

Music, Melody and Management

Dr.K.R.Subramanian

Professor of Management & Senior

Abstract-Corporate Management is concerned with performance improvement of the company as a whole. To achieve this, they have found that the employees i.e. the human beings working for their organizations have to perform at their peak levels at all the time. In the current competitive business environment this is not only important but an imperative for the businesses to succeed. So, management is always on the lookout for ways and means of improving employee performance. Recently a lot of research has been done on the functioning of brain and how it can be influenced to human advantage. It has been found that music has unique impact on the brain relating to learning abilities, memory and emotion. Hearing has been found to be the most influential sense—our hearing is sensitive to the shortest and fastest sounds. Everything in nature vibrates and produces sounds; from sound waves of vibrating molecules to black holes 57 octaves below middle C. Sound vibrations are everywhere, and Management of organizations is concerned about the de-stressing and calming influence of sound of music and other chants. This paper is about the current research on these and suggestions for future.

keywords-Music and management, brain functions and how to maximize human performance, hearing music and distressing and calming

I. INTRODUCTION

Science is not able to clearly define music but whatever it is, music has very unique and profound effects in the brain functioning related to learning, memory, emotion and spirituality. Music uses most of the brain in wide circuits that bring about such strong neuroplasticity that it affects the ability to learn other subjects as well. Playing, listening and creating music involves most cognitive skills. It has such strong effects that it can drive soldiers to war, dancers into ecstasy, and listeners into deep meditation. Music effects are as powerful as drugs. In a recent research it was found that the music activates a brain center related to reward and addiction; and was uniquely stimulated when people enjoyed new music.



Figure 1: Musical impact on brain

Sounds uniquely evoke emotions and memories. In meditation sound is often the major focus. Sound brings information from the environment, not just what can be seen, but from far away and behind other objects. There is never real silence. In nature the quieter we become, the more subtle are the sounds we hear from the environment. In isolation tanks, we hear the sounds inside of our body—the heartbeat, the breathing, the ocean sounds in our ears from air molecules vibrating in ear canals and the electrical sounds of the nervous system.

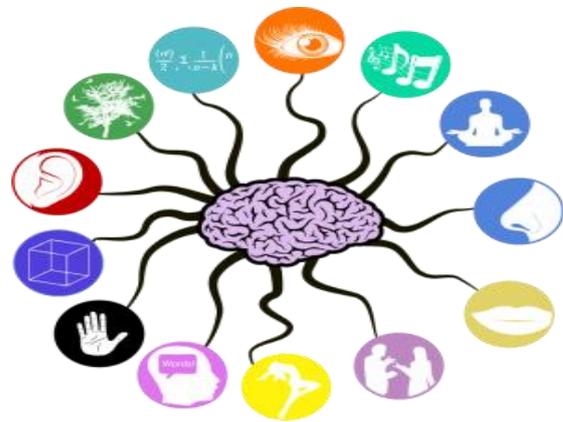


Figure 2: The impact of sounds on the brain

The present research study aims to reveal the ways in which these findings can be utilized for improving organizational and individual performance.

II. OBJECTIVES AND METHODOLOGY

The activities and functioning of the brain has been a topic of research and discussion in scientific community and seminar forums. Various types of sensory inputs activate the brain. This and other research findings on the functioning of the brain have stimulated other research fields particularly in Management of enterprises. Companies and enterprises are groups of individuals with a common purpose (as per one of the definitions of Management). When several individuals join and form a company with a common objective, it is challenging to pool their talents and direct their efforts to the common Objective. There lies the welfare of the most. With the introduction as above a few specific Objectives have been identified for the study.

- An overview of the challenges of current business environment
- Environmental developments affecting individuals and organizations.

