Quantum Management – Quantum Quality model

Rakesh Kumari M.Sc. (Physics), M.Ed., Fellow, Gujarat India.

Abstract – This paper proposes the Quantum Quality Model (Q^2M), a quality inventiveness, a merger application of Quantum science and Human psychology on Management science to improve/enhance the quality performance of managers/leaders/employees working in an organization. The foundational pillar to this model is Quantum skills model and Quantum Organization. Quantum skills model is the unification of physics, psychology and some glimpses of spiritual domain. And Quantum organization has following features - value-centered, all-inclusive, bottom-up, self-organizing, emergent, believes in the potentiality more than actuality, flexible and responsive in-on-out the chaos situations, follows adaptive evolution through multiple alteration, thinks that presence and participation of every employee affects the organizational success, considers human and non- human dimensions.

Considering Managers/Leaders/Employees as a Particle (the microcosm) of the organization (the macrocosm), the Q^2M proposes Particle domain (internal state) and the Organizational domain (outer state) of the Particle and by cultivating both domains the quality performance (in terms of Seeing-Knowing, Thinking-Acting, Feeling-Trusting) of the Particle can be improved/enhanced at workplace.

The aim of this paper to improve/enhance the qualitative attributes of the Particles and quantify their quality performance. Simple Random sampling method (Probability sampling) is used for sampling with set criteria that the Particles should be working with at least Graduation (in any subject) degree, no upper limit for the qualification, the age limit is 30-60 years, and open to all gender with no geographical limits. An analytic survey approach is used to establish a theory and then quantitative measurement of qualitative attributes through simulation, generating a cause-effect relationship among the variables and finally interpret the results through simple statistical analysis. A self-prepared survey questionnaire was used to collect the data.

Q^2M is a quality advancement tool/technique through which the Particles acquires Quantum Self-ness (cultivated intentions, modulated attitude), Quantum Preciseness & Coherence (paradoxical thinking, flexibility in chaos) and Quantum Constancy (emotionally stable, aware-motivated, fine sense of communication, strong co-ordination). In an organizational context, the Particle will cultivate clear intentions, develop paradoxical/complex thinking, become self-cognizant, know the workplace with broader perspective, exhibit a readiness to act in all situations, build trust with others at workplace.

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Keywords - Newtonian Organization, Organizational Domain, Organizational – Knowing, - Acting, -Trusting, Particle Domain, Particle – Seeing, - Thinking, -Feeling, Quantum Organization, Quality performance, Quantum Quality Model, Quantum Skill Model.

1.0 INTRODUCTION

Its 21st era wherein the information propagate by a click on electrical gadget, basis of thinking have become the interconnectivity of one another on various portal (like Facebook, Instagram, twitter etc.) and the people action-reaction (behaviour) are expressed in terms of short-form terms or similes. This very change is not only limited to informal conversation but also invaded in the formal code of conduct. The cause of change is not only one as discussed above, other factors like generation gap (in terms of thinking), human internal adjustment w.r.t. the environment, lastly most important the workplace demand-supply, standards of quality etc. So, change is inevitable and is the reality of everything.

Being in the education sector, a Physics educator, I found interconnectivity of various fields like physics with chemistry and biology, psychology with sociology, management with psychology, medicine with behavioural sciences, management and physics and so on. What fascinated me towards this research work was drawing parallels between physical sciences and management sciences. My search began with various research articles, research papers, resent issues in field of leadership, management and behavioural sciences along with their respective relationship with physics. The quest brought me to complete journey of Old to Modern Perspective in Management and Newtonian to Quantum in Physics, and connexion between the two domains. While drawing parallels between physics and management I came across with some terms like Newtonian organization, Quantum Skills Model and finally something called Quantum organization. But keeping in mind the scope of the research I constricted myself to term Quantum-Management, and ultimately to Quantum-Quality. So, Quantum Management is my destination and but there are few foundational pillars which I need to discuss before moving ahead.

1.1 NEWTONIAN TO QUANTUM PERSPECTIVE IN PHYSICS

Physics, pure sciences, involves the study of matter and energy, strives to explain what the universe is made of, and how it works. Until 18th and 19th century, it was firmly established on the classical and deterministic pillars of mechanics, thermodynamics and electromagnetics, and all its fundamental theories were well established and widely accepted; and this era was known as the "Classical" era defined by "Newtonian" laws. Classically, it was believed and accepted that the universe followed a predetermined path, perfectly deterministic a giant clockwork system that could be predicted, analysed and explained by the Newtonian laws.

With the beginning of the 20th century, advancement in experimentations through precise tools-techniques, the classical picture of nature which was based on the observations of the objects at macroscopic level, became was inadequate in a fundamental way. The phenomenon, ***Black body radiation***, the light produced by glowing objects, experimentally, was the first observation that challenged the credibility of the old

"classical" picture, theoretical and experimental observations did not match. Based on the established work of Ludwig Boltzmann (in Statistical interpretation of thermodynamics), in 1899, physicist Max Planck gave forth a theory, to explain the "black body radiation" based on an assumption that for any frequency of light, there is a fundamental unit of energy. As a result, the energy radiated by the black body at any frequency must be an integer multiple of that fundamental "quantum". Thus, was born "quanta"- tiny differential and discrete "energy packets" which are emitted or absorbed by any medium.

Around the same time, the classical picture also failed to explain the nature of another phenomenon, ***the photoelectric effect***, in which electric current is produced when light strikes metal. Based on the Planck's quantum concept, the Swiss physicist Albert Einstein accounted for the mystery of photoelectric effect, also shown that the Planck's idea had fundamental significance. A new era in the history of physics had started, Quantum Physics, which is now known as Modern Physics. Concluding, the quantum physics describes the nature of fundamental particles (such as atomic, sub-atomic particles and their energies).

1.2 Old to Modern perspective in Management

Basically, management is defined as a process of planning, organizing, leading, and controlling; and its functions are decision-making skills, interpersonal-skills, technical skills. There are five management theories: the classical, behavioural, management science, system, and contingency theories as its evolution.

The classical approach to an organization begins with the discussion of scientific management, Taylorism, named after Frederick Winslow Taylor, the Father of Scientific management, an American mechanical engineer. The goal of scientific management was increased profits through increased worker productivity. He accomplished this by breaking down the job into its component parts, standardizing those parts, and making careful observation about the time and the motion needed to complete the task. Taylor focused on formal structures and rules.

In early 20th century, management-researcher began to question the classical approach to management and altered their focus from job itself to the people who executed the job. The behavioural approach stresses the needs for the human skills rather than the technical skills; and has two branches: the human relation approach and the behavioural science approach. The human relations approach brought to the attention of management, as how the individual differences among the employees affect the success or failure of an organization; hence, the employees should be trained in human relations skills along with technical skills. Thus, the behavioural approach to management indicated that the employees needed to act more from their knowledge rather than from their formal authority.

The management science approach was more closely aligned with classical management theory, in turn, a sub-application of mathematics in problem solving and decision making. In mid-20th century the management-researcher attempted to incorporate the classical, behavioural, and management science theories into a unified perspective, the Integrative Perspective; this perspective is then categorized as systems theory, sociotechnical theory, and contingency theory. The System theory stressed the need for conceptual skills to understand how an organization's department are interrelated and contributed to the organization. The sociotechnical theorists believed in integrating people and technology.

It was in late 20th century, Tom Burns (Sociologist) in collaboration with Gorge Macpherson Stalker (Psychologist) conducted a study, how the working environment affected a firm's organization and management systems; and the finding were

(1) There exist two types of working environments - Stable and Innovative,

(2) There are two types of management systems - Mechanistic (Bureaucratic classical theory) and Organic (Behavioural theory).

Concluded that the mechanistic approach worked well in stable working environment whereas the organic approach worked well in an innovative working environment.

Similarly, John Woodward conducted a study, to determine how technology affected organizational structure and concluded that mechanistic or classical approach worked well with mass-production technologies, whereas the organic or behavioural approach worked well with small batched products and long-run process technologies.

Henri Fayol, French mining engineer, the Father of Modern Management, was a pioneer in the study of principles and functions of management; developed a general theory of business administration, Fayolism. He made a clear distinction between operating and managerial activities, identified five major functions of management - planning, coordinating, organizing, controlling, and commanding. In addition to his five management functions, also developed fourteen principles that are still used today.

1.3 Organizational paradigm shift

By the end of 1990's, the technological growth made paper work as secondary mode of collecting information and on the contrary the skilled employees were not trained to do so, hence there originated a demand of developing a new set of sustaining skills so one can improve the learning capacity in an organization for the process of continuous success.

The organizations of twenty-first century, demands more brain work. The brain work, Intellectual capital (***IC***), is a concept, to enhance the organizational success keeping human well-being into consideration. It is the collection of all information and its disposal to generate profits, gain new customers, new product and hence improve the business. It has three components human capital (know how), structural capital (work process) and external capital (relation with customer). So, the concept ***IC*** tells about to keep the tangible and intangible domain of the organization separate.

According to ***Senge (1990; 1991)***, the organizations those who practices five disciplines - shared vision, personal mas-

tery, strong mental models, group learning, and system thinking are said to be the Learning Organization (***LO***). So, building a team with this spirit of personal learning with shared vision, 'whole' instead of parts perspective, with mental flexibility gives an ultimate formula for organizational success.

According to ***Shelton***, LO with continuous learning and the cultural norms wherein all stakeholders have the access to the infinite potential of information of the organization, are defined as Quantum Organizations (QO). Later ***Shelton and Darling***, discovered highly innovative ways to cope the modern world challenges by using psycho-spiritual based Quantum Skills Model (QSM). Quantum skills (QS) proposed in QSM (Table 1.1) are based onto physics, metaphysics, and psychology and can be applied to management. Practicing QS creates fundamental change in an individual as well as in the organization.

