223.6	133.4
0.55	105.62	140.63	234.37	119.38
0.59	128.89	172.78	176.67	121.66
1	146.24	135.96	162.6	155.2

Table 18: Summary of scores for SF DMUs

Efficiency	Clan	Adhocracy	Market	Hierarchy
0.2	172.86	159	155.72	112.42
0.25	224.37	108.13	92.5	175
0.42	183.57	180.71	147.86	87.86
0.5	155	147.86	165.71	131.43
0.68	145.51	106.16	140	208.33
0.9	141.87	128.13	187.5	142.5
1	156.5	142.25	139.5	161.75

Results

This section details the findings for my research questions.

1. Is the efficiency of an origination affected by organization culture?

Analysis of variance (ANOVA) tests was used to explore whether differences in culture scores exist based on efficiency scores of the DMUs. The results indicate that there is statistically significant difference between the culture scores based on efficiency scores of the DMUs. For both the groups of DMUs and across all types of culture scores (Clan, Adhocracy and Market), there is significant difference when compared across their efficiency scores. The hierarchy culture did not show any significant difference for the IT DMUs. The difference was significant for the sales DMUs though. This validates my hypothesis that organizational culture impacts efficiency. Table 19 shows the summary results.

Table 19: Anova results of culture scores with efficiency values

Culture Type	p value for IT	p value for SF
Clan	0.0019	0.0245

Adhocracy	0.0171	0.0304
Market	0.0301	0.0048
Hierarchy	0.1418	0.0001

2. Does having a balanced culture impact efficiency?

A detailed analysis of the culture scores of the most efficient units (theta = 1) indicates that such units have very balanced scores, i.e. the scores for all the dimensions, viz. Clan, Adhocracy, Market and Hierarch are more or less the same; they hover around the average score of 150. When compared to the other units which have efficiency scores of less than 1, it is seen that the culture scores are not as equally balanced. A perfectly balanced culture score indicates that there is equal focus on people (clan), process (hierarchy), innovation (adhocracy) and competition (market). When diagrammatically represented, the OCAI culture profile of a perfectly balanced unit looks like a rhombus as indicated in Figure 18 below.

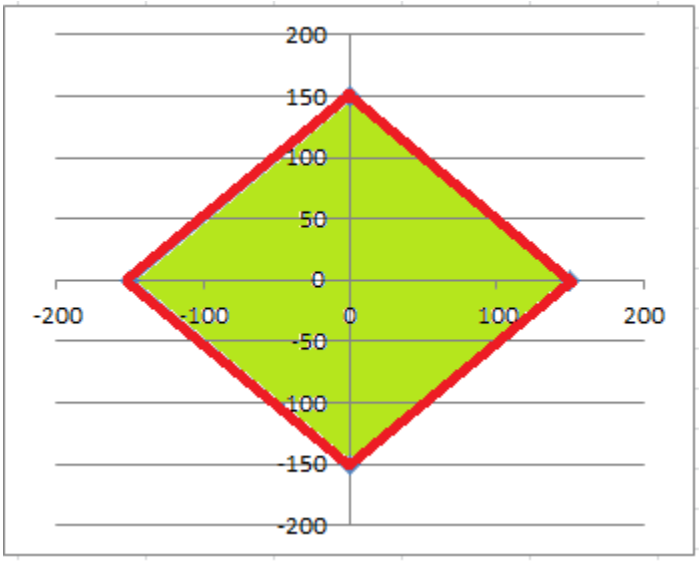
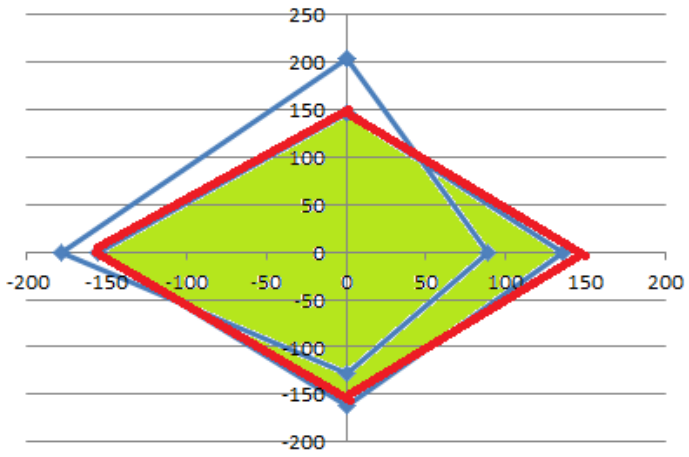
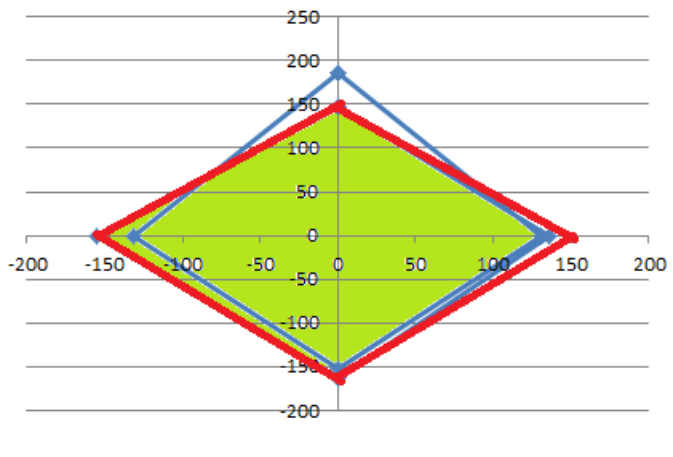
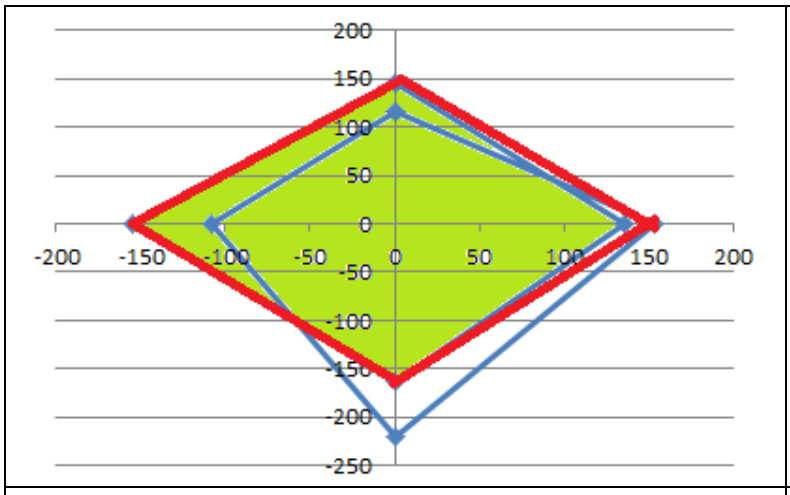


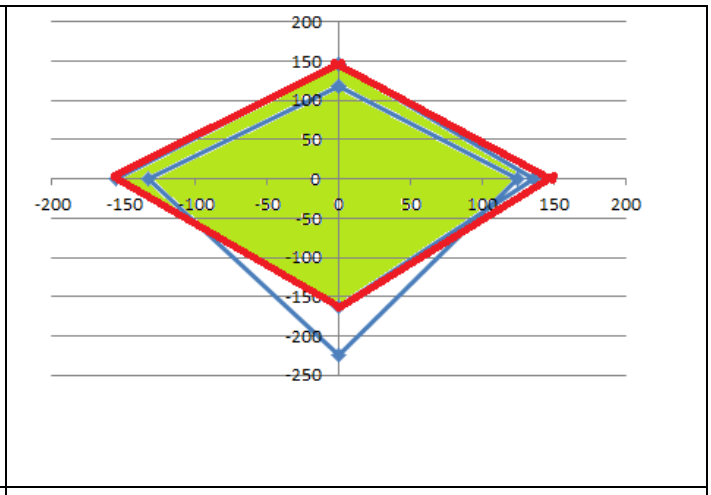
Figure 18: Perfectly balanced organization culture profile

Tables 20 and 21 show the comparison of the OCAI culture profiles of the most efficient units with that of others with less efficiency. The shaded region is the culture profile with maximum efficiency, i.e. 1. The dark line indicates a perfectly balanced culture profile. The light line is the profile of the group of lower efficiency DMUs which is being compared with the most efficient ones. It is seen that the culture profiles of the efficient units match closely with that of the perfectly balanced organization. The culture profiles of the non-efficient units have some dis-balance in either one axis or the other, indicating that the culture is not balanced among the four attributes of people, process, innovation and competition.

Table 20: Comparison of OCAI culture profiles in IT DMUs

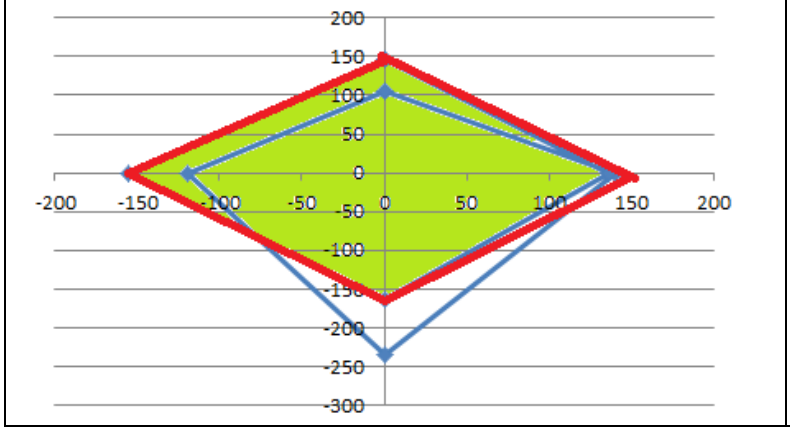
Theta = 0.2	Theta = 0.25
	
Theta = 0.32	Theta = 0.4





Theta = 0.55

Theta = 0.59



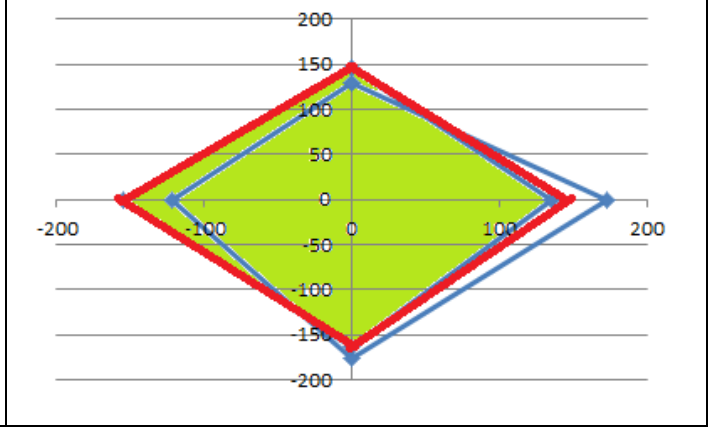
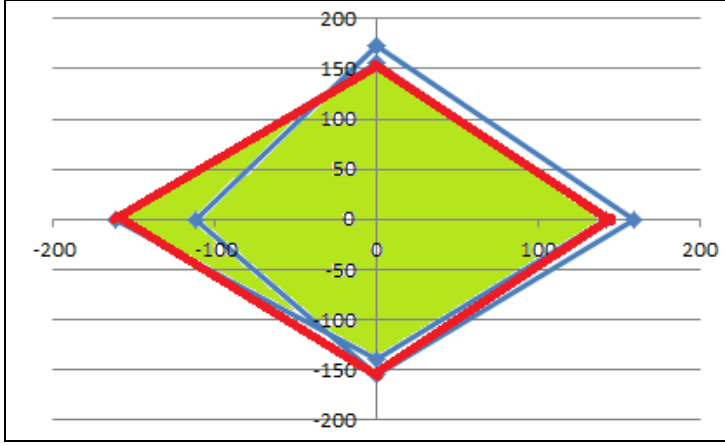
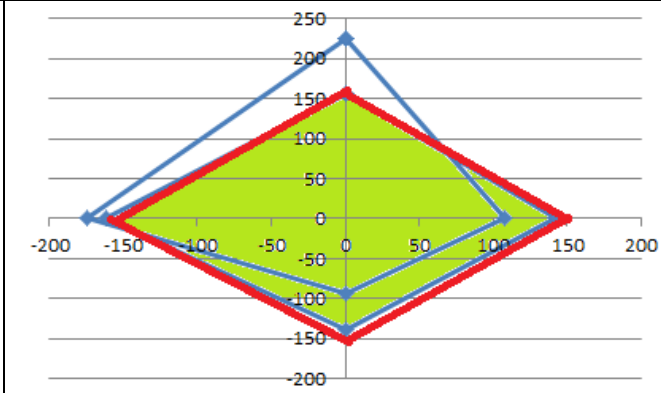
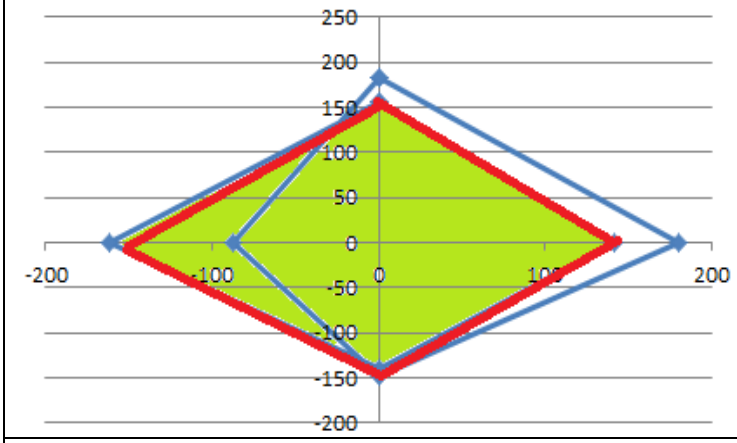
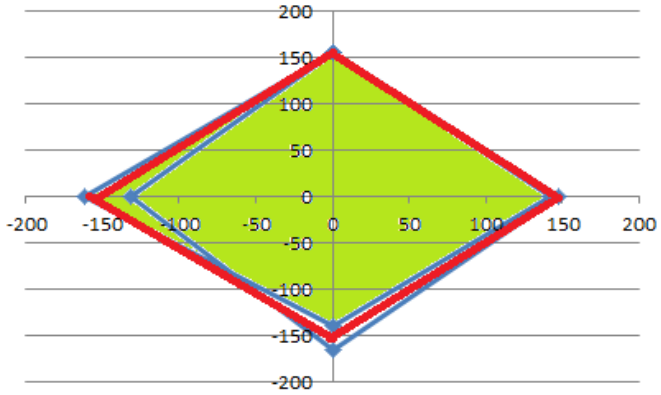
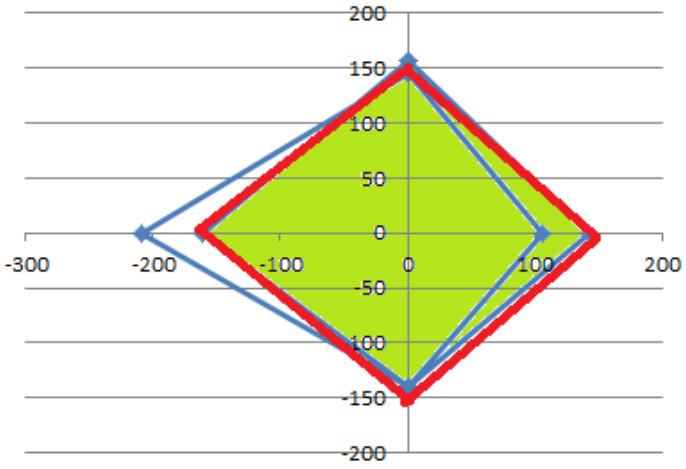
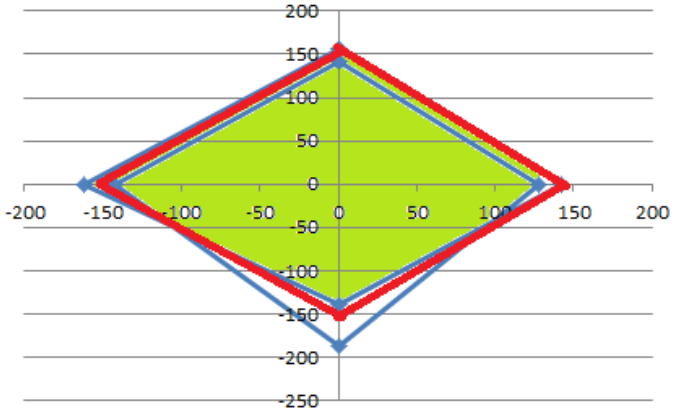


Table 21: Comparison of OCAI culture profiles in SF DMUs

Theta = 0.2	Theta = 0.25
	

Theta = 0.42	Theta = 0.5
	
Theta = 0.68	**Theta = 0.9**
	

The same pattern is seen across the two groups of DMUs, thus indicating that most efficient DMUs have a balanced culture irrespective of the industry or function. Thus my second hypothesis that balance culture affects efficiency is validated. My results indicate that instead of focusing on a single aspect of culture, organizations need to have a balanced approach for being efficient.

3. Are the results similar or different across the two groups of units studied?

The results indicate that most efficient units across both IT and SF DMUs have a balanced culture. On comparison of the culture scores of the highly efficient DMUs (classified as

High) with the others (classified as Medium and Low) and also across the two groups of IT and SF. Tables 22 and 23 show the summary data for IT and sales units respectively.

Table 22: Culture scores at Efficiency group level for IT

Efficiency Level	Clan	Adhocracy	Market	Hierarchy
High	146.24	135.96	162.6	155.2
Medium	117.95	150.23	208.32	123.5
Low	174.76	117.86	160	147.38

Table 23: Culture scores at Efficiency group level for SF

Efficiency Level	Clan	Adhocracy	Market	Hierarchy
High	152.32	138.21	153.21	156.25
Medium	162.15	146.85	151.75	139.25
Low	200.33	131.87	122	145.8

For the clan culture scores, in the IT industry, the group of highly efficient organizations has a value that is neither too high nor too low. In sales organizations, on the other hand, the highly efficient organizations have the lowest clan score. This can be explained by the difference in nature of jobs. Teamwork is of utmost importance in the IT industry. Even then, too much people orientation can be detrimental. A right balance of people orientation is the characteristic of the most efficient units. By nature, sales people on the other hand, are much more self-driven and individualistic by nature. Hence the

most efficient units have the lowest clan scores and the least efficient units have the maximum clan scores.