- Music and melody effects on management
- How management cope with such developments
- Futuristic development and role of organizations
- Suggestions and Recommendations

Various methodologies were considered for a research of above proportions. A Questionnaire survey was ruled out because of the difficulties in quantifying some qualitative variables. In the meantime while exploring and surveying available data from published sources, which propelled the researcher to take stock of available published sources. While exploring published literature, the researcher was able find adequate data and so it was decided to do a comprehensive literature survey and review available data for the purpose of the current research. Since data adequacy was satisfactory, this methodology was adopted and the conclusions and findings have been tabulated.

III. REVIEW OF LITERATURE

Recent research shows that much of the brain is multi-sensory about how most neurons are connected to multiple different senses. In fact, in our perceptions and experiences, vision and sound are very much intertwined. Perhaps, because of the way our brain operates, what vision tries to do, has the upper hand. A recent study showed that when the brain considers both sight and sound while processing speech, if the two are slightly different, visual cues dominate sounds. Another provocative study showed that our judgments about a musical performance might have more to do with sight than the sound. In this study of both trained and untrained musicians observing music competition, judgment about the quality of a music performance depended more on how a musician moves and looks than what they sound like.

The speed of economic and technological changes means that the right way to solve problems yesterday may not work today and could be a disaster by tomorrow. Solving these dynamic problems is what separates successful companies from the ones who are closing the shop. Identifying what your customers want and doing a better job of giving it to them will make all the difference in your company's future. This means understanding their mentality. Consumers are still quite conservative with their pocketbooks, and as a result, organic growth from current and new customers is not happening as quickly as businesses would like. Business owners and executives are spending more time figuring out how to go above and beyond to keep existing customers, while at the same time figuring out how to cost-effectively reach new customers through digital media y reading and understanding the minds of customers. So, it is clear that mind reading, understanding and conditioning of customers towards a favorable view of your products and services are the key elements to business success.

Problem solving capability – means development of people mentally strong, for which we need to look into how the human brain works and how best it can be influenced through the new age Promotional and e-mail messaging and texting. A major challenge for all companies is identifying, assessing, and avoiding risks, including human and financial capital, in addition to the macroeconomic factors. The lack of a sophisticated problem-solving competency among today's business leaders is limiting their ability to adequately deal with risks facing their businesses. This is why corporate managers tend to jump from one fire to another, depending on which one their executives are trying to put out, and in many cases the fast-changing business environment is what ignites these fires. I believe, to do well in the future, companies must resolve that problem solving is the key to business, then develop a robust problem-solving capability at all levels. As companies proceed to identify risks, they will then have the problem solving skills to know how to best mitigate them.

One of the biggest challenges of Management is staff – finding the right staff, retaining them, and ensuring they buy into the vision of the business. A small business is almost like a family, and, like many families, they can work well, or they can be dysfunctional. In big companies, the human resource challenge is politics and fit in the workplace, but when it comes to small business, its personalities and skill. When you work in a small environment, each team member's personality can have a huge impact on the harmony and productivity of the business. The key is to learn how to deal with different personalities, figure out what drives each individual team member and tailor your management accordingly. Because of changing technology, businesses are struggling to find qualified workers with IT skills, problem solving abilities, and deductive reasoning skills. Understanding Personalities and personal differences means analyzing the mind of employees and resolve issues. This needs a complete study of the brain and understand how it functions, and the challenges faced in a management situation

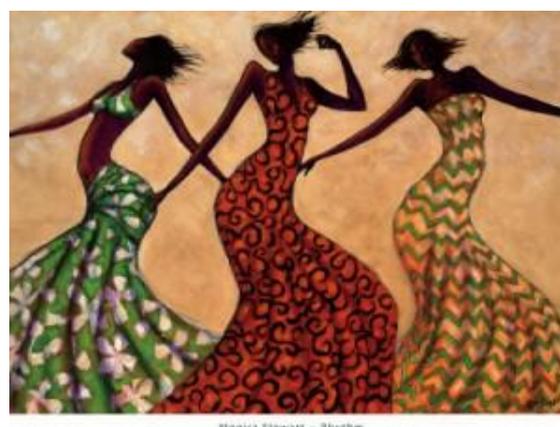


Figure 3: Effect of melody and harmony of music

While melody and harmony have wide ranging effects in human behavior, rhythm has unique power for healing the human mind and body. In the brain, melody, harmony, timbre, and lyrics are perceived as movement, as meaning, and as emotion. But, rhythm is a language of its own. Examples of rhythm's effects include how tribes unite in ceremonies, how armies march into battle, how dancers move and express, how chanting enhances meditation, how gospel music propels congregations, and also how we understand the punctuation of speech.