S.no.	Quantum skills	Definition
1.	Quantum seeing	The ability to see intentionally
2.	Quantum thinking	The ability to think paradoxically
3.	Quantum feeling	The ability to feel vitally alive
4.	Quantum knowing	The ability to know intuitively
5.	Quantum acting	The ability to act responsibly
6.	Quantum trusting	The ability to trust life
7.	Quantum being	The ability to be in relationship

Table 1.1 Quantum Skills Model

According to Charlotte D. Shelton, John R. Darling and W. Earl Walker, the key to Organizational excellence are four transformational leadership values (joy, hope, peace and love), four leadership transformational strategies (attention through vision, meaning through communication, trust through positioning and confidence through respect); and lastly seven Quantum skills (Quantum -Seeing, -Thinking, Feeling, -Knowing, -Acting, -Trusting and -Being). Reconstruction of mental model, quantum leadership, quantum leaders and their qualities, thinking pattern and everything that was existing came in a shifting procedure. The comparison between old and modern organizational perspective is in Table 1.2.

Newtonian organizations (NO)	*Quantum Organization (QO)*
They are of vertical control, hierarchical structures, focus on control, reductionist scientific process, top-down decision making, mechanistic models of design and process driven action. Just like the Newtonian science, each person in an organization was isolated, an atomistic unit. The environment in NO was controlling employees, clients, resources, and the environment; manipulating and coordinating the employees through step by step thinking process, not to entertain innovation and experimentation, resulted in incapability to adapt in the changing world. They see input and output as tangibles, focuses on strategy and structure. Their concern was to improve Quality work (external effect) rather than to focus upon the quality of thinking (the internal cause), resulting in lack of effectiveness and foresightedness. Problem solving methodology as inductive (not always successful), the nature of solution as objective and the final decision making was done based on intelligence only.	They holistic in nature, considering employees' technical-emotional-moral dimensions, believing in reality 'here and now', allowing free flow of information on the same plane as well as from top to bottom, new concept of no distinct boundaries QO worked on probabilities, human connectedness, change was an inherent nature; and as everything was interconnected in terms of time and space. Any change in small part affects the total system. Employees were able to participate in decision-making process, also the stakeholders do have their opinion in round table discussions. The input and output are intangible, nature of solution is subjective, uses inductive and deductive methodology for Problem Solving and Decision Making, involves creativity along with intelligence assuring the Quality of 'Mind' and 'Body' of the organization. At workplace through complex/paradoxical thinking Particles are encouraged to bring up concerns/opinions/suggestions in meeting/discussion. Everyone is accountable of his/her ideas.

Table 1.2 Comparison of NO and QO

According to Danah Zohar, the Quantum Organization have eight features and they are value-centred, all-inclusive, bottom-up, self-organizing, and emergent, defines potentiality more than actuality, flexible and responsive in-on-out the chaos situations, believes in the adaptive evolution through multiple alteration, thinks that presence and participation of every employee affects the organizational success, considers human and non- human dimensions. These are the Quality standards for the Particles for the proposed work.

1.4HUMAN PSYCHOLOGY - AN ASSISTANCE

There are various behavioural theories supporting organizational behaviour, the best suited and applied in this research work is the ***Theory of Planned Behaviour (TPB)***, an applied Behavioural theory, adopts cognitive approach to explain the Behaviour's (action-reaction) w.r.t human attitudes and beliefs. ***TPB*** evolved from the ***Theory of Reasoned Action (TRA)***, given by ***Fishbein and Ajzen (1975)***, states that ***intentions are the predictor of behaviour, and these intentions itself are the combination of attitude, one's own social perception of how people perceive 'me', and self-efficacy***.

According to TRA all human being 'Act-React' in the sensible manner w.r.t the information available to them, known as Predicted Volition (Will) Behaviour, PVB. Consistent focus on the 'Will' results as intention, an intermediate determinant of the behaviour but the intentions change w.r.t time, therefore, the Action-Reaction are not eternal. Concluding that PVB is not applicable to every 'Action-Reaction' loop. Through var-

ious experiment it was found that not only the attitude is the determinant of 'Action-Reaction' loop, but also depends on his/her informational world of contact like Subjective norms (Perceived social pressure) and Behavioural belief (outcome belief and outcome evaluation). Keeping in mind that intentions change, beliefs do change, information varies, everything changes w.r.t. time so everything needs to be reconsidered. Working on the feedback, Ajzen (1988), proposed a new framework, the TPB, stated that the business processes have three domains – system, operations and people; and proposed WPA index i.e. attitude for workplace. He defined attitude as a state of readiness, and by managing attitude one can direct the attention, guide the decision-making, trigger the desired behavioural response. Hence the emotional aspect of attitude depends on experiences and expectations. Concluding, a person's action-reaction (behaviour) depends on intentions which in turn depends on Attitude (behavioural belief), Subjective norms (social factor) and Control belief (presumed intentions).

Therefore, from above discussion we can say that an individual's 'Action-Reaction' depends on many factors like beliefs, values, genetic make-up, culture, society etc., but yes to an extent it can be modulated not changed.

2.0 Introducing Quantum Quality Model

In Quantum sciences, a particle is the fundamental entity of the matter, similarly an employee is the prime entity to define any organization. Here I have defined the Managers/Leaders/Employees (MLE) of an organization as 'the particle'; their inherent properties/characteristics to 'See', 'Think', 'Feel' defined as the Particle Domain (PD), and in their respective workplace action-reaction in terms of 'Know', 'Act', 'Trust' mentioned as their external properties/characteristics defined as Organizational Domain (OD). So, the whole work now onward is going to revolve around these terms, as in how the Particles develop Particle Seeing (PS), Particle Thinking (PT), Particle Feeling (PF) and there by develop Organizational Knowing (OK), Organizational Acting (OA), Organizational Trusting (OT) to meet the standards of QO and at the end will acquire Quantum Qualities (QQs) as shown in table 2.1.

Managers/Leaders/Employees – Particles		
Particle Domain	Organizational Domain	Quantum Qualities
Particle Seeing, PS: Acknowledging, Concentrating and Modulating intentions **Particle Thinking, PT:** Registering and Analysing – thinking; and Developing paradoxical thinking **Particle Feeling, PF:** Self-Cognizance	**Organizational Knowing, OK**: To 'know' the workplace **Organizational Acting, OA:** Readiness to 'act' in all situation **Organizational Trusting, OT:** To 'build trust' with other particles	**Quantum Self-ness:** Cultivated Intentions, Modulated Attitude **Quantum Preciseness & Coherence:** Paradoxical thinking, Flexibility in chaos **Quantum Constancy:** Emotionally stable, Aware-motivated, Fine sense of communication, Strong co-ordination

Table 2.1 Quantum Management Directory

2.1 Particle Seeing to Organizational Knowing

Foundational Physics concept	Supporting Psychological concept	Particle Domain	Organizational Domain	Quantum Quality	Action-Reaction of the Particle
Young's Single slit and double slit experiment	Perception is based on the observer	Particle Seeing	Organizational Knowing	Quantum Self-ness	Quality Perception

Table 2.2 Quantum Quality Progression chart I

2.1.1 Foundational Physics concept

In the beginning of the 19th century, Thomas Young performed a small experiment in which he placed a light source in front of a screen with two vertical slits in it. He covered each slit with a material and placed the screen in front of wall on which the light coming from the light source would shine on it after passing through both the slits.

When, with one slit covered the light source was turned on, the wall illuminated like the Figure 2.1 (Left) below. When both the slits were uncovered, however, the results made history and marked an end of the classical causality and an "either-or'' way of looking at things in the universe. What was obtained on the wall was not the sum of both the light beams passing through both the slits as expected, but instead an ar-

ray of alternating light and dark bands with the centre band being the brightest. Physics students around the world today recognize this pattern on the wall famously known as the "interference pattern" shown below in Figure 2.1 (Right). This interference pattern of alternating light and dark bands is a phenomenon of wave mechanics.

Figure 2.1 Young's Single-Slit Experiment (Left); Young's Double-Slit Experiment (Right)

This result when the light from both the slits interfere with each other, reinforcing at one place resulting in a bright band and cancelling in another place resulting in a dark band. This experiment showed that the nature of light was wave like because only the waves could create an interference pattern.

The world lived on believing that light is a "wave", for the rest of the century. Along the turn of the 20th century, a young clerk, Albert Einstein working in a Swiss patent office marked the beginning of the quantum physics by publishing four articles (in scientific journal in 1905) pertaining to a phenomenon called "photoelectric effect''.

The photoelectric effect is the phenomena of some metals emitting electrons when light is shone upon them. If the light is wave like, an alteration in either the amplitude or wavelength of light would induce changes in the rate of emission of electrons from the metal. However, the experimental results did not correlate with either of the two predictions made by this theory. Based on Max Planck's previous discovery of quanta, Einstein proposed and proved that a beam of light was not a wave propagating through space but rather a collection of discrete wave packets called photons. Both the theories were right.

So, it was light when shone through two vertical slits produced an interference pattern possible only for waves, and when shone on any object had a photoelectric effect possible only if the light were composed of photons. This would mean that somehow, the light comprises of photons (particles) behaving in a wave like manner. A new theory was born called the wave-particle duality which proposed that every elementary particle, including photons exhibits the properties of both particles and waves. This was called the wave-particle duality theory and became the central concept of the quantum mechanics.

Coming back to the Young's double slit experiment, repeating the experiment with the electron source (instead of light) the result remained same. The experiment was tried with different electron flux, with only one slit open other closed but the results were same. Later in the attempt was made with both the slit open and electron di- tion that this time the particle detector wa :he slits and the photographic plate to obser slit the electron passed through. The observation on the photographic plate was NOT an interference pattern but just two bright bands corresponding to the double slit. Hence, instead of acting like a wave, the electrons this time behaved like particles.