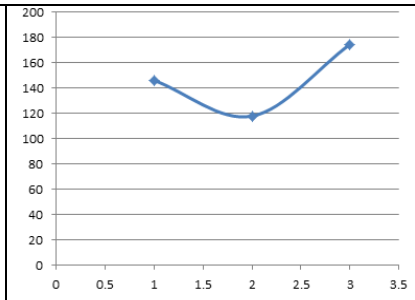
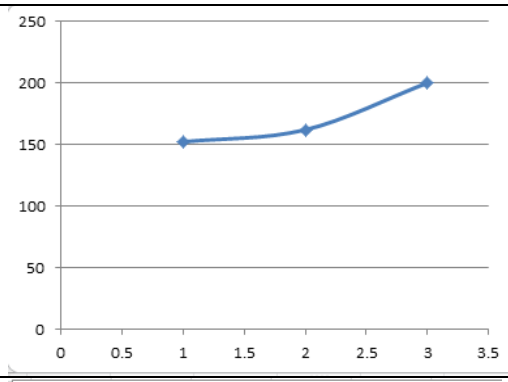
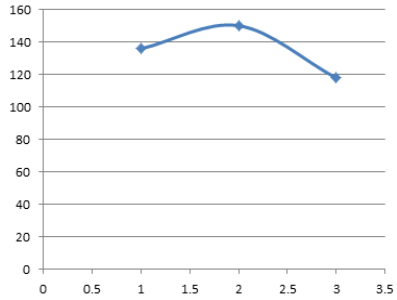
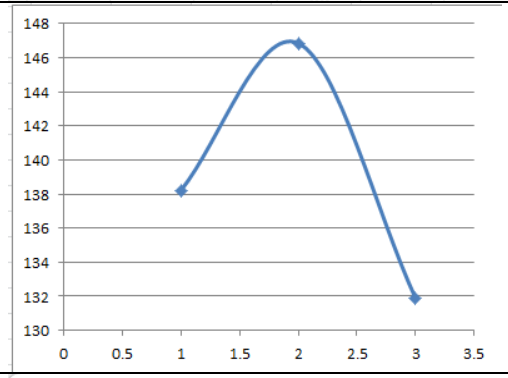
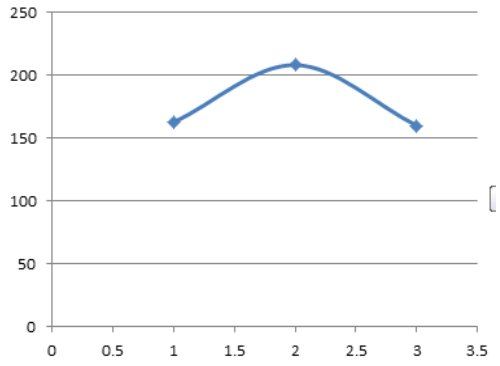
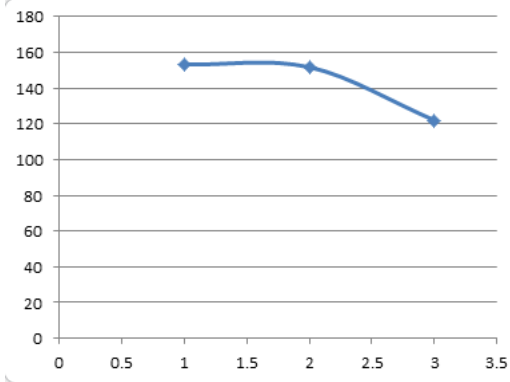
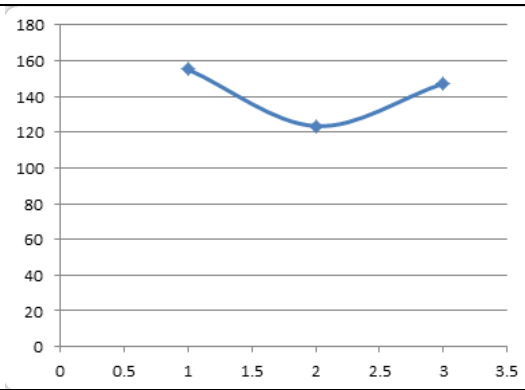
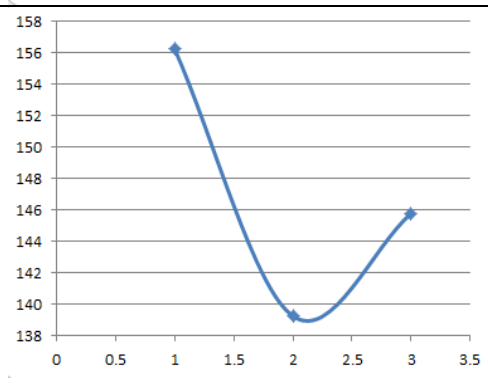
The difference in pattern seen in the market scores can also be explained. Market culture is diametrically opposite to clan culture. If a culture has too much people focus, the level of competition cannot be high and vice versa. For the IT industry, which thrives on teamwork, too much of competition is not good for efficiency. At the same time, too little competition is also not congenial. It has to have a healthy culture of competition and result focus. For sales units, which are more individualistic, the level of competition is high. Hence the most efficient sales units are the ones which have high market scores; the least efficient units have the least market scores.

Adhocracy scores indicate a middle value for the most efficient units in both IT and SF DMUs. This indicates a right innovative culture is required in efficient units. Both these groups need a right level of process orientation as well. The Hierarchy scores which indicate the level of structure and process orientation are highest for the most efficient units in both IT and SF DMUs.

The results indicate that while a right balance of culture is required for most efficient units, some variation may be there based on the nature of the work involved. Table 24 has a graphical representation of the same. In the X axis, 1 indicates High, 2 indicates Medium, 3 indicates Low group of efficiency units.

Table 24: Culture scores at efficiency group level

Culture Scores at Efficiency Level	IT	SF

Clan		
Adhocracy		
Market		
Hierarchy		

Theoretical Contributions

My broad hypothesis that organization culture and specifically balanced culture impacts organizational efficiency is validated. The research shows similar results for two groups of DMUs which were studied. Yilmaz and Ergun's (2008) study had an interesting finding on the balance of culture hypothesis. They saw that while imbalances between adaptability and mission and between involvement and consistency exert the expected negative effects on relevant measures of firm effectiveness, imbalances between mission and involvement and between adaptability and consistency may in fact improve certain effectiveness measures. They also saw that between the trait pairs of adaptability and consistency, the directionality of the imbalance also matters in that more of adaptability in comparison to consistency yields better performance outcomes. The difference that I see between my results in the IT and SF DMUs corroborates this fact. This research shows that the most efficient SF units have more market scores and less clan scores. The least efficient sales units have maximum clan scores and minimum market scores. This indicates that most efficient units, depending on the industry or nature of work, may have some degree of imbalance which aids in increasing efficiency. It also shows that based on the nature of the industry and the kind of work performed, some degree of imbalance may be required for a better performance. However, this imbalance should never be that great that it leads the organization to the point of dysfunction (Denison, 1990; Cameron, 1986).

The importance of organizational culture to performance is unquestioned. My paper empirically proves that and the balanced culture hypothesis, indicating the importance of focusing on all aspects of organizations culture and not just one.

Scope for Further Research

Awadh and Alhahya (2013) say several researches have evaluated performance of organization based on culture parameters and have seen significant association between the two. Increasingly some studies, including the present one, seem to be pointing to the fact that a balanced culture is needed for good performance. I feel that the balanced culture hypothesis needs further empirical validation. Studies can be performed at business unit and organization level and not just DMUs within business units. Both Yilmaz and Ergun's (2008) and my study have been done in emerging economy countries. The sectors covered are manufacturing, IT and the sales function (industry agnostic). It would be interesting to see whether the same hypothesis holds true for other industries and other economies as well. Researchers can also work with different sets of input and output parameters used in the data envelopment analysis to see if the same hypothesis is still valid.

Limitations of the study

It is important to acknowledge the limitations of the study. First, the data set is not entirely representative of all organizations and industries. I have studied the IT industry and the sales function only as part of this study. The study has been done on organizations in India and is restricted to few organizations representing the IT and SF DMUs. I hope other researchers will attempt to extend this study to other industries and organizations both within and outside the country as well as work with different sets of inputs and outputs for DEA, based on availability of data.

Discussion

I propose that the study has important implications in aligning business activities to the vision and strategy of the organization by linking it with the balanced score card (BSC) concept. The earlier version of BSC (Kaplan and Norton, 1992) proposed four perspectives (financial, customer, business process and learning & growth), and to develop metrics, collect data and analyze it relative to each of these perspectives. Kaplan and Norton (1996) further link BSC to the strategy of an organization, showing a logical, step-by-step connection between strategic objectives in the form of a cause-and-effect chain. They say improving employee learning and growth enables the organization to improve its internal processes, which in turn enables the organization to create desirable results in the customer and financial perspectives. I propose having a balanced organization culture has a huge impact on the first two perspectives (business process perspective, learning and growth perspective). A balanced culture with a right focus on people (clan), process (hierarchy), innovation (adhocracy) and competition (market) will significantly improve organizational capability as well as internal processes, which can help increase bottom line. This will in turn improve customer and financial perspectives as well, i.e. increase the top line. Having a right balance of culture will help organizations improve efficiency and thus become profitable. Figure 19 shows the relation between BSC and balanced organizational culture.

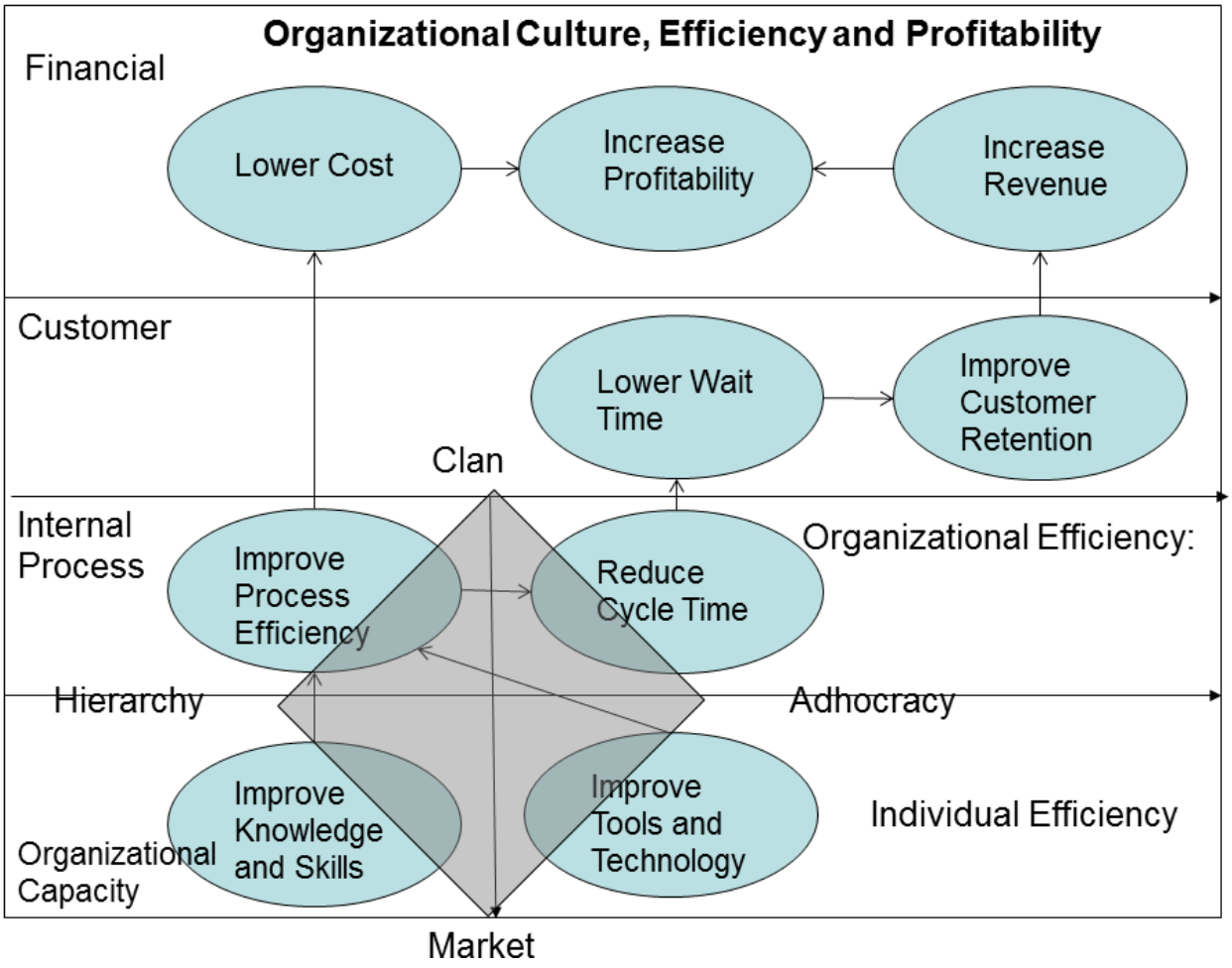


Figure 19: Relation between Balanced Scorecard and Organizational Culture

(Adapted from The Institute Way: Simplify Strategic Planning and Management with the Balanced Scorecard)

I feel having a balanced culture can also possibly help find solutions to some pressing issues in organizations like too much power distance causing power imbalance, too much competition causing a skewed work life balance, too much delay in beaurocratic processes causing lack of agility, etc. As more research is done in this field, more and more practical implications of the balanced culture will come up.

Organizational culture is often the secret sauce of how human capital aggregates up to create organizational performance differences. The dominant values are held so

deeply and intensely in the minds of employees that individuals adhere to them with great commitment. Since committed people are key to an organization's success, organizational culture acts as a great catalyst for performance.

This study is an empirical validation of the organizational culture and efficiency association. It further goes on to validate the balanced culture hypothesis by showing that the most efficient units are the ones which have the most balanced culture, giving the right focus on people, process, innovation and competition. Organizational growth depends on both efficiency and effectiveness; I hope further research will be done on the balanced culture hypothesis and how it impacts a firm's growth.

Impact of Organization Culture on Organizational Performance

Studies whether efficiency of an organization is impacted by organization culture
Studies the impact of balanced organization culture on efficiency

Population and Sample

- Two groups of DMUs: IT and SF
- 156 participants in IT organizations as well as sales function
- 14 IT and 9 SF leaders
- 93 team members for IT DMU and 63 team members for SF DMU

Instrument:

- OCAI
- Questionnaire to measure outputs (Revenue and Profit Before Tax) and inputs (Number of team members, their percentage utilization and the investment in learning and development at their unit level as inputs)

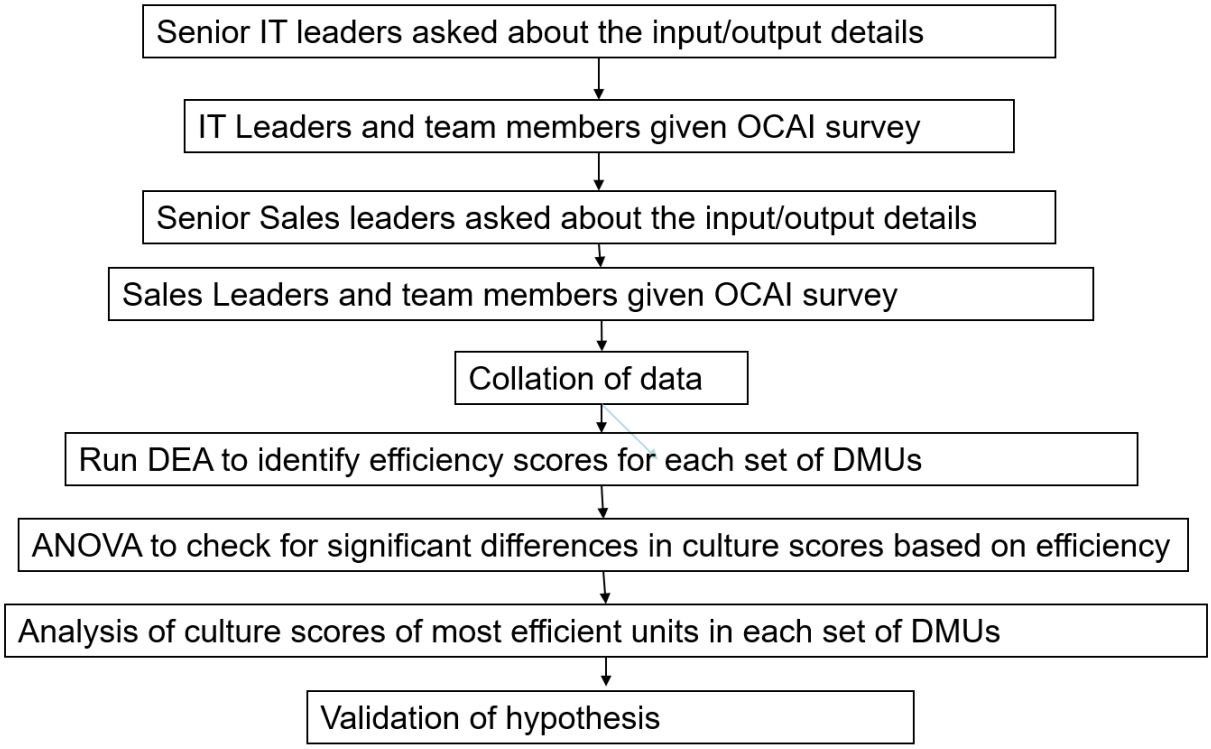
Analysis:

- Data Envelopment Analysis (DEA)
- ANOVA

Conclusion:

- Organization culture impacts efficiency of DMUs
- Most efficient DMUs have most balance culture

Details of analysis carried out:



E. Organizational Learning and Development (OL&D) Framework

After studying learning transfer, how it helps in knowledge amplification, organization culture, how perception of organization culture can impact learning transfer as well as organizational efficiency, the last study is about organizational learning and development (OL&D). It is an empirical study of the factors that affect (OL&D), a study of some of the best practices in the Indian context. Finally a holistic framework for an eclectic design of OL&D is proposed.

Design/methodology/approach

An instrument called the Organizational Learning SWOT Questionnaire is created for capturing the factors. With reference to existing literature on OL&D, the instrument is based on aspects like OL&D's contribution to current and future capabilities building, performance on the job, resources involved, processes followed, relevance, appropriateness and quality of learning, people, structure and culture. The outcome measured (dependent variable) is the overall performance of OL&D as perceived by employees of organizations who are also users of the services of OL&D. The instrument is run on over hundred employees of various organizations in India. The model is tested using regression analysis as well as identification of principal components and underlying factors that result in the success of OL&D. Some best practices of OL&D in Indian organizations are analyzed including its strengths, weaknesses, opportunities and threats, the factors that affect OL&D. A framework is

proposed which helps in designing a strategic, tactical and operational platform (roadmap) for effective and efficient OL&D (objective).

Research Questions

Following are the research questions of this study:

- What are the key underlying factors of successful OL&D?
- Are there any best practices followed in successful organizations?
- Can a holistic framework be created that can help design OL&D at strategic, tactical and operational levels?

Research Methodology

This section discusses the instrument, population, sample, the data collection process and the type of analyses used.

Instrument

The following were examined for designing the SWOT questionnaire: Learning Organizations Questionnaire (DLOQ) developed by Marsick and Watkins (2003), the APSC model for evaluating learning and development (2005), the Readiness for Organizational Learning and Evaluation Instrument (Preskill, Rorres and Martinez-Papponi, 1995) and existing literature on various evaluation models (Mavin, Lee and Robson, 2010).

The Organizational Learning SWOT Questionnaire is designed for a deeper study of OL&D based on aspects like OL&D's contribution to current and future capabilities building, performance on the job, resources involved, processes followed, relevance, appropriateness and quality of learning, people, structure and culture. There are twenty-two questions focusing on performance, impact, people, inclusivity, culture, structure and

processes. The first question (How would you rate organizational learning in your organization) is the dependent variable and the remaining twenty-one questions measure the various independent variables that can impact organizational learning and development. The questions cover the strategic, tactical and operational aspects focusing on present performance as well as future direction. It employs a five-point scale: **Poor**, **Average**, **Good**, **Very Good** and **Excellent** for all the items. A SWOT analysis of OL&D practices in Indian organizations is done and ask questions pertaining to that are also asked. There are questions related to demographic details like job level, number of years of experience, function and industry. The questionnaire is available in Appendix A.

Population

The population of interest in this study is junior, middle, senior and top management from various organizations and industries, mostly in the private sector.

Sample

To ensure that participants were chosen from a diverse range of industries, employees of sixteen different organizations were selected. A sample of one hundred and nine (109) was available for the analysis. Employees of government organizations were not very keen to fill the questionnaire; employees of private organizations were open to sharing the information. The participants represented various Indian industries like Banking, Chemicals, Design & Engineering, Electronics, Energy, Finance, IT, ITES & BPO, Management Consulting, Manufacturing, Materials & Construction, Media, Mining & Metals, Pharmaceuticals, Retail and Telecom. They came from various functions like administration, advertising, business development, consulting, design,

editorial, engineering, finance, journalism, manufacturing, marketing, purchasing, sales, etc. The average years of experience was 16 years. Break up job levels was:

Junior Management – 17%

Middle management – 42%

Senior Management – 34%

Top Management – 5%

Undefined – 2%

Data Collection and Analysis

The Organizational Learning SWOT Questionnaire was administered to the target group in person or over email using the Qualtrix software. Since it was given only to interested participants, I had a very good response rate of over 90%. The questionnaire used interval scale (metric data). Multiple regression was used to determine the overall fit of the model and the relative contribution of each of the independent variables to the total variance explained. Since I had twenty one (21) independent variables, Principal Component Analysis (PCA) was done to reduce the large number of variables to a few components. Finally, Exploratory Factor Analysis (EFA) was used to determine the underlying factors impacting OL&D. The measure of sampling adequacy (MSA) was used to determine the appropriateness of the use of factor analysis. No inadequate MSA values were found, thus supporting its use. The following section explains the results obtained for the various analyses.