Symbol	Rhythm Name	Notation Name
	ta	Quarter Note
	ti-ti	2 Eighth Notes
	---	Quarter Note Rest
	tika-tika	4 Sixteenth Notes
	too	Half Note
	ti-tika	Eighth Note 2 Sixteenth Notes
	tika-ti	2 Sixteenth Notes Eighth Note
	tum-ti	Dotted Quarter Note Eighth Note
	syn-co-pa	Eighth Note, Quarter Note, Eighth Note
	tim-ka	Dotted Eighth Note Sixteenth Note

Figure 4: Effect of Rhythm

But, rhythm has other profound effects on the brain, including influencing perception and thinking. Studies show that learning and memory linked to specific beats in a rhythm stimulated increased learning ability. For example, expecting the emphasis on the fourth beat increased cognitive performance if the learning or perception task is done on the fourth beat. Brain alpha and beta EEG rhythms synchronized to a beat and visual cortex sensory stimulus was greater on a specific beat. In perception tests, details are more likely to be seen on the emphasized beats. Very recently, an inherent relationship with rhythm and brain function was demonstrated. Playing sounds that synchronized with rhythm of the slow wave oscillations during deep sleep enhanced memory. Such techniques can be used for distressing of stressed employees and improving their mental strength.

Perception of Sound and the organizational impact

Sound waves are very complex—so complex that even current physicists have not yet figured out how the brain comprehends the many factors contributing to an individual note. Even the Fourier transformation equations used by Einstein to analyze light, are inadequate by an order of 13 to show how the brain is able to analyze sound.

Each note is made up of an extremely complex series of vibrations—the harmonics, or overtones. These are in the mathematical ratios 1:2:3:4:5:6 of the vibration of the original note. All of these different tones blend into one sound in the brain.

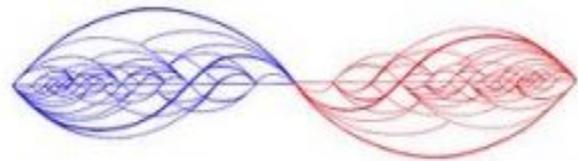


Figure 5: Complexity of sound waves

In addition to the complexity of sound waves, each type of musical instrument has many other factors with regard to the timbre, or quality, of the sound. The scientific analysis of the timbre involves the “sound envelope” including characteristics like attack time, decay, sustain, and release. Singing produces extremely complex series of overtones derived from the entire anatomy of the singer. The sound is affected by differences in vocal chords, oral cavity, facial bone structure and many other characteristics.



Figure 6: The drum used for Sound Analysis

The drum with a large round surface has the most complex timbre and series of overtones, far too complex for current mathematics. Recently, part of this puzzle of our perception of sound was discovered. When we hear a weak tone, the brain strengthens that tone, and suppresses the other frequencies near it, in order to hear it better. This allows us to pick up relevant cues in the environment even if they are soft. In this “auditory attention filter,” frequencies of an octave are also heard better than other frequencies. The brain prepares to hear the overtones of notes, either if it hears a tone or if it has a tone in mind.