This experiment was an extreme break from the idea of an objective reality or one where the laws of nature have a special Platonic existence. If the physicist looks for a particle (uses particle detectors), then a particle is found. If the physicist looks for a wave (uses a wave detector), then a wave pattern is found.

Conclusion: The two-slit experiment is a good test of the role of the observer in the quantum realm. The observer is an important entity and its effects on any quantum experiment cannot be ruled out.

2.1.2 SUPPORTING PSYCHOLOGICAL CONCEPT

Physiologically, perception is directly related to a human being's senses. All the senses are a part of sensory system which is a part of the human brain's nervous system which is responsible for processing the information received by the sensory system. Each of the sensory organs has 'a respective receptive field' which is defined as that specific part of the living universe to which the receptor (sensory-organs) respond, as for example - the eyes would receive information and perceive selectively from an entire receptive field of the universe, the process we define as "seeing". This process is called selective perception wherein out of numerous perception targets the eyes "see" and "observe" only those targets which are relevant for information processing for our brain. Hence every day, even without our conscious intervention we make choices in various events occurring in the universe based on our selective perception.

Observation, an image formation based on input through the senses. The belief, values and the resulting perception is the driving force of how the person would perform in a situation. Hence, perception develops attitude and allows the processed observation to become a factor influencing his or her Action-Reaction w.r.t the situation. Generalizing, one tends to "see what he or she want to see".

A sense of stability in changing world comes by Perceptual Constancies. To change means to 'see' differently; with a constant practice one can become free from perceptual constancy and leads to acknowledge the change and accept it in personal as well as professional life. Therefore, freeing oneself from traditional perception makes change easy. Rather our intentions guide our perception and we can turn make conscious choices of events, the brain can be conditioned to understand and select the intentions clearly, and in turn aligning the perception with one's intentions/desires. The brain "sees" intentionally and makes a conscious choice.

Conclusion: What conscious choices the brain would make of an event is completely based upon the perceiver's intentions/desires. In turn, perception is a blend of perceiver's attitude, his or her internal state (values and beliefs, genetics) and external state (surroundings).

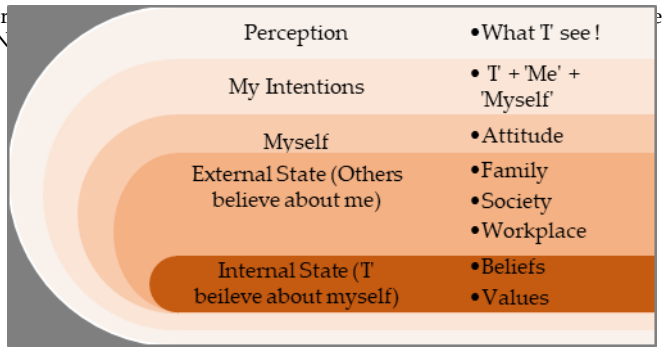


Figure 2.2 Conscious development of the intention and there by Perception

2.1.3 Developing concept of Particle Seeing and Organizational Knowing

Now we know from above discussion that the personal goal/intention derives its energy from the personal attitude and having the conscious choice to perceive at workplace is an important skill for effective working. So, what sets one Particle apart from the others is his/her ability to '***Sees***' the personal and organizational goals. And if the Particle's goals/intentions coincides/aligns with that of the organizational goals/ intentions then the task accomplished is said to be the Quality work output.

Concept: Particle Domain

Constructing an attitude by a proper understanding of workplace (environment) and scrutinize it based on personal values and belief, cultivates a clear intension resulting widened perception horizon; is seeing clearly, termed as Particle Seeing.

In an Organizational context, A Particle is said to be determined when he or she is clear in his or her intentions at workplace.

Similarly, a group/organizational goal/intention derive its energy from the common success that as a group/organization is going to achieve after the common work done. The organizational goals/intentions are simply the manifestation of collective Particles goals/intentions. Also, all Particles in an organization must have the knowledge as well as understanding of what they are seeking to create together, why they need to co-exist, how to work in sync for a common accomplishment, along with freedom, equal opportunity, merits-demerits, acknowledging strengths-weakness, and most important proper interaction among the Particles at workplace. So, selecting, organizing and interpreting information with an equilibrium between internal state and external input of the group/organization then Action-Reaction of the Particles generate Quality performance at workplace.

Concept: Organizational Domain

A collective knowing of Particles about Organizational -purpose, -vision, and values; along with the Degrees of freedom (Do's and Don'ts); Opportunities for professional and personal growth; Quality scale for the work, is Organizational knowing.

In an organizational context, the Organizational Knowing generates an impulsive force that generates mutual understanding, realization of courage, fosters risk-taking among the Particles and it contributes to a personal/professional/organizational Performance.

One thing is clear from above discussion that Particles Seeing and Organizational Knowing are deeply intertwined. Organizational aspects like 'what' – the vision, 'why'- the purpose, 'how' – the processes, assumption, context, inquiry for limits, which skills need to be practiced, scope of improvement, forgiven-acknowledged for and lastly standards of quality, everything is deeply rooted at the Particle level. So, once the Particles are clear with all the aspects of the organization and their alignment themselves with Organizational vision, purpose and processes result in Quality work output and in turn high organizational success rate.

With this ***Particle seeing and Organizational Knowing,*** the Particle will be able to cultivate a conscious choice of his/her intention w.r.t workplace, and by knowing and understanding his/her workplace with facts and correct figures tends to align the intentions to produce Quality Performance; and so, the Action-Reaction he/she will exhibits is known as ***Quality Perception*** and the ***QQ***s he/she will acquire is known as ***Quantum Self-ness.***

Quantum Quality: Quantum Self-ness

The stated plans to act is known as Intention, Particle Seeing is the Cultivated Intention i.e. a Conscious choice of intention(s). And a conscious Organizational Knowing i.e. changing one's attitude for the quality work and the people around you, termed as Modulated Attitude.

In an organizational context, the Particle- MLE exhibits a sense of I, Me, Myself for the organization through PS-OK and Quality Perception, an Acquired Quality is known QQ - Quantum Self-ness.

Action – Reaction of the Particle (s)

Quality Perception - The Particles will exhibit the following:

1. *Not assuming anything as the face-value, know the truth behind.*
2. *Listening and Registering is better over hearing and sensing.*
3. *An awareness of making the finest perception when there is an equilibrium between Internal state the external state.*
4. *A positive attitude toward everyone and everything, else become an inactive observer and mute listener, and gather more and more information from the environs.*
5. *Communicate sensibly in normal as well as challenging situation, otherwise knows any wrong input going to generate wrong impression to self as well as to the group and thereby to the organization.*

2.2Particle Thinking to Organizational Acting

Foundational Physics concept	Supporting Psychological concept	Particle Domain	Organizational Domain	Quantum Quality	Action-Reaction of the Particle

Heisenberg Uncertainty principle; Bohr's principle of complementarity; Quantum Tunnelling	Thinking thought loop; Problem-solving; Decision-making; Intelligence	Particle Thinking	Organizational Acting	Quantum Preciseness & Coherence.	Quality Thinking

Table 2.3 Quantum Quality Progression chart II

2.2.1 FOUNDATIONAL PHYSICS CONCEPT

In order, to develop an intuitive understanding for Quantum physics ***Niels Bohr and Werner Heisenberg*** introduced the principles of complementarity and uncertainty respectively in late twenties. Bohr's principle of complementarity had resolved the dilemma by pointing out the particle-wave both aspects of nature are complementary, which means that it is not possible to describe any physical observables simultaneously in terms of both particles and waves.

Heisenberg developed a new approach to quantum mechanics, he took quantities such as position and velocity and represent them a new way. He conducted an experiment to measure the position of an electron experimentally, the more he tried to measure the position the more uncertain was the momentum measurement and vice versa. Heisenberg reasoned for this uncertainty is a fundamental feature of quantum mechanics, not a limitation of any experimental apparatus. Finally, Heisenberg put forward the Uncertainty principle and developed a key piece of quantum theory, the Uncertainty principle, with profound implications. This principle has a peculiar position in physics and regarded as the hallmark of quantum mechanics.

During the study of radioactivity, a process of radioactive decay wherein an unstable nucleus decays to a stable nucleus emits particles and energy. But something strange was also observed during the radioactive decay i.e. electron tunnelled out of the nucleus or electron captured by the nucleus, this effect was termed as *tunnelling or penetration of particle (electron)*. In 1927, Friedrich Hund was the first to notice the possibility of the phenomenon of tunnelling in his study, hence stated that a particle - photons, electrons, nuclear particles, even atoms and molecules, can surmount/tunnel the potential barrier even without having sufficient energy to cross which was classical impossible. So, Quantum mechanically, the particle has a very small probability tunnel to the other side, thus crossing the barrier. In other words, the particle could borrow energy from its surroundings to tunnel through the potential barrier or "penetrate throughout", paying it back by making the reflected electrons more energetic than they otherwise would have been.

Conclusion:

(1) Complementarity was thus originally conceived as a relationship between pairs of descriptions, or phenomena, which are mutually exclusive but nevertheless both required for a complete account of the physical system under consideration

(2) Uncertainty principle refers to the broad statement that there are pairs of observables for which there is a trade-off relationship in the degrees of sharpness of the preparation or measurement of their values, such that a simultaneous or sequential determination of the values requires a nonzero amount of un-sharpness.