Results

Table 25 summarizes the results obtained from multiple regression. The **R-squared** value represents the proportion of variance in the dependent variable that can be explained by the independent variables. The value of 0.505 in my results indicates that the independent variables explained 50.5% of the variability of my dependent variable. The **adjusted R-squared** value is 0.3524. The *F*-ratio tests whether the overall regression model is a good fit for the data. The output shows that the independent variables statistically significantly predicted the dependent variable, with p = .0001. The regression model is a good fit of the data.

Table 25: Summary of results from Multiple Regression

```
. regress q1 q2 q3 q4 q5 q6 q7 q8 q9 q10 q11 q12 q13 q14 q15 q16 q17 q18 q19 q20 q21 q22

      Source |       SS       df       MS              Number of obs =      90
-------------+------------------------------           F( 21,     68) =    3.31
       Model |  33.9284037    21  1.61563827            Prob > F      =  0.0001
    Residual |  33.2271518    68  .488634586           R-squared     =  0.5052
-------------+------------------------------           Adj R-squared =  0.3524
       Total |  67.1555556    89  .754556804           Root MSE      =  .69902
```

PCA resulted in 4 components with eigenvalue of more than 1. Table 26 denotes the results after doing an oblimin rotation and retaining loadings more than 0.3. Table 27 shows a mapping of the variables to the components. Based on the grouping of the variables, four components can be seen.

Table 26: Results from Principal Component Analysis (PCA)

Rotated components (blanks are abs(loading)<.3)

Variable	Comp1	Comp2	Comp3	Comp4	Unexplained
q1					.4847
q2			0.7089		.1764
q3			0.5779		.2499
q4	0.3871				.2706
q5	0.3367				.2215
q6	0.3511				.2939
q7					.5174
q8	0.3800				.2297
q9					.3322
q10	0.3399				.2621
q11					.5366
q12		0.5113			.1443
q13					.3915
q14					.6113
q15					.3187
q16					.4176
q17				0.3144	.4197
q18					.2726
q19				0.3001	.3959
q20		0.3993			.3131
q21		0.3761			.3334
q22				0.6467	.3123

Table 27: Mapping of the variables to the Components from PCA

Component	Variables pertaining to the components
Component 1	• *Existence of a formal L&D function* • *Overall performance of L&D function (quality, reputation, reach)* • *Extent to which formal processes exist to measure the effectiveness of the learning system* • *Systems and processes followed by L&D for learning* • *How well does the L&D function partner with the rest of the organization to provide learning*
Component 2	• *How well does the learning keep you ahead of market and competition?* • *The extent to which learning affects career progression of an individual inside the organization* • *The extent to which learning affects employability of an individual outside the organization*

Component 3	• *Ability of employees to meet changes in work place* • *Ability of employees to upgrade their knowledge*
Component 4	• *The extent to which supervisors and managers support learning and development of all individuals* • *The extent to which seniors actively participate in teaching and learning in the organization* • *The extent to which your organization is threatened due to lack of proper L&D planning*

EFA resulted in 3 factors with eigenvalue of more than 1. Table 28 denotes the results after doing an oblimin rotation and retaining loadings more than 0.5. I retained Factor 4 to show similarity with the PCA results. Table 29 shows a mapping of the variables to the components. From the results of both PCA and EFA, I see the strong emergence of three factors, viz. **process, impact** and **people** as determinants of good OL&D.

Table 28: Results from Exploratory Factor Analysis (EFA)

Variable	Factor1	Factor2	Factor3	Factor4
var1				
var2				0.7048
var3				0.7552
var4	0.7678			
var5	0.8072			
var6				
var7				
var8	0.8095			
var9	0.7018			
var10	0.7711			
var11				
var12		0.7489		
var13				
var14				
var15		0.5890		
var16				
var17			0.6228	
var18				
var19			0.6859	
var20		0.7609		
var21		0.7190		
var22				

Table 29: Mapping of the variables to the Factors from EFA

Factors	Variables pertaining to the factors

Factor 1	• *Existence of a formal L&D function* • *Overall performance of L&D function (quality, reputation, reach)* • *Systems and processes followed by L&D for learning* • *Capabilities of people in the L&D function* • *How well does the L&D function partner with the rest of the organization to provide learning*
Factor 2	• *How well does the learning keep you ahead of market and competition?* • *Extent to which impact/ROI of learning is measured in the organization* • *The extent to which learning affects career progression of an individual inside the organization* • *The extent to which learning affects employability of an individual outside the organization*
Factor 3	• *The extent to which supervisors and managers support learning and development of all individuals* • *The extent to which seniors actively participate in teaching and learning in the organization*
Factor 4	• *Ability of employees to meet changes in work place* • *Ability of employees to upgrade their knowledge*

A subsequent validation survey was run with two hundred managers, executives and L&D professionals with a response rate of 25%. More than 98% of the fifty five respondents agree that Process, Impact and People (and the sub-factors identified under each of them) are the most important factors impacting OL&D. In terms of ranking the factors, people (48.2% respondents rank it as number 1) comes across as the most important, followed by process (ranked number 1 by 42.8% respondents) and impact (ranked number 1 by 37.5% respondents). There is also mention of supportive organization culture as being important for the success of OL&D.

The SWOT analysis revealed some interesting observations. The following items came up as important (either existed - as a strength, did not exist – as a weakness, suggestions – as opportunity or a best practice that others were doing- as threat). They are being categorized under the umbrella of People, Process and Impact.

People: It is important for employees to have the right perception about training and have the time to be able to attend the interventions. Top management should support OL&D and help create an environment that supports learning. Learning should be a motivation, like a pull from the employees and not a push from OL&D. It should cover all levels of people across the organization. The trainers and the L&D team should be accessible and be held in high esteem by other employees. Sometimes, using internal resources as trainers should be encouraged. Especially if senior managers participate, it becomes all the more effective. One risk is that people may leave the organization after training; however, that should not deter an organization from investing in people through OL&D.

Process: Existence of a formal OL&D function with a formal structure, processes and plan is very important. Also important are the quality, coverage and relevance of the training provided. OL&D should be agile and ahead of the curve by having partnerships with outside world, creating new programmes, constantly innovating and using newer technology, benchmarking with the outside world and communicating. It should be timely and be able to ramp up or scale down as required. It should provide L&D offerings as a service to outside organizations, if appropriate.

Impact: OL&D should focus on integrating with business and function so that its outcome impacts business results. It should focus on individual learning and impact as well. Above all, it should be a catalyst in creating a learning environment to augment organizational learning, knowledge sharing, giving feedback, ensuring application and measuring impact of learning. Figure 20 is diagrammatic representation of the factors affecting OL&D.

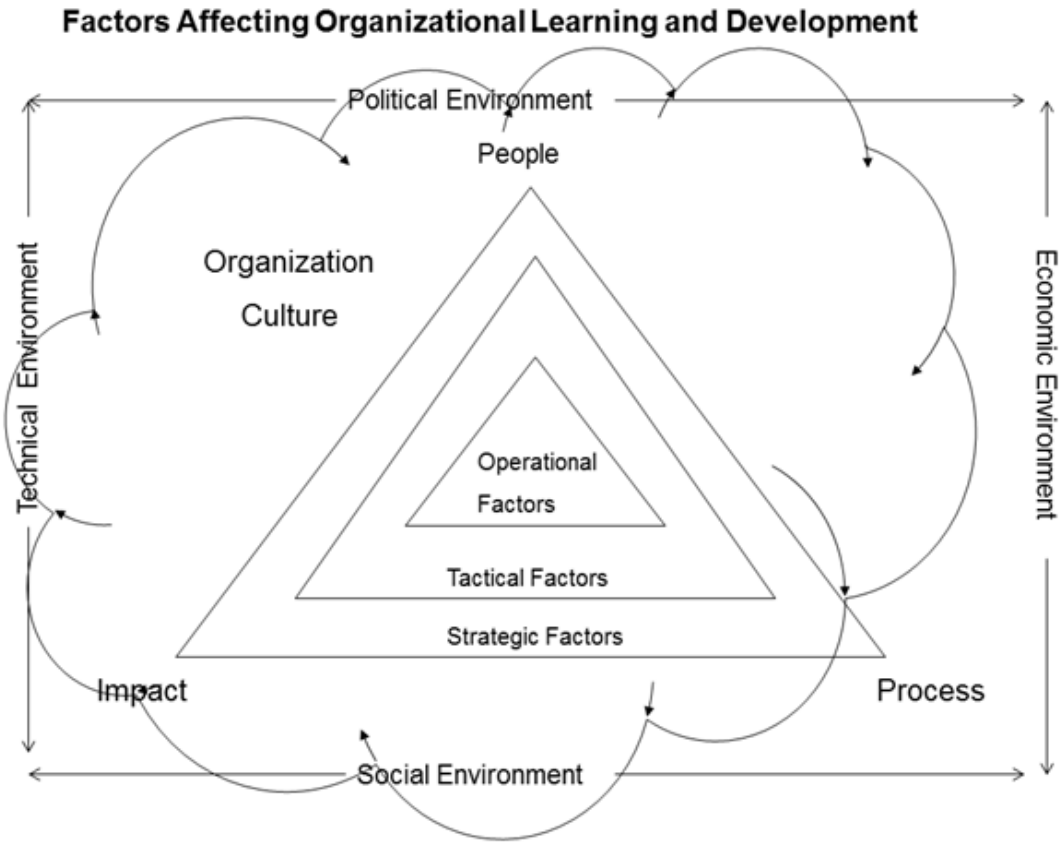


Figure 20: Factors affecting Organization Learning and Development

Theoretical Contributions

Organizations exist in competitive global environments where there is strong competition for resources, markets and skilled employees. Today most organizations realize the importance of OL&D as a means to stay ahead. OL&D's success in organizations seems to depend on three major factors, viz. involvement of people, structure and processes followed and the resultant impact on individuals. I feel each of these factors needs to be addressed at the strategic, tactical and operational levels for OL&D to be both effective and efficient and assume strategic importance in an organization.

I create a conceptual framework that helps organizations ask some relevant questions, analyze how they think, communicate, perform and make suitable choices that augment their organizational learning under the given environmental conditions and business objectives. My framework has some questions at strategic, tactical and operational levels, considering the factors of people, process and impact that will help in designing an OL&D fabric that can impart inclusive, quality and relevant learning in an organization.

Table 30: OL&D Framework

Questions	People	Structure and Process	Impact
Strategic	Do employees have a shared vision? What should leaders do to ensure a culture of trust and learning from failures? How is team learning ensured within the organization? How are important stake holders involved in OL&D?	Is the L&D division a strategic partner or a support function in the organization? Is L&D involved in making strategic business decisions? Should L&D be outsourced or done in-house or both? How much budgets (capex and opex) should be invested in L&D?	How market focused is the organization? Does L&D create a mechanism of deciphering external signals and making sense of the same? How are successes and failures handled in organizations? Does L&D have a mechanism to capture them? Does L&D measure the impact it has made on business?
Tactical	What measures are there to ensure people take learning seriously? How much time do leaders / all employees spend in imparting learning?	What kind of on-the-job learning tools are provided? Should investment be made on systems, tools and technology to increase reach?	Are training budgets cut during downturns? Are training programmes designed to create and measure impact?

	Do we have a dedicated team looking after learning? Does this team invest in their own learning and skills upgrade? Do the leaders exhibit mentoring, facilitating and nurturing skills? Does L&D cover all employees? Are different learning styles of employees (including millennials) considered while imparting learning?	Which provider to partner with in case training is outsourced? What kind of infrastructure do we provide in case of in-house training? Are there internal knowledge sharing processes that can be measured and benchmarked? Do we sponsor employees to take sabbatical, attend conferences, publish papers etc. to improve their learning?	Does OL&D create entrepreneurship, innovation and risk taking? How is impact of learning on individuals measured?
Operational	Does the manager know the learning needs of his/her team and plan accordingly? Is training planned for people in bench? What kind of training is given to new recruits as part of their on-boarding?	What kind of content is being used? What is the quality if the trainers or facilitators? How is feedback received and shared?	Are the learning objectives clearly set before every programme? How is good quality learning incentivized? How is non-usage of learning reprimanded? How is transfer of learning ensured?

Limitations

It is important to acknowledge the limitations of the study. I use the Organizational Learning SWOT Questionnaire for studying the factors impacting OL&D. Since this is the first time the questionnaire is being used, it must be measured for convergent and divergent validity. I hope researchers and practitioners will take this up in the future. That will fine tune the questionnaire and finalize the specific constructs to be used for measuring the factors. The data set is not entirely representative of all types of organizations. Participants are mostly from the private sector in this study. OL&D in government and non-profit sectors deserve research attention as well. The government sector has huge investments in L&D; the non-profit sector has to ensure judicious L&D investments.

Scope for Further Research

Each of the factors viz. people, process and impact can be studied in much more detail and elicit a lot of research questions. e.g. what is the role of senior leadership in OL&D, what is their role in creating a learning culture, how can the impact of OL&D be measured? Does impact on individuals add up to organizational impact? How can the structure and processes be optimized to achieve both efficiency and effectiveness? This study is restricted to Indian organizations. Is the framework relevant in other countries as well? Will it be impacted by national cultural differences? I hope further research will be taken up in these areas in the future. This will help in fine tuning the framework as well as add other dimensions which may not have emerged in this study.

Practical Implications

The framework is based on existing literature as well as SWOT analysis of various existing L&D practices. It is likely to benefit L&D of organizations in various stages of maturity. For organizations just about to start their L&D division, it will furnish a comprehensive set of questions to consider at strategic, tactical and operational levels. Such organizations can start with a smaller subset of the building blocks and use others to scale up later. For smaller L&D groups, it can act as a framework to scale up and benchmark themselves with more mature organizations whose best practices are embedded in the framework. For mature organizations, it gives suggestions for various types and levels of impact measurement which can be constantly benchmarked and improved. As more and more practitioners use the framework, I hope it can be refined further by adding more questions and building blocks to consider at the strategic, tactical and operational levels.

Discussion

With more and more investments being made in OL&D, the importance of designing robust OL&D is also increasing. It is essential to look at appropriateness of OL&D from business impact perspective. Also, one should consider the needs of teams and individual employees to ensure that their needs can adequately be met (Mavin, Lee and Robson, 2010). The conceptual framework created as the outcome of this research helps organizations design robust OL&D by addressing various questions at the strategic, tactical and operational levels. While this can pave way for further academic research related to OL&D, it can also help practitioners in several ways, like improve the learning process, improve performance of relevant business areas, improve investment decisions and engage with stakeholders better through well-designed OL&D.

Organizational Learning and Development (OL&D) Framework

Studies key underlying factors of successful OL&D
OL&D best practices followed in successful organizations
Creates a holistic OL&D framework

Population and Sample

- Junior, middle, senior and top management from various organizations
- 109 respondents for first survey
- 50 executives and L&D professionals for validation survey

Instrument:

Organizational Learning SWOT Questionnaire

Analysis:

- Multiple regression
- Principal Component Analysis
- Exploratory Factor Analysis
- SWOT analysis

Conclusion:

- People, Process and Impact are key factors for success of OL&D
- Supportive organization culture
- OL&D best practices identified
- OL&D framework created focusing on strategic, tactical and operational implementation aspects

Chapter 7: Summary of Findings

This section summarizes the findings from all the studies. Learning Transfer System Inventory (LTSI) has been validated in the Indian context and all the sixteen LTSI factors have been found to load in the context of executive training in India, some more prominently than others. A total of nine factors have been identified, six for specific-training and three for training-in-general. Some of the items are seen to load very clearly on the existing LTSI factors, some are seen to be a combination of two or more existing factors. Many of the transfer factors vary with industry. Some transfer factors depend on other dimensions like type of learning programme attended, seniority level, education level and years of experience.

Findings from Study 1:

- Transfer Factors identified
- Impact of Programme type, Seniority, Education Level, Years of Experience and Industry on transfer factors seen

It is shown that not only does LTSI hold significant promise in its ability to diagnose enablers and barriers to learning transfer, provide support for data-driven interventions to address those barriers, and isolate critical factors for evaluating training effectiveness, it is fundamentally related to the SECI model of knowledge creation. A theoretical framework brings together knowledge creation and transfer in context of conditions and environment which can potentially explain the ontological dimension of knowledge creation in organizations. It identifies certain constructs as enablers to creating conditions that can be used to enhance transfer and thus create new knowledge in organizations.

Findings from Study 2:

- Established LTSI's role in knowledge amplification as part of the Organizational Knowledge Creation Spiral

Taking cue from the finding that the type of industry impacted many of the LTSI factors, a study is taken up on the impact of perception of organization culture (using OCAI) on work environment related factors or the learning transfer environment (LTE). The hypothesis that perceived organization culture impacts the LTE is validated. The results of the study show that perceived flexible organizations (Clan and Adhocracy) support learning transfer and factors like Supervisor Support, Peer Support, and Performance Coaching are higher in these organizations. Resistance to Change is higher in perceived internal facing (Clan and Hierarchy) organizations.

Findings from Study 3:

- Flexible organizations (Clan and Adhocracy) create a supportive learning transfer environment.
- Factors like Supervisor Support, Peer Support and Performance Coaching are higher in these organizations.
- Resistance to Change is more in perceived internal facing (Clan and Hierarchy) organizations.

After finding the impact of the perception of organization culture on LTE, the next study focuses on how organization culture can impact organizational efficiency. The study empirically validates the association between organizational culture and efficiency. It further goes on to validate the balanced culture hypothesis by showing that the most efficient units are the ones which have the most balanced culture, giving the right focus on people, process, innovation and competition. Since organizational productivity is

dependent on both effectiveness and efficiency, the proposal (through this initial study and findings from Turkey by Yilmaz and Ergun, 2008) is that a balanced culture may be the secret sauce of organizational productivity.

Findings from Study 4:

- Organization culture impacts efficiency of DMUs
- Most efficient DMUs have most balance culture

The last study as part of this research focuses on OL&D. It finds three important factors responsible for the success of OL&D, viz. people, process and impact. People and process are the internal foci of a balanced organizational culture. Impact is how OL&D helps an organization react to the externalities. A conceptual framework is created that helps organizations ask some relevant questions, analyze how they think, communicate, perform and make suitable choices that augment their organizational learning under the given environmental conditions and business objectives. The framework has some questions at strategic, tactical and operational levels, considering the factors of people, process and impact that will help in designing an OL&D fabric that can impart inclusive, quality and relevant learning in an organization.

Findings from Study 5:

- People, Process and Impact are key factors for success of OL&D
- Supportive organization culture
- OL&D best practices identified
- OL&D framework created focusing on strategic, tactical and operational implementation aspects

It can be concluded that learning transfer, organizational learning and organizational culture impact productivity. In today's highly dynamic environment, it is important to have a nuanced understanding about the intangible influencers of organizational performance for organizations to have competitive advantage. Profitability is caused by both effectiveness and efficiency. I focus on the efficiency aspect and show how some of the intangible factors can be moderated to increase efficiency and subsequently productivity. To summarize the findings across all the studies:

- LTSI is validated in Indian context
- LTSI is impacted by organization, type or programme, seniority level, education level, years of experience
- Learning transfer plays a role in knowledge amplification
- LTSI is impacted by perception or organization culture
- Balanced culture can result in efficient organizations
- People, Process and Impact are the factors responsible for effective OL&D

Schematically, it can be represented as shown in Figure 21, an association that this research has empirically established.