Receiving thousands of different characteristics the brain instantly perceives one sound. Music training has demonstrated unique effects on learning, perception, performance and language with increases in brain efficiency and fewer neuronal units needed to encode information. It increases other abilities, an effect called metaplasticity. Training affects brain structures more strongly as a child. When the training begins before age seven, neural systems are created that last a lifetime—also; adults heard music and speech better. Random samples show structural changes in auditory and motor regions in 15 months of training in children. Those who played instruments for ten years stayed better cognitively. The benefit was not reliant on continued play. Organizations benefit from these research studies to the extent they can design the Training programs to suit employees to improve

their learning abilities and music will enhance performance by smoothening the tensions on the job.

IV. IMPACT OF MUSICAL THERAPY

Adult training also causes permanent changes in brain structure, but to a lesser degree. Changes in brain function can be observed even within three hours of training, but without continued training, short-term changes are reversible. Lifetime musical practice decreased memory loss. Exercise plus music increased cognition with elderly. There are many different brain changes that occur in highly trained musicians including better pitch perception; more cells in motor regions and cerebellum; and a bigger corpus callosum connecting right and left brain. Very recently, the bidirectional effects of music and language were uncovered. Music training was known to increase language abilities; now, certain languages are shown to help musical ability. People who speak tonal languages, those with many high and low pitch patterns that affect meaning, such as Cantonese, can learn music faster. Both Vietnamese and Cantonese have six different tones; English has none that specifically affect meaning. These scientific findings help organizational planners in improving training content and effectiveness.

Group singing produced higher measures of general health and quality of life in the elderly, cancer survivors and caretakers of ill people. Music therapy decreased pain in bone marrow patients. Specific rhythmic therapies along with electrical stimulation improved aphasia in stroke victims. Music training in the elderly helped avoid memory loss. Dyslexia was aided with learning a musical instrument. Parkinson's patients using rhythm in physical therapy improved gait. In babies, interactive song learning increased smiling, waving, communication, and understanding pitch. Even dogs in shelters barked less and slept better with classical music and mice with heart transplants survived twice as long if they listened to classical music. These mice had lower interleukin 2 and gamma interferon (both promote inflammation) and increased interleukins 4 and 10 (that stop inflammation).



Figure 7: Impact of group singing

Study of musical improvisation shows brain findings with some similarities and differences to dreaming and meditation. All three show a deactivation in brain regions that monitor and evaluate. But, each has significant differences. In jazz improvisation self initiated performance brain centers increase along with many motor regions. Surprisingly language regions were stimulated. Improvisation activates motivation, language, mood, and physical action. In hip hop free styling there was increased activity in classic language areas, and the sensorimotor cortex. In addition there was increase in cerebellum activity, related to motor memory and coordination. Meditation was similar to improvisation in that it produced a decrease of evaluation centers. It also produced a change in the resting default mode network. Unlike improvisation there was a decrease in sensorimotor motor regions. In dreaming, there is a similar pattern of decrease in evaluation centers, but, with very active brain activity and unconstrained cognition. Unlike either meditation or improvisation, the muscles are completely blocked in dreaming.

Music has a unique and relation to spiritual practices. Many meditations use sounds, syllables, prayers, and musical melody, all with repeated rhythm (sometimes with images). These allow and concentration of the active mind to allow an experience beyond thoughts. Some spiritual practices use movement and rhythm, as well, and these have



Figure 8: Impact of music on cognitive functions and even speech

demonstrated very positive effects on immune and cognitive function. Earlier we have discussed how adding movements various learning creates a wider neuroplasticity circuit and much more powerful experiences. Very powerful effects occur in religious events, while combining music, the spiritual meaning, listening, looking, and movements such as dancing, rocking and clapping. The effect on cognition and learning experience through expansion of neuroplasticity is of importance to management for effective experimentation and use in Training sessions of employees.

There is reason to believe that speech and language evolved from music, not the other way around. For this view music is defined as a generalized creative ability with

sound elements – such as timbre, rhythm, and pitch. Speech and music overlap in brain regions related to syntax, meaning and memory.