(3) The principle of tunneling can be shown with a simple way, ex. particles like photons, electrons, nuclear particles, even atoms and molecules, can surmount mountains, even though they lack the energy to reach the peak. They reach the other side of the mountain by tunneling the barrier. The impenetrable, insurmountable barriers, which physicists call potential barriers. Even with the lack of energy, particles certainly succeed in penetrating the apparently insurmountable potential mountain.

2.2.2 SUPPORTING PSYCHOLOGICAL CONCEPT

Thinking is an incredibly complex process and a most difficult concept in psychology to define or explain. The process and the result of thinking both depends on the internal state of an individual and his/her purpose of thinking. The initiator for every Thought-Thinking Loop is some doubt/problem /wants, followed by the search for possible ends/solutions /fulfilments assessments of the same based on past experiences/facts/evidences and lastly the best suited choice(s) decided as for implementation.

According to Dr. Edward de Bono (Maltese physician, psychologist), thinking is a skill and it can be improved just like any other skill. In fact, he proved that that thinking skill can be developed or improved through training and practices. Thus, PS-DM and all types of thinking can be developed and improved. Quantum leap thinking – A guide to the mind, a book by James J. Mapes, describes, thought quality can be improved by reconsidering thoughts, draft imaginations, challenge assumptions, taking risks, managing change, and finally breaking the traditional thought clutches.

Conclusion: Basically, thinking and thought is a cyclic process of Original thought, thinking as process and ending to a Result-thought. Original and the final thought can never be the same, thinking is an irreversible process, but rethinking is possible.

Generally, Problem-solving (PS) is personal as well as collective contribution to the though-thinking process consists of the process of gathering the information from past experiences related to the problem, processes the workable strategies and inspecting the consequences for most probable solution(s) and arriving to a decision as solution. And a process through which one reaches to a conclusion is known as Decision-making (DM).

In the case of complex problems like dilemma, contradiction and oxymoron, PS-DM becomes mixture of basic rules and rules that require cognitive flexibility, the ability to adjust prior thoughts or beliefs and explore alternative strategies in response to the complex nature of the problem.

Conclusion:

(1) Thinking-Thought Loop helps to define problem, diagnosing its causes, designing its possible solution and finally a decision;

(2) Problem-Solving is a thoughtful process of defining, diagnosis, designing, deciding, feedback incorporation if any and the final decision;

(3) Decision-Making is a conscious choice of yes/no to a thought to process/proceed with or not.

Uncertainty, conflicts, confusions, and disorder is a way to define Chaos. Every event during chaos is unique and unpredictable, demands to strategize operations differently, needs to address competing variables accurately; redefine the purpose(s), aspiration, values and beliefs; and lastly the either-and-or approach to the PS-DM. This encourages and transforms the Particle towards greater uniqueness while making the choices in the process of thinking and PS-DM.

There is no 'right' or 'wrong' thinking preferences but the understanding of how one thinks 'the very moment' and 'why' makes a difference. Different individuals have different thinking styles, so if thinking is what one does to achieve the goal, then intelligent thinking reflects how well he/she does it. The process of thinking and the concept of intelligence is closely related as thinking is naturally endowed skill and the intelligence is the learned ability to think properly enabling one to understand the world and cope with its challenges.

To deal with chaos situation one must break the tradition thinking trap and plans to transform, enlighten, and think the situation with different perspective. Complex or paradoxical thinking is one of the way to break the traditional thinking trap. According to four-point model identified by Ven de Ven and Poole, used by De Cock and Rickards in their own investigation into developing a paradoxical perspective among managers. The model given by them improves, encourages, transforms, and enlightens the managers with paradoxical perspective in an organization. The same using here i.e. to acknowledging the Chaos/Complex situations, determining Particles' status in Chaos/Complex situations, establishing a new work-frame in Chaos/Complex situation will help the Particle to realise that the present work-frame is inappropriate, time to set a new work-frame has come and to try and test new approaches to achieve goal and finally establishing new work frame.

Psychologically, to change the thought pattern is not easy because any deliberate change to the thought process brings conflict but this can be overcome by upgrading one's knowledge in a domain and this will help to sustain and survive in the chaotic/complex situation.

Conclusion:

(1) Intelligence is the measuring unit for thinking, and it denotes how uniquely one can think at different levels, in different directions, effectively and efficiently.

(2) In an organizational context, Complex/Paradoxical thinking accentuates the conceptual approach by not focusing on defending statement but attempting to resolve the contradictions one confronts at personal or professional front. In a way it minimizes distortion and categorize the choices when it comes to PS-DM.

2.2.3 Developing concept of Particle Thinking and Organizational Acting

Every mental activity involves both side of the brain - the upper right quadrant visualizes, creates and intuits, the lower right quadrant inspires and motivates, the lower left quadrant organizes and the upper left critiques; therefore, to perform intelligently in personal, professional, and organizational situations one must go for 'whole brain' thinking. Therefore, Whole-brain thinking process is the best way to encounter, sustain and success the normal as well as changing scenarios.

Thinking alone is fast and easy, until the reality matches with expectation things are fine but the problem arises when expectation does not match with reality, a situation of conflict, dilemma, confusion, paradoxes and contradiction etc. If some dilemma is there, then either-or choice in which one selected alternative becomes a solution. In a contradiction situation one has only one correct choice and can be worked simultaneously. But what if more than one option is right as a solution, a Paradoxical situation/chaos where everything is unclear and total case of confusion, therein one applies either-and-or choices (all are equally true), and all the choices have equal probability to be a decision. So, developing a multi-dimensional model of thinking with the purpose to make new solutions possible i.e. 'that is outside the box' by changing the thought process in a way to have a better choice for PS-DM.

Concept: Particle Domain

To think about a thought by 'registering all it's cause', 'accounting it with respect to all situation', 'multi-level execution', 'standards of recitals', 'considering its probable consequences', 'noticing it's fall-back', is introduced as Particle Thinking.

In an organizational context, complex/paradoxical thinking accentuates the conceptual approach by not focusing on defending statement but attempting to resolve the chaotic situation one confronts at personal or professional front. In a way it minimizes distortion and categorize the choices when it comes to PS-DM.

The Collective thinking is the manifestation of co-operative efforts of all the Particles towards a common problem/situation wherein each Particle plans-processes-projects ones Thought(s). Whenever there is a gap between expectation and reality or difference of opinions within the group/organization then by considering everyone's point of view through allowing dialogues, opinions, concerns, divergences, pressures, and what comes is not a decision but an agreement to the set of tentative solutions w.r.t to the problem/situation. This reflects a readiness to act for a common purpose and that's how difference among the Particles and the gap can be minimized/nullified. Such decision is a creative invention, a mutual verdict with the scope of wide applicability hence contributes to high level of quality at workplace. So, both standalone and collective both can generate ideas known as creativity and its applicability is termed as the idea is innovative.

Concept: Organizational Domain

The Particles' collective readiness 'to act' in an organizational setup, means to have a sense of participation in 'whole', an attitude

of being creative and innovative, a continuous learning approach within and without chaos, and flexibility in thinking to sustain in chaos is termed as Organization Acting.

In an organizational context, Organizational Acting is PS-DM for a common problem/situation wherein the Particles are expected to identify, analyze and solve, and make appropriate decisions w.r.t same; and it cultivates 'a sense of acting for/contributing to the wholeness' i.e. Creating something new with contribution and practically applying to generate profit.

The channel gate to enhance one's thinking is to be creative and innovative, the primary resources to sustain in change and uncertainty. According to Harvard Business School's Theodore Levitt, generating new ideas considering application viewpoint is Innovation; and thinking new things incorporating both innovation and a task of problem-solving is Creativity. In an organization, creativity is not a single Particle task but a joint participation of Particles at workplace.

2.3.4 QUALITY MATHEMATICS

Quality Mathematics is a proposed term for the mathematical representation of the concepts introduced in Quantum Management, Q^2M and it shows a gradual progression of the concepts in this research work.

Applying Quantum science, a science of probabilities, to management sciences, predicts that to any problem, there exists a set of solutions, and each has an equal chance of being chosen as "the decision". Following this linage, during the process of PS-DM the Particle(s) undergoes introspection/discussion that leads to an environment of 'Pool of Thoughts' – a set of probable solutions, and all of them seems to be equally valid or non-valid or to some extent can be the decision to the given problem/situation. Later it became a decision statement with the mutual consent.

The interpretation of decision is as follows:

Decision, $PD_i = (PD_1 + PD_2 + PD_3 + \ldots\ldots PD_N)$

and/or

Probable combination of $PD_1, PD_2, PD_3 \ldots\ldots PD_N$, **-- 1**

Where PD_i = Probability of decision; i = 1, 2, 3 … N

Thus, the Action-Reaction the Particle will exhibit is known as ***Quality Thinking*** and the ***QQ***s he/she will acquire is known as ***Quantum Preciseness & Coherence.***

Quantum Quality: Quantum Preciseness (a, b, c) & Coherence.

(a) To every probable solution there exists a probability to become a decision, also all probable solutions have certain relationship to describe situation of a problem at a given time (Complementarity principle).

(b) Whenever there is a choice for the decision only one probability exists, and rest will subdue, but one cannot deny its relationship with the rest probabilities. The measurement of success is very well defined in terms of decision outcome (Uncertainty principle).

(c) During the process of decision making, the probable solution which is foremost suitable to a given problem in each situation can be a combination of 'few one' or 'can be a single probable solution', but the final decision statement would be the one with all qualities to achieve success. (Tunnelling effect).

When all the particles think with Quantum preciseness and are consistent while PS-DM process, the state is known as Quantum Coherence. This is a state of flexibility of beings to be precise and coherent at workplace in every situation with/without chaos.

Action – Reaction of the Particle (s)

Quality Thinking: The Particles/MLEs will act the following ways:

(1) Paying attention to the workplace issue/situation – Understand it.