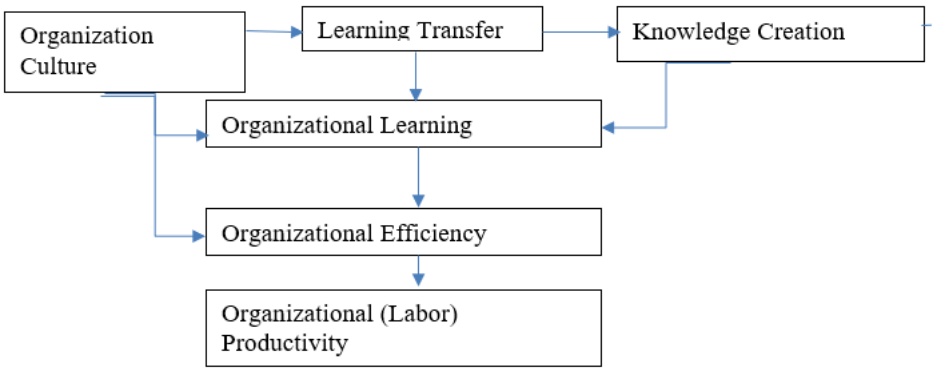


Figure 21: Consolidated Research Findings

Chapter 8: Results and Discussion

Learning is a journey from less knowledge to more knowledge, something which human beings aspire to do until death. Just as in case of individuals, organizations also aspire to learn in a manner that learning becomes greater than the rate of environmental change. Organizational learning can be critical in influencing the success of organizations in a globalized system characterized by rapid technological advancements, fierce competition, and rapid rates of change in work environments (Nonaka and Takeuchi, 1995). For example, Kaiser (2000) asserts that organizational learning is the most important resource for the future and the only element an organization can depend on for growth. Organizational learning is defined as “the intentional use of learning processes at the individual, group and system level to continuously transform the organization in a direction that is increasingly satisfying to its stakeholders” (Swanson and Holton, 2001).

Organizations gain strategic leverage through learning (Gephart and Marsick, 1999). Given suitable HR practices and a supportive organizational culture that enhance learning transfer, organization learning increases. In his paper titled ‘Knowledge Management and Organizational Learning’, Sanchez (2005) has written about the five learning cycles of the learning organization, which further talks about the association between organizational learning and knowledge management. It represents the process by which individuals in organizations create and transfer new knowledge. Individuals acquire new learning through various means, like attending external programmes, seminars, reading journals or through personal interaction. Individuals and the groups they interact with share, test and accept or reject the new knowledge developed by individuals. Groups interact with other groups to determine whether new knowledge

developed by a given group becomes accepted within the overall organization. New knowledge accepted at the organizational level is embedded in new processes, systems and culture of an organization. This, in turn, leads to new patterns of action by groups and individuals. As the present research shows, learning transfer influences knowledge creation and both impact organizational learning. This is depicted in Figure 22 below (adapted from Sanchez's Five Learning Cycles).

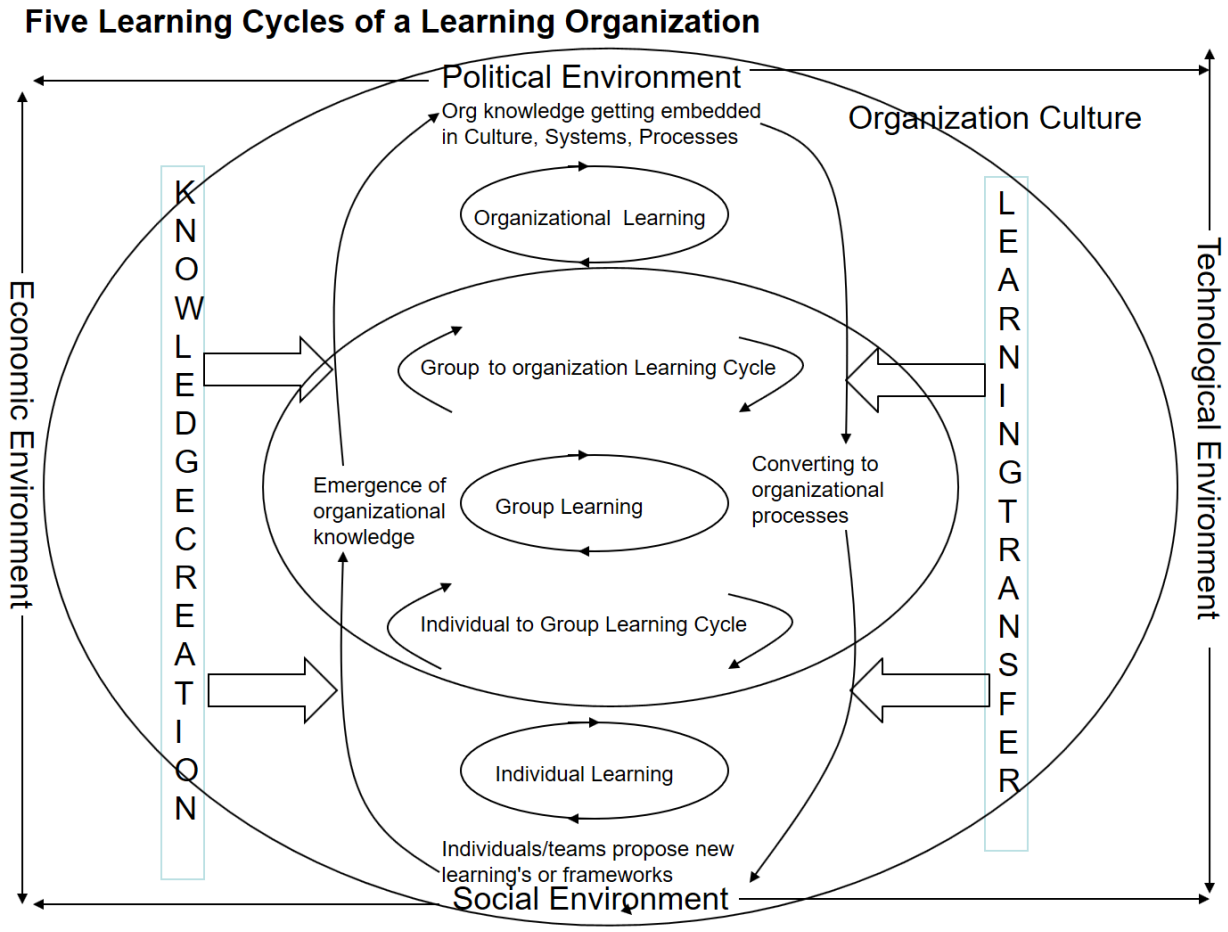


Figure 22: Five Learning Cycles in a Learning Organization

Contribution to Literature

The present research has minimized some of the gaps in literature identified earlier through literature survey. There was no literature pertaining to validation of LTSI in India. This research has validated the instrument in the context of executive training in India and shown how different factors like industry can affect the transfer factors. The instrument can be used to measure effectiveness of training programmes and identify what conditions need to be improved in organizations for increasing the same.

Knowledge transfer leads to new knowledge creation (Cook and Brown, 1999; Alipour, Idris and Karimi, 2011; Paulin and Suneson, 2012). Although a variety of studies have been conducted on knowledge creation and knowledge transfer, most have focused on the source and state of knowledge. Limited attention has been paid to exploring the conditions and culture that facilitate knowledge creation and knowledge transfer within organizations (Alavi & Leidner, 2001; Weldy, 2009). Proper conditions of knowledge flow are very important for organizational learning, and if knowledge flows are blocked, the knowledge gained in one unit cannot inform or improve practices in other parts of the organization (Dee and Leisyte, 2017). The theoretical framework integrating SECI and LTSI brings together knowledge creation and transfer in context of conditions and environment which can potentially explain the ontological dimension of knowledge creation in organizations. It identifies certain constructs as enablers to creating conditions that can be used to enhance transfer, amplify knowledge and thus create new knowledge in organizations.

Learning Transfer does not happen by itself; it is dependent on a lot of factors. Transfer can happen only if the organization has a favorable transfer environment, which is one that affects motivation and performance of its people positively (Litwin and Stringer, 1968). It can be influenced by many variables including culture, climate, leadership, management practices, information acquisition, retrieval, and sharing, and organizational structures, systems and environment (Bates and Khasawneh, 2005). There is substantial literature that focuses on the impact of the organizational culture on organization learning (Shallcross, 1975; Kiely, 1993; Amabile, 1998; Prather, 2000; Sternberg, 2003); however very little effort has been made to understand the relationship between organizational culture and organization-specific factors that affect the transfer of learning from training programs. Empirical study of work environment factors on training transfer was missing in the Indian context. The third study on impact of perceived organization culture on learning transfer addresses this gap and shows that perceived organization culture impacts the learning transfer environment. The results show that perceived flexible organizations (Clan and Adhocracy) support learning transfer and factors like Supervisor Support, Peer Support, and Performance Coaching are higher in these organizations. Resistance to Change is higher in perceived internal facing (Clan and Hierarchy) organizations.

Organizational growth is dependent on both effectiveness and efficiency (Drucker, 1967). A growing research stream in organizational sciences views organizational culture as a principal aspect of an organization’s functioning and a critical driver of effectiveness (O’Reilly, 1991). Organizational culture manifests itself in a lot of management practices, shared fundamental beliefs and assumptions, values, attitudes,

and behaviors of the organization's members. It has not been possible to discover one "best" organizational culture, either in terms of strength or type (Hellriegel & Slocum, 2011). An emerging stream of study talks about the importance of having a balanced culture (Denison, 1990; Cameron, 1986; Sorensen, 2002). A study by Yilmaz and Ergun (2008) in the manufacturing sector in Turkey examined the effect of four major organizational culture traits - involvement, consistency, adaptability, and mission (as discussed by Denison, 1990) on measures of firm effectiveness. They empirically tested the view that a balanced combination of the four traits enhances a firm's effectiveness. However, there has been no study on the impact of balanced culture on organizational efficiency. The fourth study attempts to bridge this gap by showing how balanced culture can impact organizational efficiency. It also indicates nuanced differences between the IT industry and the sales function, thus pointing to the fact that organization culture must be sensitive to the nature of job being performed. Though more studies are required to establish this firmly, the initial findings seem to indicate a right focus on people, process, innovation and competition (which enables organizations to create, collaborate, control and compete) impacts both effectiveness and efficiency, thus impacting productivity.

Organizational Learning and Development (OL&D) can be a key catalyst for building capability of people (APSC, 2005) and improving organizational effectiveness and efficiency. With investments growing in this area, the question is no longer "should we train" but rather "is the training worthwhile and effective?" (Mann, 1996). This has resulted in the emergence of the field of evaluation of learning and development (Lewis and Thornhill, 1994; James and Roffe, 2000; CIPD Learning and Development survey,

2008; Mavin, Lee and Robson, 2010; Gupta and Rani, 2013; Vijayasamundeeswari, 2013; Akilandeswari and Jayalakshmi, 2014; Dutta and Manimala, 2014). There seems to be a convergence in view that while individual training programmes have been studied occasionally, there are few studies pertaining to overall OL&D practices. The final study attempts to bridge this gap. It is an empirical study of the factors that affect (OL&D) and some of the best practices in the Indian context. It identifies people, process and impact as the key factors for a successful OL&D.

Finally, a holistic framework for an eclectic design of OL&D is proposed addressing each of these three factors at the strategic, tactical and operational levels. This framework is a combination of some of the good learning and development practices prevalent in the industry as well as some findings from the present research. It is meant to help practitioners come up with practices that can give strategic leverage and make firms competitive.

Scope of Further Research

Each of the earlier essays have mentioned scope of further research. For the overall thesis, an interesting area of research would be to test the validity of the model in specific context and industries; e.g. does the same relation hold true in the agri sector in the same way as in IT or manufacturing sectors? Would they be the same for all managerial levels? Can gender act as a moderator in these findings? What would be the external validity of the model? Do they equally apply in all other emerging economies? Would they apply in developed economies?

The current research establishes an association between organization learning, learning transfer, organizational culture and firm productivity. However causality has not been established. Causality may be established by taking productivity as the dependent variable and the other factors as independent variables, it would be interesting to see how significant their effect is. Even among the independent variables, is there any bi-directional relation among them? Organization culture impacts the learning transfer environment. Is it possible that the constructs comprising of learning transfer environment can influence organization culture?

The following flowchart summarizes the research undertaken; gaps minimized as well as the conclusion:

Research Flowchart

Study factors (learning transfer, organizational learning, organizational culture) that affect labor productivity

<u>Gaps identified from literature survey:</u>
Validation of LTSI in Indian context, Conditions and environment that impact knowledge creation and transfer, how organization culture impacts learning transfer environment, how organization culture impacts efficiency, What are the factors that impact OL&D

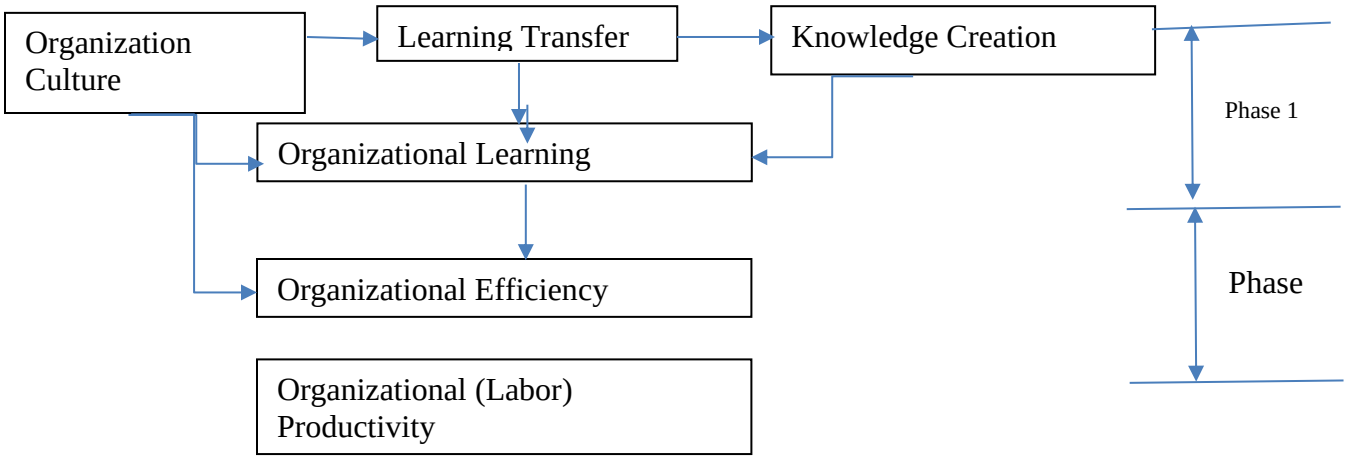
<u>Scope of present research:</u>

- Validation of LTSI in Indian context
- Learning transfer and knowledge amplification
- Impact of organization culture on learning transfer
- Impact of organization culture on organizational efficiency
- Designing a framework of effective organizational learning and development (OL&D)

Results:

- LTSI is validated in Indian context
- LTSI is impacted by organization, type or programme, seniority level, education level, years of experience
- Learning transfer plays a role in knowledge amplification
- LTSI is impacted by perception or organization culture
- Balanced culture results in efficient organizations
- People, Process and Impact are the factors responsible for effective OL&D

Conclusion:



Chapter 9: Conclusion

The objective of this research is to find an interlinkage between organization learning, learning transfer and organizational culture and how they affect firm productivity. More specifically, study learning transfer, its association with knowledge creation and how it is impacted by organizational culture. It also studies the impact organizational culture has on improving productivity and finally what needs to go into designing a robust OL&D framework that can improve and impact productivity.

The focus of this research is on the organizational productivity factors. My research shows Organization learning and culture impact labor productivity which in turn impacts organizational productivity.

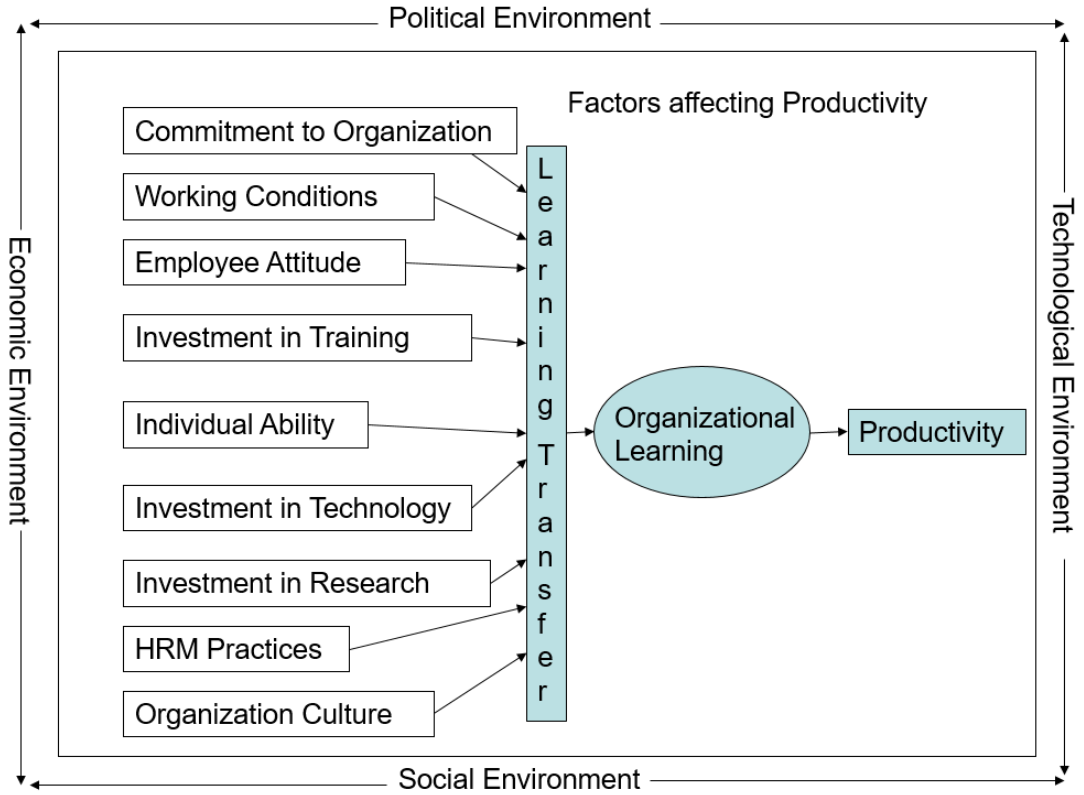


Figure 23: Factors Affecting Productivity

The study on the impact of culture on organizational performance emphasizes the importance of a balanced approach. It emphasizes on internal and external alignment as well as focus on existing stable processes and being flexible by being innovative to be able to have an impact on the strategic drivers of cost, quality and customer satisfaction. This mode of creation, collaboration, control and competition results in increasing revenue, lowering costs thus increasing profitability. Finally, effectively designed organizational learning and development systems can give strategic leverage and make firms competitive.

Presently, this research is at the level of finding associations between organizational productivity and factors like organizational learning, learning transfer and organizational culture. As per the ladder of causation (Pearl and Mackenzie, 2018), the next step is to determine causality by intervening or doing. e.g. What happens if learning transfer is increased by say, increasing supervisor support or by rewarding people when they implement new learnings? Or, if an organization consciously focuses on the four aspects of people, process, innovation and competition, how does it impact productivity? After causality, comes the stage of counterfactuals which is about imagining, retrospection, understanding scenarios based on knowledge of causality, what happens with and without an intervention. That can help us understand the impact of practices or interventions that organizations can introduce to improve productivity.

Given the importance that the fields of organizational learning and organizational culture have acquired, I would like my research in this field to traverse its journey from correlation to causality and finally to counterfactuals.