Figure 9: Music and evolution of language

Music not only uniquely uses all of the brain, but, stimulates neuroplasticity changes, which increase learning of all types. The brain is uniquely responsive to sound, taking extremely complex multiple qualities of timbre, rhythm, and melody and making them one sound that we hear, stimulating memories, emotions, and learning. The unique qualities of music in human life are just now being appreciated in science.

From the foregoing review of literature it is clear that music, melody and the human psyche are closely linked. More and more advanced research in the area of science and human brain and the connection between the functioning of brain and the effect of that on human behavior have been seen. This is precisely what is being exploited by management for better performance of employees through training and retraining.

V. DATA ANALYSIS AND FINDINGS

It is very clear from data analysis that there is a profound influence of music and harmonious sounds on the human brain. Brain is activated by musical notes- vocal and instrumental and we have seen that science has proved beyond doubt on the veracity of the claims. The challenges posed by the current environment are many and these can be solved by an understanding of how the mind works. This has been described and illustrated in our '*Upanishads and ancient literature of India*'. Our ancient teachings are available to us only because of the word of mouth transfer of such eternal truths about our nature and how we need to live in harmony with nature. Such teachings have always emphasized the need to understand the mind which is what the developments in western science tells us in a different way!

The current business environment is more challenging for our earlier generations of people because of the way

people interact with one another and how life goes on in society today. The present environment is characterized by development in digital technologies which has made possible for people to interact in real time that is 'an always on' society. In the current environment decisions have to be made faster and you have to contend with a multiplicity of alternatives and choice. The challenge for the average person is to quickly evaluate the alternative, since the availability of alternatives itself is challenging and dynamic. Then there is the peer pressure induced by the 'mobile culture' where you always seek endorsements for your choice from friends who are presumed to be knowledgeable.

Further developments in the environment like the rapid mobility of people, processes and changes in Technology do affect individuals and organizations. Organizations have to contend with and adjust with necessary changes to adapt to the tastes and temptations of a fast moving and no time for anything organization man. As people migrate from one Technology to another, their job descriptions and tasks change, creating internal and peer pressures to adapt to the new technologies. Here the management of organizations copes with the changes through training and development of people and redeploy them for new jobs and challenging tasks. This may create some tension for some people and their mentality and motivation to the changing role is affected. Here training managers have to play a key role in understanding the psychology of individual managers and groups of workers.

Music and melody have been researched a lot and the findings are relevant for the management to deal with the mental state of employees. From treatment of sick people and to deal with elders, music has been found to be handy in changing the moods of people and improve their learning abilities. Such inputs, as part of regular training programs should enable the employees to cope with stressful situations arising out of organizational changes in adapting to new ways of working. There is a significant role to be played by Human Resources Department and so their executives and Managers need to be trained continuously, where the melodies of music would help reducing employee stress levels.

Future is always made of the present. This means organizations have to be prepared to 'receive the Future in the present'. Psychological Training of Managers and evaluation of them for readiness to accept managerial roles become the success mantra for organizations of the future. Recruitment of manpower, which has already undergone a lot of changes, will evolve continuously. Organization search engines will always be 'ON' to identify on a continuous basis potential employees.

VI. CONCLUSION AND RECOMMENDATION

The Conclusion is obvious; there is no looking back from the need for organizations to change and adopt new

Technologies, particularly in the digital age and mobile technologies changing by the day. Organizations will continue to recruit new Talent and management of talented employees from the current crop and Training and retraining them for new roles will be the key to success. Competency of an organization will depend on its capacity to understand the stress levels of key persons and adopt methods of distressing them. A comprehensive understanding of the Psychological needs of the key organization personnel and in fact all of them are necessary.

Continuous monitoring is the key to successful operations. The mind is the basic determinant of a person's attitude to work. This has been well recognized by HR Managers with the help of psychologists and organizational planners. Successful Organizations make a psychological evaluation of a person before he is considered for a promotion or higher responsibilities. The success of the Managers and consequently the organization will depend on their ability to foresee such requirements and be prepared.

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