(2) Prepare oneself to handle the workplace issue/situation – Gather information.

(3) Participates in generating new ideas, and communication the same to others – Idea generation.

(4) Enlists the consequences of the generated idea – Success percentage.

(5) Review success percentage or the points to be taken care of while operation of the 'new idea'– Generate opinion.

(6) Generate creative idea as a solution to issue/situation - Creative solution(s)

(7) Executes the creative idea at workplace and its market applicability - Commercialization.

2.3 PARTICLE FELLING TO ORGANIZATIONAL TRUSTING

Foundational Physics concept	Supporting Psychological concept	Particle Domain	Organizational Domain	Quantum Quality	Action-Reaction of the Particle
Black body radiation; Photoelectric effect	Feeling; Emotions	Particle Feeling	Organizational Trusting	Quantum Constancy; Normalization of emotions	Quality Feeling

Table 2.4 Quantum Quality Progression chart III

2.3.1 FOUNDATIONAL PHYSICS CONCEPT

From the Quantum revolution period, the concepts related to this proposed work are black-body radiation and photoelectric effect. All the hot things/body glows emit radiation ranging from the red colour to violet colour, the brilliant white light emitted from the surface of the sun is an example of black-body radiation. This light produced by glowing hot objects is called the black-body radiation. It was found that these radiations emitted by the objects were temperature dependent; hotter the objects radiate more energy, and the peak of the emission spectrum is toward higher frequencies of light. Experimentally, it is observed that heating an object/body emits radiation primarily in an infrared region of the electromagnetic spectrum which human eyes cannot see, further it begins to glow a dull red the visible range to human eyes, heating further on it becomes bright red, then orange, then yellow, and lastly it crosses the visible portion of the electromagnetic spectrum. Wilhelm Wien worked out empirically for the concept of Black body radiations for the high frequencies and observed to

be true and termed as Wien's law.

In year 1900, December, a discovery made by Max Planck, presented as a paper to the scientific community; "On the Law of Distribution of Energy in the Normal Spectrum", described the spectrum of a black-body radiation at all frequencies. In his paper, Planck had made a revolutionary assumption that black-body radiation was produced by many microscopic oscillators and that the total thermal energy of the black-body was not distributed continuously among these, but rather in finite and discrete portions. In other words, the energy was "quantized" means the value of energy is an integer multiple of some small unit of energy. Planck showed this small energy element is proportional to the frequency of the oscillator. The constant of proportionality, which he labelled h, is known as Planck's constant-it is a fundamental parameter of quantum mechanics. Its value dictates the scale level at where classical physics fails and a theory of quantum physics is needed.

The second phenomenon that could not be explained by the classical wave theory of light was the photoelectric effect. It had been noticed that when light waves impacted on the metal surface, it gives energy to electrons on the metal's surface and removes them from the atoms to which they are bound. Finally, they are free to move and produce an electrical current. This is known as photoelectric effect.

In 1902, Philip Lenard observed experimentally, that the energy of the freed electrons was independent of light's intensity imposed upon them, but an individual electron's energy is affected by the imposed light colour (means frequency) and more stranger is that there existed a cut-off frequency below which no electrons were freed; resulted a requirement an explanation.

In 1905, a brilliant physicist, Albert Einstein, published a paper titled, "On a Heuristic Viewpoint Concerning the Production and Transformation of Light", explained the photoelectric effect using Planck's quantization principle. He theorized that the energy in a light ray was not continuously distributed but consisted of a finite number of "energy quanta" that could not be further divided, known as Photon. One-coloured light consists of a large but finite number photons of light, each with an energy given by the product of Planck's constant and the frequency of light ($E = h\upsilon$). In short, Einstein demonstrated, using the photoelectric effect, that light is made of photons, and that the photons of high frequency light have more energy than the photons of low frequency light.

Conclusion: The mystery solved, Einstein, using the photoelectric effect proved that light is particle-like and Young, using the phenomenon of interference proved that light is wave-like.

2.3.2 SUPPORTING PSYCHOLOGICAL CONCEPT

Everyone is born with feeling, but thoughts and emotions are built by his or her encounter with the environment. In general, both the feeling and the emotion, are self- induced interaction between the Particles and their respective environment, but the distinction between the two is like the effect and consequences respectively. Feelings arise within the Particle (physical body) whereas emotions are the Action-Reaction characteristic exhibited by the Particle back to the environment.

The first step of the feeling progression is the 'initial feel', an input from the environment to the Particle. Then a process and the final step in progression is the 'final feel', an output back to the environment (i.e. as the Action (within the body) - Reaction (outside the body)). The second stage in the progression, is a whole process of acknowledging, analysing, judging, and confirming the initial feel based on internal self (i.e. needs/ urges, ideas, beliefs, expectation, related information) and a giving a mental decision (supporting/rejecting the 'feel'). This second stage draws a difference between the 'feel' and the 'emotion' i.e. whatever outside the body is the 'feel' and the process that undergoes within the body the abstract one, thinking/mental process defined as emotions till an extent the output given back to the environment w.r.t the initial feel.

Conclusion: A thought, an emotion, and the feeling are just the periods of focus on certain things. The mental fact which we express by liking or disliking is what we shall term "feeling". We have thus two simple feelings, liking and disliking (the quality of feeling). The state of our feeling depends on the strength of impression that arouses them. An emotion is the thrill or flutter of experience or consideration. It is a rude stroke, felt, but not yet fully constructed, by the mind. Emotions are of three kinds; some of them agreeable, some are disagreeable, and some indifferent.

Different literatures state different opinion about the components of feeling, but the researcher is confining to the four components of the feeling and they are physical sensation, instincts, emotions and intuitions; and hence, the emotion is a component of feeling.

(1) The physical sensation is the first component of feeling that acts as 'a transducer' between the Particle and causes from the external world/workplace.

(2) Instinct, the second component, something that is inherited, unlearned, involuntary, unreasoned, an inward impulse; passive but protective.

(3) Emotions, the third and a highly complex phenomenon that typically activates neural, cognitive (mental), and motor processes, is caused by mind, body, and self. Emotions are the collective reaction (s) w.r.t to external information, starting from perception to action, scrutinizing the same based on internal beliefs, facts-figures and experiences. The Particle's emotional behaviour is characterized by his/her biological build-up (mental and genetic condition), cultural values and the cognitive domain.

(4) Lastly, intuition, fourth component, is the inner knowingness (knowledge of soul), 'the capacity to sense messages from our internal store of emotional memory – our own reservoir of wisdom and judgement. This ability lies at the heart of self-awareness and self-awareness is the vital foundation skill for emotional competencies'.

Conclusion: To every thought there is a feeling (personal or objective) and thereby a negative or/as well as a positive emotion or vice versa. (Analogy: To every action there is

equal and opposite reaction, Newtons third law of motion)

2.3.3 Developing concept of Particle Feeling and Organizational Trusting

The perception of the Particle is shaped by Particle seeing, Particle thinking channelizes thinking-analysing-interpreting domain into correct direction, creativity and innovation accelerates his/her path of PS-DM, but what is it that confirms that the collected information from the information pool is one hundred percent correct and worth. This is where I want to introduce the concept of Particle Feeling.

Registry through senses acknowledge the information i.e. 'initial feel', whether information is required or not is decided by the Particle's-Self based on needs/urges. Where Particle-Self means 'inner feel', one's reservoir of wisdom and judgement driven by facts, figures, experiences, intuitions which supports/rejects the sense registered information. Finally, a decision to act, 'Action-Reaction', a confirmation to the information chosen is worth for the success/profit, known as 'final feel'. At all stages the 'feel' is different and varies from Particle to Particle. This 'Continuum of feeling' is a simple way to denote the process of Feeling in a Particle, Figure 2.4.

Acknowledging, understating, and a conscious choice to decide what to seek outside that coincides/align to the personal intentions/goals and then picking up an information from the informational pool will be the Correct/positive/happy Feel to the Particle and resulting the maximum output and there by quality performance at the workplace. This is known as Particle Feeling; the pictorial representation of the same is by rearranging the Figure 2.4 as Figure 2.5. The Quality mathematics of the same is in the next section, as Equation 2.

Figure 2.4 'Continuum of feeling', Particle feeling

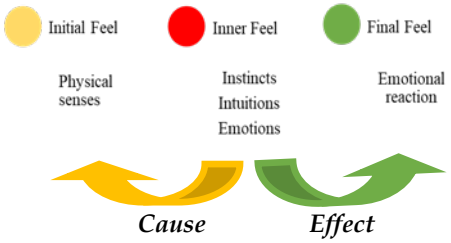


Figure 2.5 Inner-feel is the cause of Initial- and Final-feel, Particle Feeling

Concept: Particle Domain

A feeling phenomenon from inward to outward, the 'Continuum of feeling', registering the information through senses based on inner feel and deciding final feel; is termed as Particle feeling

In an organizational context, in the Continuum of Feel the most important is the inner-feel i.e. the awareness about 'Self' and 'others'. In other words, both initial- and final-feel are inner-feel dependent. So, the inner-feel decides - what to see (intentions), what to account for thinking (thought), and what to react back (emotional reaction) to the surrounding/workplace. Also, the inner feel resides within the Particle whereas rest other feel persists outside the Particle's physical body.

Through Particle feeling the Particle will be able to say that 'I am aware of myself', 'I know my strengths as well as weaknesses', 'I acknowledge my emotional capabilities', 'I realize my behaviour (Action-Reaction)' in a given situation etc. Similarly, for collective goals/intentions/issues/problems each Particle should be aware of others' strengths, weaknesses, emotional capability and their behaviour. And this can be done through a fine sense of communication, a strong co-ordination, closeness and connectivity among the Particles and a collective awareness, regulation, motivation for the Organizational contribution, mutual empathy and adeptness will lead to quality work output from the group/organization.