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Appendix A - Questionnaires

LEARNING TRANSFER SYSTEM INVENTORY

Please circle the number (1, 2, 3, 4 or 5) to the right of each item that most closely reflects your opinion about training.

1 - Strongly disagree 2 - Disagree 3 - Neither agree nor disagree
4 - Agree 5 - Strongly agree

For the following items, please think about THIS SPECIFIC TRAINING PROGRAM :

1.	Prior to this training, I knew how the program was supposed to affect my performance.	1	2	3	4	5
2.	This training will increase my personal productivity.	1	2	3	4	5
3.	When I leave this training, I can't wait to get back to work to try what I learned.	1	2	3	4	5
4.	I believe this training will help me do my current job better.	1	2	3	4	5
5.	Successfully using this training will help me get a salary increase.	1	2	3	4	5
6.	If I use this training I am more likely to be rewarded.	1	2	3	4	5
7.	I am likely to receive some recognition if I use my newly learned skills on the job.	1	2	3	4	5
8.	Before this training, I had a good understanding of how it would fit my job-related development.	1	2	3	4	5
9.	I knew what to expect from this training before it began.	1	2	3	4	5
10.	I don't have time to try to use this training on my job.	1	2	3	4	5
11.	Trying to use this training will take too much energy away from my other work.	1	2	3	4	5
12.	Employees in this organization will be penalized for not using what they have learned in this training.	1	2	3	4	5
13.	I will be able to try out this training on my job.	1	2	3	4	5
14.	There is too much happening at work right now for me to try to use this training.	1	2	3	4	5
15.	If I do not use new techniques taught in this training I will be reprimanded.	1	2	3	4	5
16.	If I do not utilize this training I will be cautioned about it.	1	2	3	4	5
17.	The resources needed to use what I learned in this training will be available to me.	1	2	3	4	5

Please turn to the next page

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1 - Strongly disagree	2 - Disagree	3 - Neither agree nor disagree	4 - Agree	5 - Strongly agree

18.	My colleagues will appreciate my using the new skills I learned in this training.	1	2	3	4	5
19.	My colleagues will encourage me to use the skills I have learned in this training	1	2	3	4	5
20.	At work, my colleagues will expect me to use what I learned in this training.	1	2	3	4	5
21.	My supervisor will meet with me regularly to work on problems I may be having in trying to use this training.	1	2	3	4	5
22.	My supervisor will meet with me to discuss ways to apply this training on the job.	1	2	3	4	5
23.	My supervisor will oppose the use of techniques I learned in this training.	1	2	3	4	5
24.	My supervisor will think I am being less effective when I use the techniques taught in this training.	1	2	3	4	5
25.	My supervisor will probably criticize this training when I get back to the job.	1	2	3	4	5
26.	My supervisor will help me set realistic goals for job performance based on my training.	1	2	3	4	5
27.	The instructional aids (equipment, illustrations, etc.) used in this training are very similar to real things I use on the job.	1	2	3	4	5
28.	The methods used in this training are very similar to how we do it on the job.	1	2	3	4	5
29.	I like the way this training seems so much like my job.	1	2	3	4	5
30.	It is clear to me that the people conducting this training understand how I will use what I learn.	1	2	3	4	5
31.	The trainer(s) used lots of examples that showed me how I could use my learning on the job.	1	2	3	4	5
32.	The way the trainer(s) taught the material made me feel more confident I could apply it in my job.	1	2	3	4	5
33.	I will get opportunities to use this training on my job.	1	2	3	4	5

Please turn to the next page

Please complete questions 34 - 48 below.
Note that these items have new instructions.
Please read them carefully.

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1 - Strongly disagree 2 - Disagree 3 - Neither agree nor disagree
4 - Agree 5 - Strongly agree

For the following items, please THINK ABOUT TRAINING IN GENERAL in your organization.

34.	My job performance improves when I use new things that I have learned.	1	2	3	4	5
35.	The harder I work at learning, the better I do my job.	1	2	3	4	5
36.	For the most part, the people who get rewarded around here are the ones that do something to deserve it.	1	2	3	4	5
37.	When I do things to improve my performance, good things happen to me.	1	2	3	4	5
38.	The more training I apply on my job, the better I do my job.	1	2	3	4	5
39.	My job is ideal for someone who likes to get rewarded when they do something really good.	1	2	3	4	5
40.	Experienced employees in my group ridicule others when they use techniques they learn in training.	1	2	3	4	5
41.	People in my group are not willing to put in the effort to change the way things are done.	1	2	3	4	5
42.	My workgroup is reluctant to try new ways of doing things.	1	2	3	4	5
43.	People often make suggestions about how I can improve my job performance.	1	2	3	4	5
44.	I get a lot of advice from others about how to do my job better.	1	2	3	4	5
45.	I never doubt my ability to use newly learned skills on the job.	1	2	3	4	5
46.	I am sure I can overcome obstacles on the job that hinder my use of new skills or knowledge.	1	2	3	4	5
47.	At work, I feel very confident using what I learned in training even in the face of difficult or taxing situations.	1	2	3	4	5
48.	People often tell me things to help me improve my job performance.	1	2	3	4	5

Please complete questions 49 -56 on the following page.

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49. What was the TITLE of the training program you have just attended? _____

50. What was the LENGTH of the training program you have just attended? (tick the correct circle)
- O Less than 1 day
- O 1 day
- O 2 days
- O 3 days
- O 4 days
- O 5 days
- O 6 days
- O 7 days
- O More than 7 days

51. What is your gender?
- O Female
- O Male

52. What is your JOB TITLE? _____

53. Including this training, how many work-related training programs provided by this organization have you attended in the last 12 months?
- O 1 program
- O 2
- O 3
- O 4
- O 5
- O 6
- O 7
- O 8
- O 9
- O 10 or more programs

54. Which of the following best reflects your main goal for engaging in this learning experience? (check the one that best fits)
- O Personal growth/self-improvement
- O Upgrade skills for current job
- O Acquire new skills for current job
- O Preparation for a new career
- O Required to attend by employer
- O For interest only

55. What is your age?
- O Less than 26 years of age
- O 26-35
- O 36-45
- O 46-55
- O 56-65
- O 66 years or older

56. What is your estimate of the annual expenditure per employee that this organization makes for learning and development?

_____INR

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Organizational Culture Assessment Instrument

Instructions for completing the Organizational Culture Assessment Instrument (OCAI).

The purpose of the OCAI is to assess six key dimensions of organizational culture. In completing the instrument, you will be providing a picture of how your organization operates and the values that characterize it. No right or wrong answers exist for these questions, just as there is no right or wrong culture. Every organization will most likely produce a different set of responses. Therefore, be as accurate as you can in responding to the questions so that your resulting cultural diagnosis will be as precise as possible.

You are asked to rate your organization in the questions. To determine which organization to rate, you will want to consider the organization that is managed by your boss, the strategic business unit to which you belong, or the organizational unit in which you are a member that has clearly identifiable boundaries. Because the instrument is most helpful for determining ways to change the culture, you'll want to focus on the cultural unit that is the target for change. Therefore, as you answer the questions, keep in mind the organization that can be affected by the change strategy you develop.

The OCAI consists of six questions. Each question has four alternatives. Divide 100 points among these four alternatives depending on the extent to which each alternative is similar to your own organization. Give a higher number of points to the alternative that is most similar to your organization. For example, in question one, if you think alternative A is very similar to your organization, alternative B and C are somewhat similar, and alternative D is hardly similar at all, you might give 55 points to A, 20 points to B and C, and five points to D. Just be sure your total equals 100 points for each question.

The Organizational Culture Assessment Instrument

1. Dominant Characteristics		Now
A	The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	
B	The organization is a very dynamic entrepreneurial place. People are willing to stick their necks out and take risks.	
C	The organization is very results oriented. A major concern is with getting the job done. People are very competitive and achievement oriented.	
D	The organization is a very controlled and structured place. Formal procedures generally govern what people do.	
	Total	
2. Organizational Leadership		**Now**
A	The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	
B	The leadership in the organization is generally considered to exemplify entrepreneurship, innovating, or risk taking.	

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C	The leadership in the organization is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus.	
D	The leadership in the organization is generally considered to exemplify coordinating, organizing, or smooth-running efficiency.	
	Total	
3. Management of Employees		**Now**
A	The management style in the organization is characterized by teamwork, consensus, and participation.	
B	The management style in the organization is characterized by individual risk-taking, innovation, freedom, and uniqueness.	
C	The management style in the organization is characterized by hard-driving competitiveness, high demands, and achievement.	
D	The management style in the organization is characterized by security of employment, conformity, predictability, and stability in relationships.	
	Total	

4. Organization Glue		**Now**
A	The glue that holds the organization together is loyalty and mutual trust. Commitment to this organization runs high.	
B	The glue that holds the organization together is commitment to innovation and development. There is an emphasis on being on the cutting edge.	
C	The glue that holds the organization together is the emphasis on achievement and goal accomplishment. Aggressiveness and winning are common themes.	
D	The glue that holds the organization together is formal rules and policies. Maintaining a smooth-running organization is important.	
	Total	
5. Strategic Emphases		**Now**
A	The organization emphasizes human development. High trust, openness, and participation persist.	
B	The organization emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	

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C	The organization emphasizes competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	
D	The organization emphasizes permanence and stability. Efficiency, control and smooth operations are important.	
	Total	
6. Criteria of Success		**Now**
A	The organization defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	
B	The organization defines success on the basis of having the most unique or newest products. It is a product leader and innovator.	
C	The organization defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	
D	The organization defines success on the basis of efficiency. Dependable delivery, smooth scheduling and low-cost production are critical.	
	Total	

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Organizational Learning SWOT questionnaire

Please keep in mind the following (PEST) factors while answering the questions on the next page.....

Political	**Economic**
• ecological/environmental issues • current legislation home market • future legislation • international legislation • regulatory bodies and processes • government policies • government term and change • trading policies • funding, grants and initiatives • home market lobbying/pressure groups • international pressure groups • wars and conflicts	• home economy situation • home economy trends • overseas economies and trends • general taxation issues • taxation specific to product/services • seasonality/weather issues • market and trade cycles • specific industry factors • market routes and distribution trends • customer/end-user drivers • interest and exchange rates • international trade/monetary issues
Social	**Technological**
• lifestyle trends • demographics • consumer attitudes and opinions • media views • law changes affecting social factors • brand, company, technology image • consumer buying patterns • fashion and role models • major events and influences • buying access and trends • ethnic/religious factors • advertising and publicity • ethical issues	• competing technology development • research funding • associated/dependent technologies • replacement technology/solutions • maturity of technology • manufacturing maturity and capacity • information and communications • consumer buying • mechanisms/technology • technology legislation • innovation potential • technology access, licencing, patents • intellectual property issues • global communications

How would you compare your organization's performance to that of other organizations that do the same kind of work in terms of the following

1.	How would you rate organizational learning in your organization	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
2.	Ability of employees to meet changes in work place	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
3.	Ability of employees to upgrade their knowledge	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
4.	Existence of a formal L&D function	Not at all ☐	Somewhat ☐	Little ☐	Strong ☐	Very strong ☐
5.	Overall performance of L&D function (quality, reputation, reach)	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
6.	Extent to which formal processes exist to measure the effectiveness of the learning system	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
7.	Relevance of training provided to the work people do	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
8.	Systems and processes followed by L&D for learning	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
9.	Capabilities of people in the L&D function	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
10.	How well does the L&D function partner with the rest of the organization to provide learning	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
11.	How well does the org culture promote org learning	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
12.	How well does the learning keep you ahead of market and competition?	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
13.	The extent of learning propagation that happens after individuals have attended training	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐
14.	The extent to which employees across multiple geographies are covered by the learning processes	Poor ☐	Average ☐	Good ☐	Very Good ☐	Excellent ☐

15.	*Extent to which impact/ROI of learning is measured in the organization*	*Poor* ☐	*Average* ☐	*Good* ☐	*Very Good* ☐	*Excellent* ☐
16.	The extent to which every employee has an individual learning plan	*Poor* ☐	*Average* ☐	*Good* ☐	*Very Good* ☐	*Excellent* ☐
17.	The extent to which supervisors and managers support learning and development of all individuals	*Poor* ☐	*Average* ☐	*Good* ☐	*Very Good* ☐	*Excellent* ☐
18.	The extent to which top management supports learning and development of all individuals	*Poor* ☐	*Average* ☐	*Good* ☐	*Very Good* ☐	*Excellent* ☐
19.	The extent to which seniors actively participate in teaching and learning in the organization	*Poor* ☐	*Average* ☐	*Good* ☐	*Very Good* ☐	*Excellent* ☐
20.	The extent to which learning affects career progression of an individual inside the organization	*Poor* ☐	*Average* ☐	*Good* ☐	*Very Good* ☐	*Excellent* ☐
21.	The extent to which learning affects employability of an individual outside the organization	*Poor* ☐	*Average* ☐	*Good* ☐	*Very Good* ☐	*Excellent* ☐
22.	*The extent to which your organization is threatened due to lack of proper L&D planning*	*Not at all* ☐	*Somewhat* ☐	*Little* ☐	*Strong* ☐	*Very strong* ☐

23. What is your estimate of the annual expenditure per employee that this organization makes for learning and development? _____ INR

24. Name two key strengths and weaknesses of the L&D function?

25. What would be the two key opportunities and threats facing the learning function in your organization?

26. What suggestions do you have to improve your own learning and the organizational learning?

27. Please choose your appropriate job level (circle relevant number):

1. Top Management
2. Senior/Upper Management
3. Middle Management
4. Junior Management

28. How many years of work experience do you have? _____ years

29. Please tick/highlight the box that most closely describes your current position:

Administration	Advertising, Market Research, PR, Events	Business Development
Engineering, Design, R &D	Finance, Accounts, Audits	General Management
Human Resources, Industrial Relations	Information Services	Learning and Development
Manufacturing, Production, Maintenance, Quality	Marketing	Operations, Technical
Process Management, Strategy	Professional Services	Purchase, Logistics, Supply Chain
Sales	Others (Please Specify):	

30. Please tick/highlight the box that most closely describes your industry sector:

Agriculture	Auto	Banking
Chemicals	Conglomerate	Consumers Products/Services
Defense	Durables	Electronics
Energy	Finance	Food and Beverage
Government	Health	Information Technology
Manufacturing	Materials & Construction	Media
Mining and Metals	Not for Profit	Paper
Retail	Services	Telecom
Trading	Travel & Transportation	Utilities
Others (Please Specify):		

For any queries, please contact Aindrila_Chatterjee@isb.edu

Email correspondence regarding permission to use questionnaires

Sridhar Samu <Sridhar_Samu@isb.edu>

Fri 7/19/2013, 5:02 PM

Hi Aindrila,

On behalf of the IRB, I am happy to approve your application. I would request you to include the following in your consent statement:

There are no known risks associated with your participation in this research beyond those of everyday life. You will/not be compensated for participating in this interview. Your participation will help the research since your views are important.

Further, would request you to update the contact information for the IRB chair. By mistake, Jayashree sent an older version of the form. The relevant information to change is as follows:

For questions about your rights as a research participant, you may contact the Chair of the IRB at ISB: Professor Sridhar Samu at 040-2318-7128 or Email Sridhar_Samu@isb.edu at the Indian School of Business, Gachibowli, Hyderabad - 500032, India.

Finally, please include a space for signature (shown below) where they agree to take part in the survey. If it is link, please include a note that says, "By clicking on this link, I give my informed consent (or something similar)"

At this time, do you have any questions about the survey? Do you agree to participate in this survey?

YES/NO
(signature, if YES)

Do let me know if you have any questions. Good luck

Sridhar

-----Original Message-----
From: Aindrila Chatterjee
Sent: 11 July 2013 AM 08:33
To: Sridhar Samu
Cc: Arun Pereira; K Jayashree
Subject: RE: Request for approval

Dear Prof Sridhar,

Thanks for your mail. Please find attached the 4 questionnaires included in the word document:

a. LTSI
b. OCAI
c. Org Performance
d. SWOT

Please let me know in case of any further queries.

Thanks and regards,
Aindrila

Appendix B – Data Analysis

```
. factor question1-question33, pf
(obs=264)

Factor analysis/correlation                       Number of obs    =        264
    Method: principal factors                     Retained factors =         17
    Rotation: (unrotated)                         Number of params =        425
```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	7.33885	3.61886	0.4138	0.4138
Factor2	3.71999	1.85431	0.2098	0.6236
Factor3	1.86568	0.57068	0.1052	0.7288
Factor4	1.29501	0.22190	0.0730	0.8018
Factor5	1.07311	0.03429	0.0605	0.8623
Factor6	1.03882	0.20908	0.0586	0.9209
Factor7	0.82974	0.09050	0.0468	0.9677
Factor8	0.73923	0.25863	0.0417	1.0094
Factor9	0.48060	0.06931	0.0271	1.0365
Factor10	0.41128	0.11212	0.0232	1.0597
Factor11	0.29916	0.05302	0.0169	1.0765
Factor12	0.24614	0.05147	0.0139	1.0904
Factor13	0.19468	0.06065	0.0110	1.1014
Factor14	0.13403	0.06793	0.0076	1.1089
Factor15	0.06610	0.00732	0.0037	1.1127
Factor16	0.05878	0.01114	0.0033	1.1160
Factor17	0.04765	0.05524	0.0027	1.1187
Factor18	-0.00760	0.01174	-0.0004	1.1182
Factor19	-0.01933	0.01087	-0.0011	1.1172
Factor20	-0.03020	0.01638	-0.0017	1.1154
Factor21	-0.04658	0.02186	-0.0026	1.1128
Factor22	-0.06845	0.03120	-0.0039	1.1090
Factor23	-0.09965	0.00861	-0.0056	1.1033
Factor24	-0.10825	0.01945	-0.0061	1.0972
Factor25	-0.12770	0.01529	-0.0072	1.0900
Factor26	-0.14299	0.01480	-0.0081	1.0820
Factor27	-0.15779	0.01351	-0.0089	1.0731
Factor28	-0.17130	0.02007	-0.0097	1.0634
Factor29	-0.19137	0.01297	-0.0108	1.0526
Factor30	-0.20434	0.01373	-0.0115	1.0411
Factor31	-0.21807	0.01571	-0.0123	1.0288
Factor32	-0.23378	0.04331	-0.0132	1.0156
Factor33	-0.27709	.	-0.0156	1.0000

```
    LR test: independent vs. saturated: chi2(528) = 4140.18 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances
```