Concept: Organizational Domain

If one is clear in 'wants', think multidimensional, takes the inner consent, then performs the act it is said to be an ideal emotional state. Therefore, by reverse approach, not from outward to inward but from inward to outward, seeing the information w.r.t clear 'wants', thinking workable dimensions creatively with best practices, and most important conscious act – 'the best I can do' to produces a quality work, cultivates 'a Trust within Self', known as Particle's Emotional Equilibrium State.

All with emotional equilibrium state the Particle will have a fine sense of communication and a strong co-ordination, will build and win the trust at workplace, this closeness and connectivity among the Particles for a common organizational benefit is termed as Organizational Trusting.

2.3.4 Quality Mathematics

In an organizational set up, through Particle feeling the Particle transforms his/her input information to most relevant output result. Not everything felt always reflected in the result, but the impression of each step can easily be observed in this whole process of Particle feeling. So, mathematically same as in Equation 2.

Particle Feeling (PF) = Physical sensation (information)
+ Instincts (needs/urges)
+ Intuitions (gut feeling)
+ Emotions (reaction/felt)

PF = ps + ins. + int. + e **--- 2**

2.3.4 Normalization of Emotion

In normal situation, it's easy to have emotional stability but if there is chaos inside and at workplace then there arise 'an emotional turmoil', 'the inner tug of war', feeling restless

'within' and 'Particles drifting apart'. This is proposed as Emotional Potential difference, a difference between internal (own) and outer (workplace) world of the Particle and among the Particles at the workplace. So, by collecting the strengths, fixing the negative aspects, making sure of no fullback, cultivating an equilibrium at within as well as at workplace allows the whole energy to hit precisely the common goals/intentions/issues/problems for the quality performance.

To attain the emotional equilibrium, the Particles need to convert his/her negative energy to the minimum neutral energy level, so that the overall positive energy cannot get affected by the negative energy. Therefore, uplifting/training negativity to some threshold or to a reference/neutral energy in such a way that it does not affect the over all work quality. By doing this, the strengths become the driving force and uplifted/trained weakness will support the process of PS-DM. Similarly, for the group the weakness of the group can be trained/uplifted to certain level so that it doesn't affect the overall quality but supports the process of PS-DM and the group performance results in quality work output Figure 2.6.

Concept: *In an organizational context, the conscious efforts for mounting one's/group weakness (Negative energy levels) for a personal/professional/ organizational benefit in such a way that it does not go below a reference level (common benefits ground) and making one's/group strengths as continuous force of sustainability, announces the Particle/Group into a state of emotional stability, the phenomena is known as Normalization of emotions.*
To 'Normalize oneself' means to attain the emotional stability, by 'making best use of strengths' and 'tapering weaknesses'.

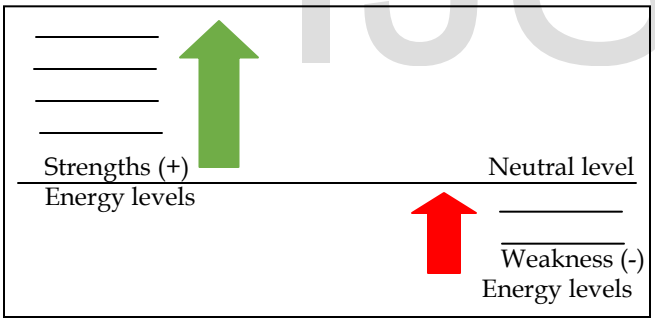


Figure 2.6 'Normalize' the emotions - Normalization or Emotional stability through Particle feeling

The Action-Reaction the Particle will exhibit after acquiring the Particle feeling and organizational trusting is known as Quality Feeling and the QQs he/she will acquire is known as Quantum Constancy.

Quantum Quality: Quantum Constancy
Quality of being emotionally intelligent as in self aware, self-regulated, motivated on personal front and having empathy and adeptness for social relationship, allows energy to flow positively in all directions in terms of fine judgement, conversation, commitments etc. Also, keeping in mind the weaknesses are to be tapered or to be skilled in a way it provides a proper threshold to support the strengths rather than to acting as energy drainer for the one's Quality Performance.

Action – Reaction of the Particle (s)
Quality Feeling: The Particles/MLEs will, Particles will cultivate
(1) A knowledge of one's inner capabilities (strengths' force) as well as same for the group;
(2) A consideration of one's weaknesses (negative energy) as well as same for the group;
(3) Mutual learning to channelize strength forces and negative energy in proper direction to produce Quality-output at workplace.
(4) Group stability, a state that is extremely virtual, once achieved help the Particles to make high quality decision in/out of chaos at the workplace.

3.0 Quality Mathematics for Organizational Problem – Strategizing a Probable- Workable- Solution

The Probable-Workable-Solution (PWS) is an operational-cum-abstract routine performing task, a sequential procedure to find out the solution to a given problem/situation in a mathematical way. This sequential procedure comprises of five stages - Input informational pool, Processing the information, Range of probable solutions, Consequences of the probable solutions, Probable Workable Solution.

Stage -I is purely Particle seeing i.e. considering, acknowledging, and electing all the information relevant to the organizational problem/situation. Stage-II, -III, and -IV is combination of Particle thinking and Particle feeling wherein the Particles analyses the information, mentally acknowledge all the probable solutions, consider their probability of being success/failure, the respective consequences w.r.t the organizational problem/situation in the stipulated time. Lastly Stage-V, is a combination of solutions and the feedback of all the particles, and to arrive at a unanimous solution(s).

Mathematically,

(1) During PS-DM, the Particles see, think, and feel for the given problem/situation and afterward they reach to an array of the probable solutions w.r.t. the problem/situation at workplace.
(2) They propose a Range of probable solutions – RPS (Eq –3) for a given organizational problem/situation.

$$RPS = PS1 + PS2 + PS3 + \ldots\ldots\ldots\ldots + PSN \quad \text{---- 3}$$

(where PSN – probable solution; N = 1,2,3, ……. N, positive whole number)

(3) The Particles know about every probability of solution in details and are aware about its consequences (pros and cons). The probable-workable-solution for the organizational problem in each situation is a summation of Positive-consequences and Negative-consequences (Eq –4, Eq –5)

$$PWS = PS_1 (CQ_{11} + CQ_{12} + \ldots\ldots + CQ_{1i}) + PS_2 (CQ_{21} + CQ_{22} + \ldots\ldots + CQ_{2i}) + PS_3 (CQ_{31} + CQ3_2 + \ldots\ldots + CQ_{3i}) + \ldots +$$

$+ PS_N (CQ_{N1} + CQ_{N2} + CQ_{N3} + \ldots + CQ_{Ni})$ **--- 4**

(Where, PWS – probable workable solution;
PS_N – probable solution;
CQ_{Ni} – Both the consequences, profitable/successful or non-profitable;
i = 1, 2, 3, ····· fixed and small value)

$PWS = \sum PS_N (CQ_i)^* + \sum PS_N (CQ_i)^!$ **---- 5**

$(CQ_i)^*$ = consequences resulting into a profitable/successful attempt
$(CQ_i)^!$ = non-profitable/unsuccessful attempts of consequences

(4) Positive-consequences register the validity of the respective probable-solution whereas the Negative-consequences registers 'not to opt' this one or can be a threat if this possibility is chosen. So, all profitable/successful consequences attempt will be counted in probable solution whereas non-profitable/unsuccessful consequences will be considered as a threat/feedback w.r.t. same probable solution. Concluding, a unanimous solution(s) (Eq – 3.6).

$PSW = \sum PS_N (CQ_i)^* + PTC$ **---- 6**

(PTC – points to be taken care of while taking a decision)

Therefore, PWS strategy is the collective efforts to 'see-know', 'think-act', 'feel-trust' by the Particles to have a unanimous decision for the organizational success/profit. Any incoherence in the sense-perceive, thought-think and emotion-felt results in ambiguity in an organization. So, with a proper coordination and clear communication, and work in synchronicity is must for hitting the organizational targets.

Concept: Quality performance (QP)/Coefficient of Quantum Quality

Normally the efficiency of any thing is given by the ratio of output to input, applying the same logic here I have proposed a term Quality Performance/ Coefficient of Quantum Quality as the best output given from the available input at the workplace.

Quality performance (QP), Coefficient of Quantum Quality is defined as the best output given by the Particle/Particles with given input information.

In an organizational context, Quality Performance (QP)/Coefficient of Quantum Quality speaks about the profit/success rate of the efforts given by the Particles in an organization from the available information given to them at the workplace.

Mathematically,

QP, the co-efficient of Quantum Quality is represented as Eq - 7, and its various case of the same is given as Eq - 8a, Eq – 8b, Eq - 8c.

$$QP/\text{Co-efficient of QQ} = \frac{\text{Output performance}}{\text{Input information}} \quad \textbf{------ 7}$$

(1) If QP = 1, **------ 8a**
MLE arrived the solution for the Organizational problem; Success is certain

(2) QP < 1, **------ 8b**
The i/p information is more or irrelevant to the problem, less or no o/p,
Shows there is no profit or success in solving organizational problem.
MLE are in the process stage of solving the organizational problem.

(3) QP > 1, **------ 8c**
Profit is certain,
MLE are efficient to solve the organizational problem.

The definitions of ***PS, PT, PF, OK, OA, and OT***, and the respective ***QQs*** are developed. Also, the mathematical workout for the ***Quantum Performance or the Co-efficient of QQs.*** Not a single domain can exist standalone, every aspect of the domains is interrelated. As for example seeing cannot happen without thinking and feeling and no knowing is possible without acting or trusting or other way round. Therefore, by accounting see-know, think-act, feel-trust one can excel into Quality work output.

4.0 FIELD WORK

The proposed research work is a combination of qualitative (making observations and develop theory) and quantitative (making observations and test theory) research wherein initial chapters were of building a theoretical framework, thereupon a proposing the model with new concepts (a construct of important terms that theory and the practical consists of) and now operationalization (the process by which the concepts are to be tested).

The methodology is an Inductive (observation from empirical world, build theory) – Deductive (theory, test through observing in empirical world) approach to the proposed research work.

4.0.1 RESEARCH DESIGN

Since this is proposed work is a management-based research and variables chosen by the me are seeing, thinking, feeling, knowing, acting and trusting, so its quite impossible to measure them directly and no standardized measuring tool to measure the same. I opted for a Self-Prepared measuring tool and Survey method to collect the data. The technique is to impose the Particle with some knowledge i.e. Introduced Theoretical Knowledge (ITI), registering their dominant domain as their Pre-Quality scores ($QQS_{Theoritical\text{-}Input}$), inducing the same knowledge among the Particles through simulation (Inducing Practical Assessment, IPA) and taking them as Post-Quality scores ($QQS_{Practical\text{-}Output}$). Lastly comparing the Pre- and Post-Scores, mathematical analysis and interpretation.

4.0.2 DEFINING THE VARIABLES

Independent Variables	Dependent Variable
Seeing: To perceive the situation at	Particle Seeing: Acknowledging, Concen-

workplace through senses	trating and Modulating intentions
Knowing: To have the knowledge of self and the workplace	Organizational Knowing: To 'know' the workplace
Thinking: To think about of self, workplace and both w.r.t each other.	Particle Thinking: Registering and Analysing – thinking; and Developing paradoxical thinking
Acting: To act for personal, professional and organizational benefit.	Organizational Acting: Readiness to 'act' in all situation
Feeling: A sense of being aware of Self-Requirement, Professional-Commitment Organizational-Success	Particle Feeling: Self-Cognizance
Trusting: A conscious choice of relying on self and others for Organizational Success.	Organizational Trusting: To 'build trust' with other particles

Table 4.1 Variables for the Proposed work

4.0.3 SAMPLE AND SAMPLING

The researcher used the Simple Random sampling, Probability sampling for the proposed work. The researcher was ready with the list of criteria such as the subject should be working with at least Graduation (in any subject) degree, no upper limit for the qualification, the age limit is 30-60 years, and open to all gender with no geographical limits.

The expected population is 150 and to decide the sample size the researcher have chosen the margin of error as 5% (α = 0.05), the level of confidence as 95%, the estimation of variance/heterogeneity 50%, then the number of responses to be collected are 108. The researcher collected 103 responses for the field work.

4.0.4 SURVEY RESEARCH METHODOLOGY

The proposed work is Analytic survey approach to establish a theory, Quantitative measurement of Qualitative attributes through simulation, generating a cause-effect relationship among the variables and finally interpret the results through simple statistical analysis.

4.0.5 RESEARCH APPROACH

The proposed work is Analytic survey approach to establish a theory, Quantitative measurement of Qualitative attributes through simulation, generating a cause-effect relationship among the variables and finally interpret the results through simple statistical analysis.

4.0.6 TOOL AND TECHNIQUE

The Tool to measure the variables is a self-prepared questionnaire, Survey Tool. It comprises of total twenty-five multiple choice questions wherein Question 1st – 24th are conceptual based practical assessment, Question 25th is based on the understanding about the concept of Q^2M, and the respective scores are $QQS_{Practical\text{-}Output}$ and $QQS_{Theoritical\text{-}Input}$ respectively. The comparison of both the scores and the interpretation of the same will show the effect of the Quantum Management on the Particles is significant.

The components and the Blueprint of the Survey questionnaire are shown in Table 4.2

Skills	Components
PS: Who am I!	Self-Awareness Self-Regulated Motivation
PT: Am I a Quantum Thinker?	Register the thought-thinking Continuous learning Creative thinking and Manage Changes Conscious decision-making
PF: What I feel so I Trust!	Empathize and awareness about surrounding Conflict management Proper communication
Paradoxical thinking and understanding Chaos	Acknowledge the situation is different Dealing and managing differently Think to act differently Setting new norms
OK: Seeing different & know others' part	Organizational awareness As the attitude so will be action Open to learning skills
OA: Think uniquely & act consciously	Understanding Paradox Accept the Paradox Thinking out of the box Decision making in Chaos
OT: Emotional acknowledgement	Internal-External emotional balance Organizational growth is by mutual understanding To empathize

Figure 4.2a Component of Questionnaire

Quantum Quality Skills	No. of questions (Q means Question)	Marks
Theoretical information about Q^2M		
PS	Q1, Q2, Q3	15
PT	Q4, Q5, Q6, Q7	20
PF	Q8, Q9, Q10	15

Theoretical information about Paradoxical thinking and Chaos		
Paradoxical thinking	Q11, Q12, Q13, Q14	20
Picture: Seeing differently and know others part		
OK	Q15, Q16, Q17	15
Picture: Think uniquely and act consciously		
OA	Q18, Q19, Q20, Q21	20
Concept of Normalization of emotions		
OT	Q22, Q23, Q24	15
Understanding towards Q2M		
Model in a nutshell	Q25* (*Compulsory but not counted in over all score)	120

Table 4.2b Questionnaire format and content (Blueprint)

Freshly prepared questionnaire was taken to the Educators/Lectures (Science faculty, Psychology faculty and Management faculty) for their opinions and criticisms. Expect the number of questions in the questionnaire, the Tool was approved by the Experts. Incorporating the feedback, the researcher rearranged the questions without compromising the content, and a new draft is ready for try-out.

For the pilot reading the sample was MBA students working full/part time, and the sample size was one hundred twenty-six. The sample was introduced with the Quantum Management, Q2M through power-point presentation followed by performance test i.e. Self-prepared questionnaire. It was observed that the 77% of the sample had shown a significant change in their performance after encountering Quantum Management, Q2M, with a feedback that the questionnaire was lengthy. Revising the questionnaire under the guidance of Experts the Self-Prepared Questionnaire (The Tool) is fully ready for the Field work.

The responses were collected through Online data collection portal, i.e. Surveymonkey.com. Choosing the range of sample, Survey was open for a week and a survey link was created so if necessary the sample member can attempt it offline too.

4.0.7 Skill Calculations

The Independent variables seeing, thinking, feeling, knowing, acting, trusting depends on the Particle's internal state (i.e. belief, culture, genetics, social strata etc.) and to quantify them is not easy. But it is for sure at any point of the time they cannot have zero value, so, denoting the inherent/non-zero value of seeing, thinking, feeling, knowing, acting, and trusting as QQS_0

Case I: Before any introduction and induction

$PD = Seeing + Thinking + Feeling = P_{min}$ ----- **9a**

$OD = Knowing + Acting + Trusting = O_{min}$ ----- **9b**

$QQS_0 = P_{min} + O_{min}$

$= Constant\ Value\ w.r.t\ Particle$ ----- **9c**

Case II: Introducing the skills theoretically

$QQS_{Theoritical\text{-}Input} = PD_{min} + PD_{in} + OD_{min} + OD_{in}$ ----- **10a**

$QQS_{Theoritical\text{-}Input} = (PD_{min} + OD_{min}) + (PD_{in}\ and/or\ OD_{in})$ ----- **10b**

$QQS_{Theoritical\text{-}Input} = QQS_0 + QQS_{Dominant}$ ----- **10c**

Case III: Inducing the skills Practically

$QQS_{Practical\text{-}Output} = PD_{min} + PD_{acquired} + OD_{min} + OD_{acquired}$ -----**11a**

$QQS_{Practical\text{-}Output} = (PD_{min} + OD_{min}) + (PD_{acquired} + OD_{acquired})$ ----- **11b**

$QQS_{Practical\text{-}Output} = QQS_0 + QQS_{acquired}$ ----- **11c**

Here, the Action-Reaction of Particles are being measured through Survey Tool, the only evidence of their seeing-knowing, thinking-acting, feeling-trusting in the given situation. In other words, QQSTheoritical-Input and QQSPractical-Output are mere numerical values that is based on how the Particle sees-knows, thinks-acts, feels-trusts in the given situation by the means of Survey Tool and the Particles' performance is completely based the general efficiency formula.

$$\textbf{Quality Performance} = \frac{QQS_{Practical\text{-}Output}}{QQS_{Theoritical\text{-}Input}} \quad \text{------ 12}$$

4.1 Data Analysis and Interpretation

From data collection following are the Graphs & Calculations:

4.1 Graph – Comparision between ITI and IPA

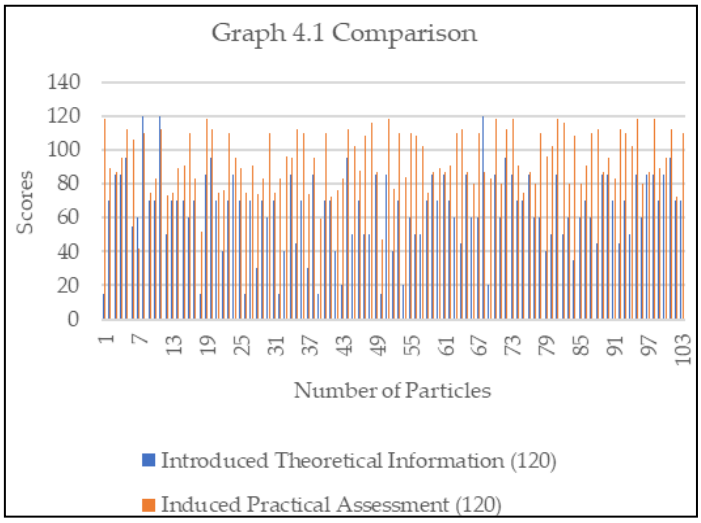
It shows that there were total 103 Particles participated in the survey. Wherein 99 out of 103 were got affected by Quantum Management, Q^2M and 3 (2 were not showing changes and 1 left few questions unattempted) haven't shown any significant improvement in their seeing-knowing, thinking-acting, feeling-trusting skills.