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9	Factor10	Factor11	Factor12
question1	0.2540	0.0995	0.2748	0.4849	0.1973	0.0430	-0.0875	-0.0513	-0.0213	0.0307	-0.2254	-0.0374
question2	0.5791	-0.0619	0.1916	0.0856	-0.0655	-0.0779	0.2503	-0.0643	0.1788	-0.0920	-0.0468	-0.0642
question3	0.5659	-0.0494	0.1901	-0.0198	-0.0539	-0.1017	0.1827	0.0676	0.1541	-0.0713	-0.0937	0.0778
question4	0.6779	-0.0475	0.1648	-0.0038	-0.0806	0.0147	0.3155	-0.0194	0.1524	-0.0920	-0.0172	-0.0254
question5	0.4276	0.3527	0.1240	0.0652	-0.4231	-0.0585	-0.2231	0.0672	-0.0988	-0.0405	-0.1292	0.0311
question6	0.4566	0.2914	0.2231	-0.0181	-0.4542	-0.1849	-0.1727	0.1882	-0.1129	-0.1023	0.0055	0.0323
question7	0.5367	0.1157	0.0713	0.0273	-0.3185	-0.1081	-0.1023	0.0291	0.0324	-0.1113	0.0622	-0.0012
question8	0.3372	0.1039	0.1964	0.5646	0.0345	0.0814	-0.0122	0.0358	-0.0406	0.0011	0.1845	-0.1099
question9	0.3517	0.0239	0.2761	0.5853	0.1967	0.1452	0.0039	0.0461	-0.0283	0.1039	0.0379	0.0583
question10	-0.3989	0.4485	0.0730	-0.0287	0.1687	0.0345	-0.2186	0.2002	0.2504	-0.0297	0.1549	0.0517
question11	-0.3505	0.5007	-0.0011	0.0120	0.1193	-0.0785	-0.1670	0.0902	0.2874	-0.0503	-0.0309	0.1457
question12	-0.1046	0.6070	0.0288	-0.0520	0.1556	-0.0993	0.0760	-0.1452	-0.0065	-0.1062	0.0723	-0.0614
question13	0.5659	-0.0238	-0.0246	-0.0040	-0.0239	-0.0288	0.2315	-0.1514	0.1121	-0.1304	0.1152	-0.0128
question14	-0.1179	0.5613	0.1591	0.0694	0.0200	-0.0610	-0.2063	0.0458	0.0910	0.0509	-0.0054	-0.0552
question15	-0.0792	0.7148	0.0958	-0.1064	0.1570	-0.3378	0.0455	-0.1730	-0.0766	-0.0202	-0.0466	-0.0658
question16	-0.0636	0.7430	-0.0007	0.0021	0.1644	-0.3067	0.0867	-0.2325	-0.0889	0.0054	-0.0341	0.0006
question17	0.4986	-0.0289	-0.0203	0.0348	-0.0654	-0.1173	0.0046	-0.1296	-0.1410	0.0405	0.1503	0.0881
question18	0.6512	0.1754	-0.1859	0.0687	-0.1331	0.0263	-0.1270	-0.1799	0.1684	0.2211	0.1211	0.0884
question19	0.6380	0.2312	-0.3330	-0.0714	-0.1733	0.0235	-0.0318	-0.1466	0.1233	0.2545	0.0609	-0.0557
question20	0.4729	0.2371	-0.4371	-0.0171	-0.0409	0.1045	-0.0085	-0.0680	0.0194	0.2083	-0.1674	-0.1275
question21	0.4074	0.4491	-0.5319	0.1038	0.0960	0.0479	0.0651	0.2510	-0.0436	-0.0753	-0.0317	-0.0011
question22	0.3898	0.2846	-0.5586	0.1129	0.1080	0.0850	0.1100	0.3538	-0.0494	-0.1402	-0.0288	-0.0616
question23	-0.2341	0.4507	0.1785	-0.1524	-0.1952	0.3254	0.1503	0.1663	0.0385	0.0649	0.0641	-0.1607
question24	-0.3412	0.5123	0.3120	-0.1035	-0.1373	0.3038	0.2912	0.1109	0.0210	0.1183	-0.0655	0.0651
question25	-0.3406	0.5259	0.2568	-0.0729	-0.0770	0.2874	0.2210	-0.0812	-0.1898	0.0585	0.0581	0.0887
question26	0.4323	0.2057	-0.3189	0.0220	0.1220	0.0292	0.1557	0.0478	-0.1791	-0.0189	0.0888	0.2370
question27	0.5068	0.1017	0.0047	-0.0987	0.0685	0.3902	-0.1515	-0.1990	-0.0016	-0.0795	-0.1425	0.1251
question28	0.4861	0.0819	0.0890	-0.1471	0.0868	0.3978	-0.2364	-0.1625	-0.0236	-0.1791	0.0211	0.0122
question29	0.5993	0.0702	0.0526	-0.2279	0.2215	0.2205	-0.1352	-0.1274	0.0368	-0.1655	0.0477	-0.1205
question30	0.6036	0.0502	0.2142	-0.1881	0.1379	-0.0436	-0.1324	0.0768	-0.2291	0.0339	0.0520	-0.0943
question31	0.5825	-0.1745	0.2872	-0.2712	0.2371	-0.0664	-0.0401	0.2553	-0.0243	0.1463	0.0917	-0.0394
question32	0.6721	-0.0687	0.2431	-0.2986	0.2360	-0.0650	-0.0449	0.1773	-0.0047	0.1435	-0.0907	0.0484
question33	0.7087	-0.0227	0.1928	-0.0984	0.1726	-0.1634	0.1297	0.0892	0.0445	0.0583	-0.0368	0.0723

Variable	Factor13	Factor14	Factor15	Factor16	Factor17	Uniqueness
question1	-0.0046	-0.0932	-0.0498	0.0522	0.0468	0.4942
question2	0.0034	-0.0180	0.0920	0.0326	-0.0591	0.4795
question3	0.0618	0.0690	0.0379	0.0963	0.0157	0.5264
question4	0.0802	-0.0614	0.0040	-0.0344	0.0663	0.3561
question5	0.0045	-0.0183	0.0322	-0.0034	0.0220	0.4054
question6	-0.0813	0.0927	-0.0032	-0.0090	0.0114	0.3112

```
. rotate,oblimin blank (.3)

Factor analysis/correlation                       Number of obs    =      264
    Method: principal factors                     Retained factors =       17
    Rotation: orthogonal oblimin (Kaiser off)     Number of params =      425
```

Factor	Variance	Difference	Proportion	Cumulative
Factor1	4.59241	2.07551	0.2590	0.2590
Factor2	2.51690	0.22790	0.1419	0.4009
Factor3	2.28900	0.45013	0.1291	0.5299
Factor4	1.83886	0.27002	0.1037	0.6336
Factor5	1.56884	0.00145	0.0885	0.7221
Factor6	1.56739	0.17402	0.0884	0.8105
Factor7	1.39337	0.25226	0.0786	0.8891
Factor8	1.14112	0.24324	0.0643	0.9534
Factor9	0.89788	0.02260	0.0506	1.0040
Factor10	0.87527	0.63741	0.0494	1.0534
Factor11	0.23786	0.01409	0.0134	1.0668
Factor12	0.22377	0.03044	0.0126	1.0794
Factor13	0.19332	0.03081	0.0109	1.0903
Factor14	0.16251	0.00473	0.0092	1.0995
Factor15	0.15778	0.06158	0.0089	1.1084
Factor16	0.09620	0.00983	0.0054	1.1138
Factor17	0.08637	.	0.0049	1.1187

LR test: independent vs. saturated: chi2(528) = 4140.18 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9	Factor10	Factor11	Factor12
question1					0.6095							
question2	0.4503									0.4566		
question3	0.5076									0.3601		
question4	0.5449									0.4823		
question5						0.6722						
question6	0.3025					0.7496						
question7	0.3061					0.4935						
question8					0.6716							
question9					0.7516							
question10									0.5890			
question11		0.3975							0.5171			
question12		0.6090										
question13	0.3720									0.3992		
question14		0.4390										
question15		0.8294										
question16		0.8398										
question17	0.3199											
question18	0.3186						0.6191					
question19	0.3068		0.3549				0.6621					
question20			0.4836				0.4713					
question21			0.8209									
question22			0.8484									
question23				0.6683								
question24				0.7850								
question25		0.3337		0.6693								
question26			0.5038								0.3283	
question27	0.3106							0.5697				
question28	0.3365							0.6285				
question29	0.5130							0.5165				
question30	0.6462											
question31	0.8009											
question32	0.8367											
question33	0.7425											

```
. factor question34-question48, pf
(obs=269)
```

Factor analysis/correlation — Number of obs = 269
Method: principal factors — Retained factors = 7
Rotation: (unrotated) — Number of params = 84

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	3.85454	2.07474	0.5666	0.5666
Factor2	1.77980	0.49742	0.2616	0.8282
Factor3	1.28238	0.62695	0.1885	1.0167
Factor4	0.65543	0.47079	0.0963	1.1130
Factor5	0.18464	0.03855	0.0271	1.1402
Factor6	0.14609	0.10452	0.0215	1.1616
Factor7	0.04157	0.08945	0.0061	1.1677
Factor8	-0.04788	0.02462	-0.0070	1.1607
Factor9	-0.07251	0.03147	-0.0107	1.1501
Factor10	-0.10398	0.01465	-0.0153	1.1348
Factor11	-0.11863	0.04368	-0.0174	1.1173
Factor12	-0.16232	0.02439	-0.0239	1.0935
Factor13	-0.18671	0.02858	-0.0274	1.0660
Factor14	-0.21529	0.01862	-0.0316	1.0344
Factor15	-0.23391	.	-0.0344	1.0000

LR test: independent vs. saturated: chi2(105) = 1502.52 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Uniqueness
question34	0.5548	0.0122	0.1860	0.1423	-0.0374	-0.2137	0.0566	0.5869
question35	0.6272	0.0579	0.2467	0.1986	-0.1033	-0.1023	-0.1045	0.4710
question36	0.5320	0.0017	-0.0297	0.2990	-0.0274	0.1789	-0.0038	0.5939
question37	0.6562	0.0411	0.1274	0.1606	-0.0710	0.1647	-0.0274	0.4928
question38	0.6780	0.0122	0.2514	0.1949	0.0076	-0.0261	0.0351	0.4371
question39	0.5307	0.0197	-0.1231	0.1487	0.2389	0.0470	0.0794	0.6151
question40	-0.3093	0.4471	0.2387	0.0790	0.2196	-0.0190	-0.0714	0.5875
question41	-0.4614	0.5192	0.5178	0.0688	0.0606	0.0179	0.0356	0.2394
question42	-0.4897	0.4966	0.4371	0.0811	-0.1412	0.0441	0.0375	0.2926
question43	0.2336	0.5504	-0.4005	0.0681	-0.0706	-0.0782	0.0743	0.4608
question44	0.2051	0.6300	-0.4063	-0.0767	-0.0811	-0.0123	-0.0291	0.3826
question45	0.4490	0.1623	0.2130	-0.4562	-0.0808	0.0484	0.0145	0.5095
question46	0.6649	0.1232	0.2129	-0.3733	0.0423	0.0781	0.0259	0.3494
question47	0.6018	-0.0063	0.1868	-0.2115	0.1093	-0.1012	-0.0381	0.5345
question48	0.2180	0.5626	-0.3524	-0.0131	0.0775	0.0191	-0.0518	0.5025

.

```
. rotate,oblimin blank (.3)

Factor analysis/correlation                       Number of obs    =      269
    Method: principal factors                     Retained factors =        7
    Rotation: orthogonal oblimin (Kaiser off)     Number of params =       84
```

Factor	Variance	Difference	Proportion	Cumulative
Factor1	2.98799	1.07870	0.4392	0.4392
Factor2	1.90929	0.22765	0.2806	0.7198
Factor3	1.68164	0.70795	0.2472	0.9670
Factor4	0.97370	0.79383	0.1431	1.1102
Factor5	0.17987	0.02748	0.0264	1.1366
Factor6	0.15240	0.09285	0.0224	1.1590
Factor7	0.05955	.	0.0088	1.1677

LR test: independent vs. saturated: chi2(105) = 1502.52 Prob>chi2 = 0.0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Uniqueness
question34	0.5969							0.5869
question35	0.7074							0.4710
question36	0.5427							0.5939
question37	0.6599							0.4928
question38	0.7384							0.4371
question39	0.4433							0.6151
question40		0.5695						0.5875
question41		0.8615						0.2394
question42		0.8097						0.2926
question43			0.7178					0.4608
question44			0.7765					0.3826
question45				0.6213				0.5095
question46	0.5016			0.6106				0.3494
question47	0.4938			0.4038				0.5345
question48			0.6857					0.5025

(blanks represent abs(loading)<.3)

Factor rotation matrix

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7
Factor1	0.8355	-0.4165	0.2065	0.2906	0.0360	0.0064	-0.0052
Factor2	0.0797	0.6231	0.7686	0.1144	0.0310	-0.0005	0.0266
Factor3	0.3860	0.6480	-0.6023	0.2530	-0.0357	-0.0510	0.0210
Factor4	0.3800	0.1300	-0.0107	-0.9085	0.0590	0.0934	-0.0324
Factor5	-0.0338	-0.0017	-0.0472	0.0214	0.9352	-0.1361	0.3209
Factor6	-0.0285	0.0280	-0.0388	0.1064	0.1651	0.9754	-0.0831
Factor7	-0.0159	0.0268	-0.0052	0.0364	0.3018	-0.1368	-0.9423

ANOVA Results

Programme Type

ANOVA results for Factor1 with Programme Type

```
. oneway factor1 ptype, t
```

ProgType	Summary of Factor1 Mean	Std. Dev.	Freq.
Functiona	3.9586539	.62031947	104
GM	4.1505264	.42668588	19
Leadershi	4.1158537	.45799334	82
Strategy	4.122963	.503769	27
Total	4.0490518	.54279537	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	1.55893177	3	.519643924	1.78	0.1514
Within groups	66.4998616	228	.29166606		
Total	68.0587934	231	.294626811		

```
Bartlett's test for equal variances:  chi2(3) =  10.1348  Prob>chi2 = 0.017
```

ANOVA results for Factor2 with Programme Type

```
. encode progtype, gen (ptype)

. oneway factor2 ptype, t
```

ProgType	Summary of Factor2 Mean	Std. Dev.	Freq.
Functiona	3.5288461	.67402185	104
GM	3.2842105	.77836237	19
Leadershi	3.5407407	.5826186	81
Strategy	3.4296296	.79942999	27
Total	3.5012987	.66825408	231

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	1.23903383	3	.413011277	0.92	0.4299
Within groups	101.470575	227	.44700694		
Total	102.709609	230	.446563518		

```
Bartlett's test for equal variances:  chi2(3) =   5.5172  Prob>chi2 = 0.138
```

ANOVA results for Factor3 with Programme Type

```
. encode progtype, gen (ptype)

. oneway factor3 ptype, t
```

ProgType	Summary of Factor3 Mean	Std. Dev.	Freq.
Functiona	2.1576923	.7786835	104
GM	1.8631579	.62911801	19
Leadershi	1.997561	.60491314	82
Strategy	1.9925926	.70923899	27
Total	2.0577586	.70393462	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	2.16994693	3	.723315642	1.47	0.2239
Within groups	112.296085	228	.492526689		
Total	114.466032	231	.495523949		

```
Bartlett's test for equal variances:  chi2(3) =   5.9674  Prob>chi2 = 0.113
```

ANOVA results for Factor4 with Programme Type

```
. oneway fac4 ptype, t
```

ProgType	Summary of Factor4 Mean	Std. Dev.	Freq.
Functiona	4.5576923	2.2547767	104
GM	4.0526316	2.3445844	19
Leadershi	4.304878	2.4276648	82
Strategy	3.8518519	1.915598	27
Total	4.3448276	2.2871879	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	13.0271223	3	4.34237411	0.83	0.4795
Within groups	1195.38667	228	5.24292399		
Total	1208.41379	231	5.23122854		

```
Bartlett's test for equal variances:  chi2(3) =   2.0939  Prob>chi2 = 0.553
```

ANOVA results for Factor5 with Programme Type

```
. oneway factor5 ptype, t

                Summary of Factor5
   ProgType |       Mean   Std. Dev.       Freq.
------------+------------------------------------
  Functiona |  3.3524038   .80366335         104
         GM |  3.6315789   .72004063          19
  Leadershi |  3.1181707   .77990841          82
   Strategy |  3.5803704   .71942541          27
------------+------------------------------------
      Total |  3.3190086   .79420868         232

                          Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      7.12419825       3   2.37473275      3.91     0.0095
 Within groups      138.583079     228    .60782052
------------------------------------------------------------------------
    Total           145.707277     231   .630767432

Bartlett's test for equal variances:  chi2(3) =   0.7194  Prob>chi2 = 0.869
```

ANOVA results for Factor6 with Programme Type

```
. oneway factor6 ptype, t

                Summary of Factor6
   ProgType |       Mean   Std. Dev.       Freq.
------------+------------------------------------
  Functiona |  3.4165385   .71180992         104
         GM |  3.4910526   .76379094          19
  Leadershi |  3.4370732   .71851096          82
   Strategy |  3.5055555   .81836298          27
------------+------------------------------------
      Total |  3.4402586   .72715179         232

                          Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      .223487407       3   .074495802      0.14     0.9364
 Within groups      121.917699     228    .53472675
------------------------------------------------------------------------
    Total           122.141186     231   .528749725

Bartlett's test for equal variances:  chi2(3) =   0.9657  Prob>chi2 = 0.810
```

ANOVA results for Factor7 with Programme Type

```
. oneway factor7 ptype, t

                Summary of Factor7
   ProgType |       Mean   Std. Dev.       Freq.
------------+------------------------------------
  Functiona |  4.1273787   .49163984         103
         GM |  4.2652632   .38102738          19
  Leadershi |  4.0503704   .41832835          81
   Strategy |  4.2196297   .40208573          27
------------+------------------------------------
      Total |  4.1224783    .4507969         230

                          Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      1.06583617       3   .355278724      1.77     0.1545
 Within groups       45.471051     226   .201199341
------------------------------------------------------------------------
    Total           46.5368871     229   .203217848

Bartlett's test for equal variances:  chi2(3) =   3.9615  Prob>chi2 = 0.266
```

ANOVA results for Factor8 with Programme Type

```
. oneway fac8 ptype, t
```

ProgType	Summary of Factor8 Mean	Std. Dev.	Freq.
Functiona	5.7211538	2.732248	104
GM	4.4210526	2.063325	19
Leadershi	5.4878049	2.3791476	82
Strategy	5.3333333	2.0191392	27
Total	5.487069	2.494983	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	27.9283615	3	9.30945384	1.51	0.2139
Within groups	1410.03285	228	6.18435458		
Total	1437.96121	231	6.22494029		

```
Bartlett's test for equal variances:  chi2(3) =   5.2734  Prob>chi2 = 0.153
```

ANOVA results for Factor9 with Programme Type

```
. oneway factor9 ptype, t
```

ProgType	Summary of Factor9 Mean	Std. Dev.	Freq.
Functiona	3.0969903	.85385497	103
GM	3.1047368	.8688202	19
Leadershi	3.0037037	.80183297	81
Strategy	3.1107407	.64158416	27
Total	3.0663913	.81091168	230

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	.495790087	3	.165263362	0.25	0.8621
Within groups	150.089516	226	.664112905		
Total	150.585307	229	.657577758		

```
Bartlett's test for equal variances:  chi2(3) =   3.1663  Prob>chi2 = 0.367
```

Seniority

ANOVA results for Factor1 with Seniority

```
. encode seniority, gen (sen)

. oneway factor1 sen, t
```

Seniority	Summary of Factor1 Mean	Std. Dev.	Freq.
Middle	4.0722034	.47162986	59
Senior	4.0981982	.54812441	111
Top	3.9614894	.47948787	47
Total	4.0615208	.51438474	217

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	.626349096	2	.313174548	1.19	0.3075
Within groups	56.5254505	214	.264137619		
Total	57.1517996	216	.264591665		

```
Bartlett's test for equal variances:  chi2(2) =   2.1694  Prob>chi2 = 0.338
```

ANOVA results for Factor2 with Seniority

```
. encode seniority, gen (sen)

. oneway factor2 sen, t
```

Seniority	Summary of Factor2 Mean	Std. Dev.	Freq.
Middle	3.4779661	.65180592	59
Senior	3.5054545	.69583774	110
Top	3.4893617	.61828445	47
Total	3.4944444	.66484246	216

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	.030569236	2	.015284618	0.03	0.9663
Within groups	95.0027631	213	.446022362		
Total	95.0333323	215	.442015499		

```
Bartlett's test for equal variances:  chi2(2) =   0.9582  Prob>chi2 = 0.619
```

ANOVA results for Factor3 with Seniority

```
. encode seniority, gen (sen)

. oneway factor3 sen, t
```

Seniority	Summary of Factor3 Mean	Std. Dev.	Freq.
Middle	2.0033898	.70612251	59
Senior	2.0378378	.71681796	111
Top	2.2	.67114439	47
Total	2.0635945	.70488505	217

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	1.16199333	2	.580996665	1.17	0.3120
Within groups	106.160401	214	.496076641		
Total	107.322394	216	.496862937		

```
Bartlett's test for equal variances:  chi2(2) =   0.2751  Prob>chi2 = 0.871
```

ANOVA results for Factor4 with Seniority

```
. oneway fac4 sen, t
```

Seniority	Summary of Factor4 Mean	Std. Dev.	Freq.
Middle	3.8813559	2.0517843	59
Senior	4.5675676	2.3879303	111
Top	4.7446809	2.4089334	47
Total	4.4193548	2.3202398	217

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	24.4898047	2	12.2449023	2.30	0.1025
Within groups	1138.3489	214	5.31938741		
Total	1162.83871	216	5.38351254		

```
Bartlett's test for equal variances:  chi2(2) =   1.9076  Prob>chi2 = 0.385
```

ANOVA results for Factor5 with Seniority

```
. oneway factor5 sen, t
```

Seniority	Summary of Factor5 Mean	Std. Dev.	Freq.
Middle	3.4352542	.69883243	59
Senior	3.2763964	.89128692	111
Top	3.3331915	.6229178	47
Total	3.3318894	.78919183	217

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	.972274366	2	.486137183	0.78	0.4602
Within groups	133.557656	214	.624101196		
Total	134.52993	216	.622823751		

```
Bartlett's test for equal variances:  chi2(2) =   9.4775  Prob>chi2 = 0.009
```

ANOVA results for Factor6 with Seniority

```
. oneway factor6 sen, t

                Summary of Factor6
  Seniority |      Mean   Std. Dev.       Freq.
------------+------------------------------------
     Middle |  3.5137288   .67928182          59
     Senior |  3.4730631   .74232166         111
        Top |  3.2197872   .71638736          47
------------+------------------------------------
      Total |  3.4292627   .72546627         217

                    Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      2.69624603       2   1.34812301      2.60     0.0767
 Within groups      110.984838     214   .518620738
------------------------------------------------------------------------
    Total           113.681084     216   .526301314

Bartlett's test for equal variances:  chi2(2) =   0.5857  Prob>chi2 = 0.746
```

ANOVA results for Factor7 with Seniority

```
. oneway factor7 sen, t

                Summary of Factor7
  Seniority |      Mean   Std. Dev.       Freq.
------------+------------------------------------
     Middle |  4.1023729   .38566709          59
     Senior |  4.1284546   .49831677         110
        Top |   4.127174   .45071628          46
------------+------------------------------------
      Total |  4.1210233   .45786774         215

                    Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      .028337178       2   .014168589      0.07     0.9352
 Within groups      44.8352371     212   .211486968
------------------------------------------------------------------------
    Total           44.8635743     214   .209642871

Bartlett's test for equal variances:  chi2(2) =   4.6905  Prob>chi2 = 0.096
```

ANOVA results for Factor8 with Seniority

```
. oneway fac8 sen, t

                Summary of Factor8
  Seniority |      Mean   Std. Dev.       Freq.
------------+------------------------------------
     Middle |  5.5254237   2.5687508          59
     Senior |  5.5945946   2.6229005         111
        Top |  5.3617021   2.2402012          47
------------+------------------------------------
      Total |  5.5253456   2.5203896         217

                    Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      1.79091409       2   .895457043      0.14     0.8696
 Within groups      1370.31968     214   6.40336301
------------------------------------------------------------------------
    Total            1372.1106     216   6.35236388

Bartlett's test for equal variances:  chi2(2) =   1.5664  Prob>chi2 = 0.457
```

ANOVA results for Factor9 with Seniority

```
. oneway factor9 sen, t

             |          Summary of Factor9
  Seniority  |        Mean   Std. Dev.       Freq.
-------------+------------------------------------
     Middle  |   2.9935593   .83381707          59
     Senior  |   3.0121818   .82884953         110
        Top  |   3.2895652    .7057603          46
-------------+------------------------------------
      Total  |   3.0664186   .81041222         215

                          Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      2.92732223      2   1.46366111      2.25     0.1074
 Within groups      137.621022    212   .649155766
------------------------------------------------------------------------
    Total           140.548345    214   .656767966

Bartlett's test for equal variances:  chi2(2) =   1.7530  Prob>chi2 = 0.416
```

Level of Education

ANOVA results for Factor1 with Level of Education

```
. encode educationlevel, gen (edlevel)

. oneway factor1 edlevel, t

EducationLe |          Summary of Factor1
        vel |        Mean   Std. Dev.       Freq.
------------+------------------------------------
  Graduatio |   4.0689844   .53422671         128
  Post Doct |       3.902   .59650652           5
  Post Grad |   4.0307071   .55510297          99
------------+------------------------------------
      Total |   4.0490518   .54279537         232

                          Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      .192292919      2    .09614646      0.32     0.7233
 Within groups      67.8665005    229   .296360264
------------------------------------------------------------------------
    Total           68.0587934    231   .294626811

Bartlett's test for equal variances:  chi2(2) =   0.2257  Prob>chi2 = 0.893
```

ANOVA results for Factor2 with Level of Education

```
. encode educationlevel, gen (edlevel)

. oneway factor2 edlevel, t

EducationLe |          Summary of Factor2
        vel |        Mean   Std. Dev.       Freq.
------------+------------------------------------
  Graduatio |   3.5338583   .70555848         127
  Post Doct |        3.32   .75630679           5
  Post Grad |   3.4686869   .61687932          99
------------+------------------------------------
      Total |   3.5012987   .66825408         231

                        Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      .404271766      2   .202135883      0.45     0.6379
 Within groups      102.305337    228    .44870762
------------------------------------------------------------------------
    Total           102.709609    230   .446563518

Bartlett's test for equal variances:  chi2(2) =   2.0039  Prob>chi2 = 0.367
```

ANOVA results for Factor3 with Level of Education

```
. encode educationlevel, gen (edlevel)

. oneway factor3 edlevel, t

EducationLe |          Summary of Factor3
        vel |        Mean   Std. Dev.       Freq.
------------+------------------------------------
  Graduatio |   2.0703125   .65187305         128
  Post Doct |        2.72    .9757049           5
  Post Grad |   2.0080808   .74391089          99
------------+------------------------------------
      Total |   2.0577586   .70393462         232

                        Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      2.45731174      2   1.22865587      2.51     0.0833
 Within groups       112.00872    229    .48912105
------------------------------------------------------------------------
    Total           114.466032    231   .495523949

Bartlett's test for equal variances:  chi2(2) =   2.9694  Prob>chi2 = 0.227
```

ANOVA results for Factor4 with Level of Education

```
. oneway fac4 edlevel, t

EducationLe |          Summary of Factor4
        vel |        Mean   Std. Dev.       Freq.
------------+------------------------------------
  Graduatio |   4.3046875   2.2256861         128
  Post Doct |         5.4   3.3615473           5
  Post Grad |   4.3434343   2.3218642          99
------------+------------------------------------
      Total |   4.3448276   2.2871879         232

                        Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      5.77337328      2   2.88668664      0.55     0.5779
 Within groups      1202.64042    229   5.25170489
------------------------------------------------------------------------
    Total           1208.41379    231   5.23122854

Bartlett's test for equal variances:  chi2(2) =   1.7129  Prob>chi2 = 0.425
```

ANOVA results for Factor5 with Level of Education

```
. oneway factor5 edlevel, t
```

EducationLevel	Summary of Factor5		
	Mean	Std. Dev.	Freq.
Graduatio	3.296875	.82259026	128
Post Doct	2.936	.92400218	5
Post Grad	3.3669697	.75141427	99
Total	3.3190086	.79420868	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	1.02391092	2	.511955462	0.81	0.4460
Within groups	144.683366	229	.631805092		
Total	145.707277	231	.630767432		

Bartlett's test for equal variances: chi2(2) = 1.0568 Prob>chi2 = 0.590

ANOVA results for Factor6 with Level of Education

```
. oneway factor6 edlevel, t
```

EducationLevel	Summary of Factor6		
	Mean	Std. Dev.	Freq.
Graduatio	3.4905469	.70028376	128
Post Doct	3.2	.37934152	5
Post Grad	3.3873737	.77193051	99
Total	3.4402586	.72715179	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	.889205441	2	.444602721	0.84	0.4332
Within groups	121.251981	229	.529484633		
Total	122.141186	231	.528749725		

Bartlett's test for equal variances: chi2(2) = 3.2318 Prob>chi2 = 0.199

ANOVA results for Factor7 with Level of Education

```
. oneway factor7 edlevel, t
```

EducationLevel	Summary of Factor7		
	Mean	Std. Dev.	Freq.
Graduatio	4.1382678	.43824885	127
Post Doct	4.1540001	.35760312	5
Post Grad	4.1004082	.47342994	98
Total	4.1224783	.4507969	230

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	.084364861	2	.042182431	0.21	0.8139
Within groups	46.4525223	227	.204636662		
Total	46.5368871	229	.203217848		

Bartlett's test for equal variances: chi2(2) = 0.9987 Prob>chi2 = 0.607

ANOVA results for Factor8 with Level of Education

```
. oneway fac8 edlevel, t

EducationLe |          Summary of Factor8
        vel |        Mean   Std. Dev.       Freq.
------------+------------------------------------
  Graduatio |   5.5859375   2.4188477         128
  Post Doct |         6.6   3.5071356           5
  Post Grad |   5.3030303    2.545322          99
------------+------------------------------------
      Total |    5.487069    2.494983         232

                       Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      10.7974285      2   5.39871424      0.87     0.4219
 Within groups      1427.16378    229   6.23215624
------------------------------------------------------------------------
    Total           1437.96121    231   6.22494029

Bartlett's test for equal variances:  chi2(2) =   1.4346  Prob>chi2 = 0.488
```

ANOVA results for Factor9 with Level of Education

```
. oneway factor9 edlevel, t

EducationLe |          Summary of Factor9
        vel |        Mean   Std. Dev.       Freq.
------------+------------------------------------
  Graduatio |   3.1414173   .75312863         127
  Post Doct |       2.732   1.4016668           5
  Post Grad |   2.9862245   .84557858          98
------------+------------------------------------
      Total |   3.0663913   .81091168         230

                       Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      1.9037769       2   .951888452      1.45     0.2360
 Within groups      148.68153     227   .654984712
------------------------------------------------------------------------
    Total           150.585307    229   .657577758

Bartlett's test for equal variances:  chi2(2) =   5.0120  Prob>chi2 = 0.082
```

Years of experience

ANOVA results for Factor1 with Years of experience

```
. encode experience, gen (exp)

. oneway factor1 exp, t

            |          Summary of Factor1
 Experience |        Mean   Std. Dev.       Freq.
------------+------------------------------------
       0-10 |      3.9425   .50961903          40
      10-15 |   4.0000001   .62403414          44
      15-20 |   4.0744899   .62064168          49
      20-25 |   4.0912122   .49425162          66
------------+------------------------------------
      Total |   4.0370352   .55922905         199

                       Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups      .680285523      3   .226761841      0.72     0.5399
 Within groups      61.2416668    195    .31405983
------------------------------------------------------------------------
    Total           61.9219523    198   .312737133

Bartlett's test for equal variances:  chi2(3) =   4.6521  Prob>chi2 = 0.199
```

ANOVA results for Factor2 with Years of experience

```
. encode experience, gen (exp)

. oneway factor2 exp, t
```

Experience	Summary of Factor2 Mean	Std. Dev.	Freq.
0-10	3.605	.54816712	40
10-15	3.3	.67168651	44
15-20	3.5375	.64068613	48
20-25	3.5090909	.72932577	66
Total	3.4888889	.66544727	198

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	2.24951021	3	.749836737	1.71	0.1659
Within groups	84.9860437	194	.43807239		
Total	87.2355539	197	.442820071		

```
Bartlett's test for equal variances:  chi2(3) =   3.8430  Prob>chi2 = 0.279
```

ANOVA results for Factor3 with Years of experience

```
. encode experience, gen (exp)

. oneway factor3 exp, t
```

Experience	Summary of Factor3 Mean	Std. Dev.	Freq.
0-10	2.205	.86586253	40
10-15	1.8909091	.64621193	44
15-20	2.2857143	.60415229	49
20-25	1.9515152	.6830345	66
Total	2.0713568	.71204192	199

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	5.34652125	3	1.78217375	3.66	0.0135
Within groups	95.0402103	195	.487385694		
Total	100.386732	198	.507003695		

```
Bartlett's test for equal variances:  chi2(3) =   6.5144  Prob>chi2 = 0.089
```

ANOVA results for Factor4 with Years of experience

```
. oneway fac4 exp, t
```

Experience	Summary of Factor4 Mean	Std. Dev.	Freq.
0-10	5.05	2.5515204	40
10-15	4.4090909	2.3159526	44
15-20	4.3673469	2.2610274	49
20-25	4.0909091	2.2852522	66
Total	4.4221106	2.3490195	199

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	23.1640494	3	7.72134979	1.41	0.2417
Within groups	1069.37866	195	5.48399315		
Total	1092.54271	198	5.51789249		

```
Bartlett's test for equal variances:  chi2(3) =   0.8034  Prob>chi2 = 0.849
```

ANOVA results for Factor5 with Years of experience

```
. oneway factor5 exp, t
```

Experience	Summary of Factor5 Mean	Std. Dev.	Freq.
0-10	3.534	.71588856	40
10-15	3.1811363	.77574635	44
15-20	3.537551	.90245391	49
20-25	3.1819697	.76394771	66
Total	3.3401005	.80737698	199

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	6.17644514	3	2.05881505	3.27	0.0224
Within groups	122.891357	195	.63021209		
Total	129.067803	198	.651857589		

```
Bartlett's test for equal variances:  chi2(3) =   2.7091  Prob>chi2 = 0.439
```

ANOVA results for Factor6 with Years of experience

```
. oneway factor6 exp, t
```

Experience	Summary of Factor6 Mean	Std. Dev.	Freq.
0-10	3.2915	.82419363	40
10-15	3.5602273	.61399755	44
15-20	3.5036735	.64897898	49
20-25	3.3357576	.8112347	66
Total	3.4178392	.73865963	199

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	2.33621231	3	.778737435	1.44	0.2334
Within groups	105.69616	195	.542031591		
Total	108.032373	198	.545618043		

```
Bartlett's test for equal variances:  chi2(3) =   6.2512  Prob>chi2 = 0.100
```

ANOVA results for Factor7 with Years of experience

```
. oneway factor7 exp, t
```

Experience	Summary of Factor7 Mean	Std. Dev.	Freq.
0-10	4.0687501	.42300627	40
10-15	4.1104546	.36424471	44
15-20	4.0765958	.54746958	47
20-25	4.1819697	.45031345	66
Total	4.1178681	.4523279	197

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	.4501768	3	.150058933	0.73	0.5350
Within groups	39.6515271	193	.205448327		
Total	40.1017039	196	.20460053		

```
Bartlett's test for equal variances:  chi2(3) =   7.6009  Prob>chi2 = 0.055
```

ANOVA results for Factor8 with Years of experience

```
. oneway fac8 exp, t
```

Experience	Summary of Factor8 Mean	Std. Dev.	Freq.
0-10	5.775	2.7220609	40
10-15	5.8181818	2.581443	44
15-20	5.5714286	2.5	49
20-25	5.1060606	2.3213311	66
Total	5.5125628	2.5062735	199

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	17.9405627	3	5.98018755	0.95	0.4169
Within groups	1225.77803	195	6.28604118		
Total	1243.71859	198	6.28140704		

```
Bartlett's test for equal variances:  chi2(3) =   1.3541  Prob>chi2 = 0.716
```

ANOVA results for Factor9 with Years of experience

```
. oneway factor9 exp, t
```

Experience	Summary of Factor9 Mean	Std. Dev.	Freq.
0-10	2.86625	.81636057	40
10-15	2.9090909	.87282972	44
15-20	3.056383	.77506081	47
20-25	3.2016667	.7992373	66
Total	3.0335533	.81939162	197

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	3.69100973	3	1.23033658	1.86	0.1383
Within groups	127.903905	193	.662714533		
Total	131.594915	196	.671402625		

```
Bartlett's test for equal variances:  chi2(3) =   0.6904  Prob>chi2 = 0.875
```

Industry

ANOVA results for Factor1 with Industry

```
. encode industry, gen (ind)

. oneway factor1 ind, t
```

Industry	Summary of Factor1 Mean	Std. Dev.	Freq.
BFSI	4.1361765	.60031312	34
Consumer	4.3228572	.35452857	7
Energy	4.0361539	.35996616	13
Health	4.0440001	.40723455	15
IT/Servic	4.0930435	.61521472	69
Manufactu	4.1334211	.46914113	38
Others	3.973871	.48916717	31
Real Esta	3.7072001	.50785924	25
Total	4.0490518	.54279537	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	4.28622231	7	.612317473	2.15	0.0396
Within groups	63.7725711	224	.284698978		
Total	68.0587934	231	.294626811		

```
Bartlett's test for equal variances:  chi2(7) =  11.6257  Prob>chi2 = 0.114
```

ANOVA results for Factor2 with Industry

```
. encode industry, gen (ind)

. oneway factor2 ind, t
```

Industry	Summary of Factor2 Mean	Std. Dev.	Freq.
BFSI	3.5454545	.62103288	33
Consumer	3.6571428	.73678844	7
Energy	3.4769231	.47285275	13
Health	3.9333333	.45773772	15
IT/Servic	3.426087	.75608358	69
Manufactu	3.6105263	.52390912	38
Others	3.2838709	.72805531	31
Real Esta	3.464	.68244658	25
Total	3.5012987	.66825408	231

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	5.38587096	7	.769410137	1.76	0.0959
Within groups	97.3237383	223	.43642932		
Total	102.709609	230	.446563518		

```
Bartlett's test for equal variances:  chi2(7) =  12.0905  Prob>chi2 = 0.098
```

ANOVA results for Factor3 with Industry

```
. encode industry, gen (ind)

. oneway factor3 ind, t
```

Industry	Summary of Factor3 Mean	Std. Dev.	Freq.
BFSI	1.8588235	.7211597	34
Consumer	1.9999999	1.2055427	7
Energy	2.1538462	.50434014	13
Health	2.2266667	.55993197	15
IT/Servic	2.0144928	.69563245	69
Manufactu	2.1894737	.61678743	38
Others	1.9741936	.72248079	31
Real Esta	2.216	.78934571	25
Total	2.0577586	.70393462	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	3.54778887	7	.506826981	1.02	0.4154
Within groups	110.918243	224	.495170729		
Total	114.466032	231	.495523949		

```
Bartlett's test for equal variances:  chi2(7) =  10.3080  Prob>chi2 = 0.172
```

ANOVA results for Factor4 with Industry

```
. oneway fac4 ind, t
```

Industry	Summary of Factor4 Mean	Std. Dev.	Freq.
BFSI	3.7941176	2.1430566	34
Consumer	4.2857143	1.6035675	7
Energy	4.4615385	2.0662117	13
Health	4.3333333	2.5260547	15
IT/Servic	4.2463768	2.2778072	69
Manufactu	4.5263158	2.5012088	38
Others	4.1612903	2.2963271	31
Real Esta	5.28	2.2642144	25
Total	4.3448276	2.2871879	232

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	35.3434688	7	5.04906697	0.96	0.4583
Within groups	1173.07032	224	5.23692109		
Total	1208.41379	231	5.23122854		

```
Bartlett's test for equal variances:  chi2(7) =   2.5855  Prob>chi2 = 0.921
```

ANOVA results for Factor5 with Industry

```
. oneway factor5 ind, t
```

Industry	Summary of Factor5 Mean	Std. Dev.	Freq.
BFSI	3.1570588	.62709302	34
Consumer	3.43	.99416634	7
Energy	3.4353846	.63027265	13
Health	3.2666667	.71536871	15
IT/Servic	3.5027536	.84929709	69
Manufactu	3.4034211	.92768901	38
Others	3.1390322	.63831215	31
Real Esta	3.0668	.80010793	25
Total	3.3190086	.79420868	232

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	6.3898629	7	.912837557	1.47	0.1799
Within groups	139.317414	224	.621952741		
Total	145.707277	231	.630767432		

```
Bartlett's test for equal variances:  chi2(7) =  10.1370  Prob>chi2 = 0.181
```

ANOVA results for Factor6 with Industry

```
. oneway factor6 ind, t
```

Industry	Summary of Factor6 Mean	Std. Dev.	Freq.
BFSI	3.3776471	.69245745	34
Consumer	3.9057143	.63158157	7
Energy	3.5907693	.62543932	13
Health	3.6666667	.57818272	15
IT/Servic	3.5888406	.72342026	69
Manufactu	3.2021053	.77678882	38
Others	3.3758064	.70411069	31
Real Esta	3.2128	.76240585	25
Total	3.4402586	.72715179	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	7.81397823	7	1.1162826	2.19	0.0363
Within groups	114.327208	224	.510389323		
Total	122.141186	231	.528749725		

```
Bartlett's test for equal variances:  chi2(7) =   2.4548  Prob>chi2 = 0.930
```

ANOVA results for Factor7 with Industry

```
. oneway factor7 ind, t
```

Industry	Summary of Factor7 Mean	Std. Dev.	Freq.
BFSI	4.2933634	.48053887	33
Consumer	4.4542855	.35094434	7
Energy	4.1276924	.49064541	13
Health	4.0606667	.32711574	15
IT/Servic	4.0594203	.45775201	69
Manufactu	4.1465947	.43095462	37
Others	4.0064517	.40227311	31
Real Esta	4.032	.45159729	25
Total	4.1224783	.4507969	230

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	2.65822273	7	.379746039	1.92	0.0675
Within groups	43.8808644	222	.197660651		
Total	46.5390871	229	.203217845		

```
Bartlett's test for equal variances:  chi2(7) =   4.3551  Prob>chi2 = 0.735
```

ANOVA results for Factor8 with Industry

```
. oneway fac8 ind, t
```

Industry	Summary of Factor8 Mean	Std. Dev.	Freq.
BFSI	4.6176471	2.3742904	34
Consumer	5.5714286	1.9880596	7
Energy	5.4615385	2.8465003	13
Health	5.9333333	2.6313133	15
IT/Servic	5.4637681	2.5063432	69
Manufactu	5.4210526	2.2854603	38
Others	5.9032258	2.5865658	31
Real Esta	6.04	2.6689573	25
Total	5.487069	2.494983	232

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	41.9611512	7	5.99445018	0.96	0.4600
Within groups	1396.00006	224	6.23214311		
Total	1437.96121	231	6.22494029		

```
Bartlett's test for equal variances:  chi2(7) =   2.0337  Prob>chi2 = 0.958
```

ANOVA results for Factor9 with Industry

```
. oneway factor9 ind, t
```

Industry	Summary of Factor9 Mean	Std. Dev.	Freq.
BFSI	3.1209091	.81180495	33
Consumer	3.2385714	.93881895	7
Energy	3.0515385	.6908792	13
Health	3.378	.78463094	15
IT/Servic	2.8833333	.84946292	69
Manufactu	3.1713514	.75220847	37
Others	3.1393548	.78787873	31
Real Esta	3.0264	.84438283	25
Total	3.0663913	.81091168	230

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	4.6898087	7	.669972671	1.02	0.4183
Within groups	145.895498	222	.657186927		
Total	150.585307	229	.657577758		

```
Bartlett's test for equal variances:  chi2(7) =   1.6519  Prob>chi2 = 0.977
```

Impact of Individual Perception of Organizational Culture on Learning Transfer Environment

```
. factor question1-question48, pf
(obs=150)

Factor analysis/correlation                       Number of obs    =        150
    Method: principal factors                     Retained factors =         29
    Rotation: (unrotated)                         Number of params =        986
```

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	9.15605	4.45160	0.3032	0.3032
Factor2	4.70445	2.29603	0.1558	0.4591
Factor3	2.40842	0.28508	0.0798	0.5388
Factor4	2.12334	0.26367	0.0703	0.6091
Factor5	1.85967	0.39181	0.0616	0.6707
Factor6	1.46786	0.07351	0.0486	0.7194
Factor7	1.39435	0.07598	0.0462	0.7655
Factor8	1.31838	0.19307	0.0437	0.8092
Factor9	1.12531	0.10561	0.0373	0.8465
Factor10	1.01970	0.20389	0.0338	0.8802
Factor11	0.81581	0.09597	0.0270	0.9073
Factor12	0.71984	0.03092	0.0238	0.9311
Factor13	0.68893	0.07174	0.0228	0.9539
Factor14	0.61719	0.09003	0.0204	0.9744
Factor15	0.52716	0.08647	0.0175	0.9918
Factor16	0.44069	0.03509	0.0146	1.0064
Factor17	0.40560	0.07189	0.0134	1.0198
Factor18	0.33371	0.07543	0.0111	1.0309
Factor19	0.25828	0.00812	0.0086	1.0395
Factor20	0.25016	0.02652	0.0083	1.0477
Factor21	0.22365	0.01299	0.0074	1.0551
Factor22	0.21065	0.03756	0.0070	1.0621
Factor23	0.17309	0.01215	0.0057	1.0679
Factor24	0.16093	0.01303	0.0053	1.0732
Factor25	0.14790	0.08070	0.0049	1.0781
Factor26	0.06720	0.00834	0.0022	1.0803
Factor27	0.05886	0.01432	0.0019	1.0823
Factor28	0.04454	0.01589	0.0015	1.0837
Factor29	0.02865	0.03502	0.0009	1.0847
Factor30	-0.00637	0.01162	-0.0002	1.0845
Factor31	-0.01799	0.01283	-0.0006	1.0839
Factor32	-0.03082	0.01173	-0.0010	1.0829
Factor33	-0.04255	0.03081	-0.0014	1.0814
Factor34	-0.07336	0.00965	-0.0024	1.0790
Factor35	-0.08301	0.02359	-0.0027	1.0763
Factor36	-0.10660	0.01625	-0.0035	1.0727
Factor37	-0.12285	0.00324	-0.0041	1.0687
Factor38	-0.12608	0.01920	-0.0042	1.0645
Factor39	-0.14529	0.01083	-0.0048	1.0597
Factor40	-0.15612	0.00425	-0.0052	1.0545
Factor41	-0.16037	0.01763	-0.0053	1.0492
Factor42	-0.17799	0.00354	-0.0059	1.0433
Factor43	-0.18153	0.02491	-0.0060	1.0373
Factor44	-0.20644	0.01058	-0.0068	1.0305
Factor45	-0.21702	0.00291	-0.0072	1.0233
Factor46	-0.21993	0.01652	-0.0073	1.0160
Factor47	-0.23645	0.00970	-0.0078	1.0082
Factor48	-0.24615	.	-0.0082	1.0000

```
LR test: independent vs. saturated: chi2(1128)= 3857.53 Prob>chi2 = 0.0000
```

rotate,oblimin blank (.45)

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9	Factor10	Factor11	Factor12
question1							0.7316					
question2												
question3	0.4981											
question4	0.6089											
question5											0.5432	
question6											0.7039	
question7											0.5188	
question8							0.6875					
question9							0.7366					
question10												
question11												
question12					0.5618							
question13	0.5248											
question14												
question15					0.7866							
question16					0.8009							
question17												
question18								0.6241				
question19								0.7581				
question20								0.6442				
question21		0.8721										
question22		0.8480										
question23			0.8533									
question24			0.7589									
question25			0.7526									
question26		0.5252										
question27										0.5796		
question28										0.7782		
question29										0.6139		
question30	0.5817											
question31	0.8096											
question32	0.8087											
question33	0.7852											
question34	0.6375											
question35												
question36												
question37												
question38												0.5151
question39												
question40									0.5328			
question41									0.8153			
question42									0.7348			
question43				0.8172								
question44				0.8525								
question45						0.5721						
question46						0.7619						
question47						0.6705						
question48				0.7414								

Analysis of Factor 2 (Supervisor Support)

```
. oneway f2sum culturetype, t
```

CULTURE TYPE	Summary of F2Sum Mean	Std. Dev.	Freq.
A	11.8	1.3165612	10
C	9.6615385	2.6414776	65
H	9.5517241	2.6536526	29
M	10.023256	2.5587234	43
Total	9.8911565	2.5885132	147

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	43.9554993	3	14.6518331	2.24	0.0859
Within groups	934.303004	143	6.53358744		
Total	978.258503	146	6.70040071		

Bartlett's test for equal variances: chi2(3) = 5.4434 Prob>chi2 = 0.142

Paired T test results:

```
. ttesti 10 11.8 1.32 65 9.66 2.64

Two-sample t test with equal variances

------------------------------------------------------------------------------
         |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       x |      10        11.8    .4174207        1.32    10.85573    12.74427
       y |      65        9.66    .3274517        2.64     9.00584    10.31416
---------+--------------------------------------------------------------------
combined |      75    9.945333    .3005778     2.60308    9.346419    10.54425
---------+--------------------------------------------------------------------
    diff |            2.14     .854298                .4373865    3.842613
------------------------------------------------------------------------------
    diff = mean(x) - mean(y)                                      t =   2.5050
Ho: diff = 0                                     degrees of freedom =       73

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9928         Pr(|T| > |t|) = 0.0145          Pr(T > t) = 0.0072

. ttesti 10 11.8 1.32 29 9.55 2.65

Two-sample t test with equal variances

------------------------------------------------------------------------------
         |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       x |      10        11.8    .4174207        1.32    10.85573    12.74427
       y |      29        9.55    .4920926        2.65    8.541994    10.55801
---------+--------------------------------------------------------------------
combined |      39    10.12692    .4106838    2.564719    9.295537    10.95831
---------+--------------------------------------------------------------------
    diff |            2.25     .8784546                .470082    4.029918
------------------------------------------------------------------------------
    diff = mean(x) - mean(y)                                      t =   2.5613
Ho: diff = 0                                     degrees of freedom =       37

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9927         Pr(|T| > |t|) = 0.0146          Pr(T > t) = 0.0073

Two-sample t test with equal variances

------------------------------------------------------------------------------
         |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       x |      10        11.8    .4174207        1.32    10.85573    12.74427
       y |      43          10    .3812464         2.5    9.230614    10.76939
---------+--------------------------------------------------------------------
combined |      53    10.33962    .3323774    2.419744    9.672659    11.00659
---------+--------------------------------------------------------------------
    diff |             1.8     .8199414                .1538989    3.446101
------------------------------------------------------------------------------
    diff = mean(x) - mean(y)                                      t =   2.1953
Ho: diff = 0                                     degrees of freedom =       51

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9836         Pr(|T| > |t|) = 0.0327          Pr(T > t) = 0.0164

. oneway f2sum iefocus, t

                Summary of F2Sum
  I/E focus |      Mean   Std. Dev.       Freq.
------------+------------------------------------
          E |  10.076923   2.896319          39
          I |  9.7205882   2.3234405          68
------------+------------------------------------
      Total |  9.8504673   2.5395132         107

                        Analysis of Variance
    Source              SS         df      MS            F     Prob > F
------------------------------------------------------------------------
Between groups       3.1470694       1    3.1470694       0.49     0.4874
 Within groups      680.460407     105   6.48057531
------------------------------------------------------------------------
    Total           683.607477     106   6.44912714

Bartlett's test for equal variances:  chi2(1) =   2.4094  Prob>chi2 = 0.121
```

```
. oneway f2sum fsfocus, t
```

F/S focus	Summary of F2Sum Mean	Std. Dev.	Freq.
F	9.8666667	2.5280247	45
S	8.7575758	2.2224747	33
Total	9.3974359	2.4512904	78

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	23.4188811	1	23.4188811	4.05	0.0477
Within groups	439.260606	76	5.77974482		
Total	462.679487	77	6.00882451		

```
Bartlett's test for equal variances:  chi2(1) =   0.5969  Prob>chi2 = 0.440
```

Analysis of Factor 3 (Supervisor Sanction) – Culture as no impact

```
. oneway f3sum culturetype, t
```

CULTURE TYPE	Summary of F3 Sum Mean	Std. Dev.	Freq.
A	4.8	1.6193277	10
C	5	2.3318448	65
H	5.4137931	3.0061513	29
M	5.3255814	2.3575707	43
Total	5.1632653	2.4327695	147

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	6.00528943	3	2.00176314	0.33	0.8011
Within groups	858.076343	143	6.00053387		
Total	864.081633	146	5.91836735		

```
Bartlett's test for equal variances:  chi2(3) =   5.4001  Prob>chi2 = 0.145
```

```
. oneway f3sum iefocus, t
```

I/E focus	Summary of F3 Sum Mean	Std. Dev.	Freq.
E	5.3846154	2.3576905	39
I	5.0735294	2.3583208	68
Total	5.1869159	2.351759	107

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	2.39856007	1	2.39856007	0.43	0.5128
Within groups	583.863122	105	5.56060116		
Total	586.261682	106	5.53077059		

```
Bartlett's test for equal variances:  chi2(1) =   0.0000  Prob>chi2 = 0.999
```

```
. oneway f3sum fsfocus, t
```

F/S focus	Summary of F3 Sum Mean	Std. Dev.	Freq.
F	5.2413793	2.4445453	58
S	5.28	2.204263	50
Total	5.2592593	2.325681	108

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	.040051086	1	.040051086	0.01	0.9319
Within groups	578.70069	106	5.45944047		
Total	578.740741	107	5.40879197		

Bartlett's test for equal variances: chi2(1) = 0.5550 Prob>chi2 = 0.456

Analysis of Factor 4 (Performance Coaching)

```
. oneway f4sum culturetype, t
```

CULTURE TYPE	Summary of F4 Sum Mean	Std. Dev.	Freq.
A	10.2	3.0477679	10
C	9.2461538	2.3387414	65
H	9.6551724	2.3796137	29
M	8.4418605	2.6213621	43
Total	9.1564626	2.5121641	147

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	40.5834468	3	13.5278156	2.20	0.0911
Within groups	880.817914	143	6.15956583		
Total	921.401361	146	6.31096822		

Bartlett's test for equal variances: chi2(3) = 1.6337 Prob>chi2 = 0.652

Paired t tests have been run

```
. oneway f4sum iefocus, t
```

I/E focus	Summary of F4 Sum Mean	Std. Dev.	Freq.
E	9.4615385	2.6041076	39
I	9.2941176	2.3312211	68
Total	9.3551402	2.4233625	107

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	.694718146	1	.694718146	0.12	0.7327
Within groups	621.809955	105	5.92199957		
Total	622.504673	106	5.87268559		

Bartlett's test for equal variances: chi2(1) = 0.5991 Prob>chi2 = 0.439

```
. oneway f4sum fsfocus, t
```

F/S focus	Summary of F4 Sum Mean	Std. Dev.	Freq.
F	9.6724138	2.4307095	58
S	8.62	2.4485731	50
Total	9.1851852	2.4841484	108

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	29.7404342	1	29.7404342	5.00	0.0274
Within groups	630.555862	106	5.94864021		
Total	660.296296	107	6.17099342		

```
Bartlett's test for equal variances:  chi2(1) =   0.0028  Prob>chi2 = 0.958
```

Analysis of Factor 5 (Personal Outcome Negative) – Culture has no Impact

```
. oneway f5sum culturetype, t
```

CULTURE TYPE	Summary of F5 Sum Mean	Std. Dev.	Freq.
A	5.3	1.7669811	10
C	5.6461538	2.4330457	65
H	6.2413793	3.0782088	29
M	5.744186	2.4503938	43
Total	5.7687075	2.5294648	147

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	9.67812462	3	3.22604154	0.50	0.6835
Within groups	924.45793	143	6.46474077		
Total	934.136054	146	6.39819215		

```
Bartlett's test for equal variances:  chi2(3) =   4.4947  Prob>chi2 = 0.213
```

```
. oneway f5sum iefocus, t
```

I/E focus	Summary of F5 Sum Mean	Std. Dev.	Freq.
E	5.1282051	2.0542573	39
I	5.75	2.6166801	68
Total	5.5233645	2.4353753	107

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	9.58261443	1	9.58261443	1.63	0.2052
Within groups	619.108974	105	5.89627595		
Total	628.691589	106	5.93105272		

```
Bartlett's test for equal variances:  chi2(1) =   2.6666  Prob>chi2 = 0.102
```

```
. oneway f5sum fsfocus, t
```

F/S focus	Summary of F5 Sum Mean	Std. Dev.	Freq.
F	5.3793103	2.2542559	58
S	5.66	2.4876019	50
Total	5.5092593	2.3581054	108

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	2.11556833	1	2.11556833	0.38	0.5399
Within groups	592.875172	106	5.593162		
Total	594.990741	107	5.56066113		

```
Bartlett's test for equal variances:  chi2(1) =   0.5082  Prob>chi2 = 0.476
```

Analysis of Factor 8 (Peer Support)

```
. oneway f8sum culturetype, t
```

CULTURE TYPE	Summary of F8 Sum Mean	Std. Dev.	Freq.
A	13.4	1.4298407	10
C	11.369231	1.7008199	65
H	10.965517	1.9176391	29
M	11.093023	2.0332235	43
Total	11.346939	1.9040442	147

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	49.1742367	3	16.3914122	4.88	0.0029
Within groups	480.131886	143	3.35756563		
Total	529.306122	146	3.6253844		

```
Bartlett's test for equal variances:  chi2(3) =   2.6630  Prob>chi2 = 0.447
```

Paired T tests were done

```
. oneway f8sum iefocus, t
```

I/E focus	Summary of F8 Sum Mean	Std. Dev.	Freq.
E	11.512821	2.0503118	39
I	11.426471	1.7131291	68
Total	11.457944	1.8340612	107

Source	Analysis of Variance SS	df	MS	F	Prob > F
Between groups	.184804979	1	.184804979	0.05	0.8159
Within groups	356.375943	105	3.3940566		
Total	356.560748	106	3.36378064		

```
Bartlett's test for equal variances:  chi2(1) =   1.5934  Prob>chi2 = 0.207
```

```
. oneway f8sum fsfocus, t
```

F/S focus	Summary of F8 Sum Mean	Std. Dev.	Freq.
F	11.672414	1.7610596	58
S	10.86	1.8845234	50
Total	11.296296	1.8558282	108

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	17.7226564	1	17.7226564	5.36	0.0226
Within groups	350.795862	106	3.30939493		
Total	368.518519	107	3.4440983		

```
Bartlett's test for equal variances:  chi2(1) =   0.2403  Prob>chi2 = 0.624
```

Analysis of Factor 9 (Resistance to Change)

```
. oneway f9sum culturetype, t
```

CULTURE TYPE	Summary of F9Sum Mean	Std. Dev.	Freq.
A	5	2.4037009	10
C	6.8769231	2.689724	65
H	6.862069	2.9607448	29
M	6.3488372	2.0457124	43
Total	6.5918367	2.5795696	147

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	35.2791017	3	11.7597006	1.80	0.1506
Within groups	936.231102	143	6.54707065		
Total	971.510204	146	6.65417948		

```
Bartlett's test for equal variances:  chi2(3) =   5.2532  Prob>chi2 = 0.154
```

```
. oneway f9sum iefocus, t
```

I/E focus	Summary of F9Sum Mean	Std. Dev.	Freq.
E	5.3076923	2.092013	39
I	7.0294118	2.58567	68
Total	6.4018692	2.5471398	107

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	73.4707574	1	73.4707574	12.56	0.0006
Within groups	614.248869	105	5.84998923		
Total	687.719626	106	6.487921		

```
Bartlett's test for equal variances:  chi2(1) =   2.0588  Prob>chi2 = 0.151
```

```
. oneway f9sum fsfocus, t
```

F/S focus	Summary of F9Sum Mean	Std. Dev.	Freq.
F	6.7241379	2.9486429	58
S	6.5	2.2246302	50
Total	6.6203704	2.6288038	108

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	1.34897829	1	1.34897829	0.19	0.6607
Within groups	738.086207	106	6.96307742		
Total	739.435185	107	6.91060921		

```
Bartlett's test for equal variances:  chi2(1) =   4.0343  Prob>chi2 = 0.045
```