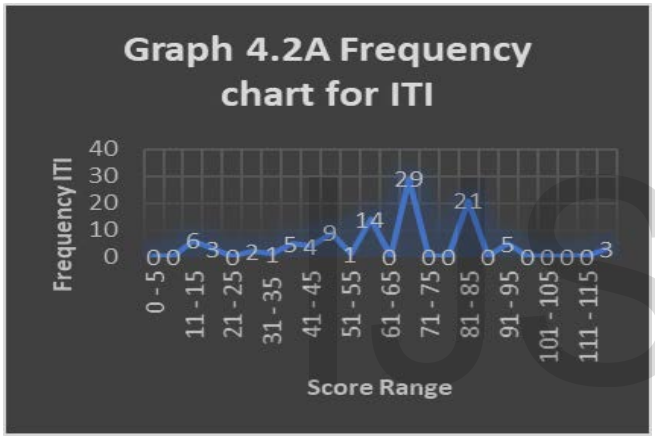
4.2 Graph – Frequency chart for ITI

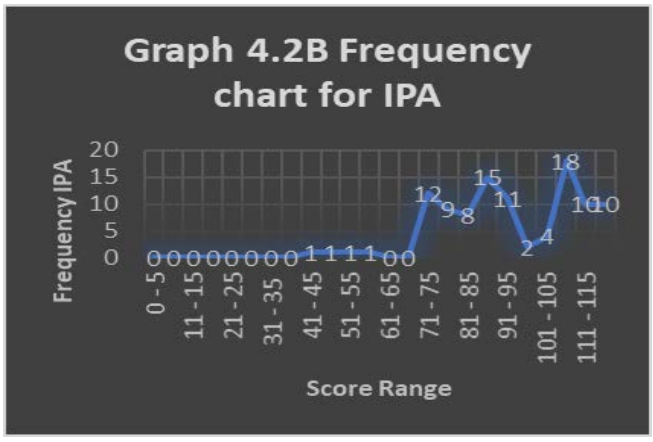
Graph 4.2A shows that the Particles' performance exhibits a normal probability curve; hence the statistical analysis can be performed for the meaningful interpretation. The highest QQS for ITI is 120 out of 120 and the lowest QQS for the same is 15 out of 120.

Graph 4.2B shows that the highest QQS for IPA is 118 out of 120 and the lowest QQS for the same is 42 out of 120. Also, there is a shift in the lower score towards the higher score in IPA than ITI signifies that there is an improvement in the Quality Performance of the Particles. But the same comparison (between 4.2A and 4.2B) shows that the higher score of the IPA is less than that of ITI because theoretical one can be ideal

but practically always there is a scope of improvement.





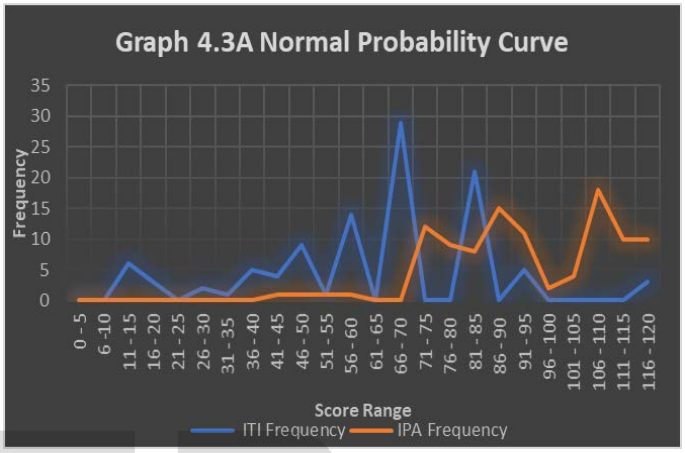


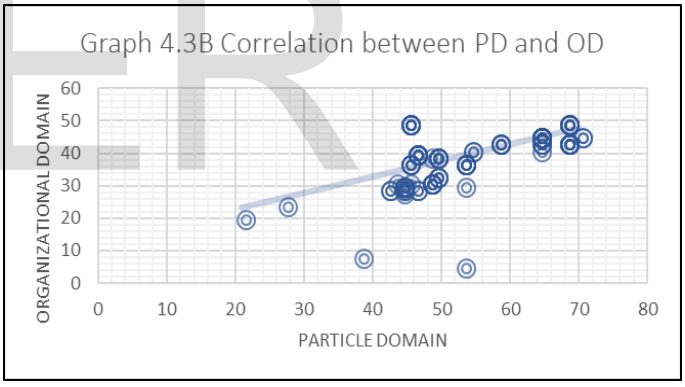
4.3 Graph – Normal Probability Curve

Graph 4.3A shows that the sample selected is normally distributed, shown as blue curve. Highly skewed the orange curve in the graph signifies that the IPA worked for improving the Particle performance. Aslo, following statistical parameters Table 4.3

Statistical Parameter for ITI & IPA		
Statistical Parameter	ITI	IPA
Mean	64.27	93.89
Median	70.00	91.00
Mode	70.00	110.00
Standard Deviation	23.07	17.08
Variance	532.06	291.63
Skewness	-0.29	-0.47
Kurtosis	0.23	-0.09

Table 4.3 Statistical Parameter





Graph 4.3B shows that the value of the Correlation between PD and OD is 0.6488 ≈ 0.65 ≈ 0.7 which means there is a very strong positive correlation between the PD and OD. This implies that PS, PT, PF, complex thinking and OK, OA, OT varies w.r.t each other and vice versa.

4.0 Results

(1) By considering the facts, figures, analyses and interpretations, the I am being a researcher "Rejects" the null hypothesis and directs toward the alternative hypotheses.

Hypothesis (H_0):

There is no significance effect of QQM practically on the Particles. In other words, the theoretical scores and the

practical scores of the Particles are same.

H_o: QQS $_{Theoretical}$ = QQS $_{Practical}$ ✖

Alternative Hypothesis (H_a):
There is a significant difference between the theoretical and practical scores of the Particles, i.e. practically, the Quantum Management, Q2M has a significant affected on the Seeing-Knowing, Thinking-Acting, Feeling-Trusting skills of the Particles.

H_a: QQS $_{Theoretical}$ ≠ QQS $_{Practical}$ ✓

(2) In the sample-size of 103, in total 99 Particles have shown improvement in their performance and its in a way a confirmation that the Quantum Management, Q^2M has a significant impact. In other words, at least some changes are there in their skills of seeing-knowing, thinking-acting, feeling-trusting, and get reflected the Particles' performance.

(3) After introducing Q^2M to the Particles, they were able to identify the dominant Domain (Particle/ Organizational) in them i.e. their choices that they made in ITI.

QQS$_{Theoretical}$ = Dominant Domain in the Particle (i.e. seeing, thinking, feeling, knowing, acting, trusting and/or all the probable combination of all of them)

(4) After inducing Q2M practically to the Particles, they were able to score more than the Theoretical Information imposed, i.e. the Quality Performance is the addition of PD and OD.

QQS$_{Practical}$
= (Particle Domain) + (Organizational Domain)

(5) There is a significance effect of Q^2M on the Particles as their Quality performance scores i.e. the Theoretical QQs scores and Practical QQs scores are not same.

H_A: QQS $_{Theoretical}$ ≠ QQS $_{Practical}$

(6) Particle Seeing allow the Particles 'to acknowledge, concentrate and modulate their intent to see' a broader perspective; and Organizational Knowing allow the Particles 'to know the workplace with different perspective'.

(7) Particle Thinking allow the Particles 'to register and analyse the thinking procedure'; Paradoxical/ Complex Thinking allow the Particles 'register, analyse, think in chaos at workplace'; and Organizational Acting allow the Particles 'for a readiness to act in all situation' at workplace.

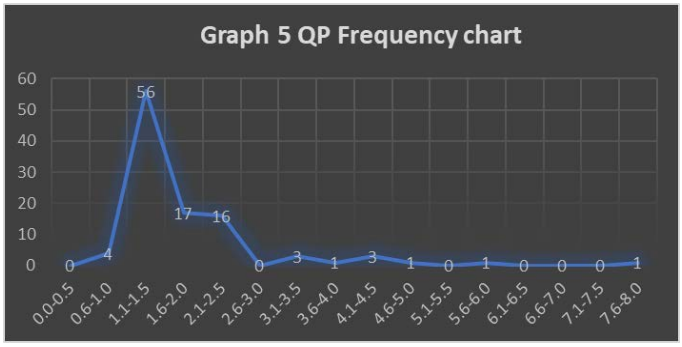
(8) Particle Feeling allow the Particles 'to value Self-Cognizance'; and Organizational Trusting allows the Particle 'to build trust with other particles' at workplace.

5.1 Quality Performance/ Coefficient of Quantum Qualities of the Particles

5 Graph - Quality Performance (QP)

(1) 4 Particles fall under the range 0.6 – 1.0 of QP depicts that the efforts are used in PS-DM but, yet success is not achieved even if achieved then it isn't leading into profit

(2) Maximum Particles, 56 falls under the range 1.6 – 1.5 of QP depicts that their efforts results in success and the organization gaining profit from their work output.



(3) Seventeen and sixteen Particles falls under the range 1.6 – 2.0 and 2.1 – 2.5 respectively of QP depicts that the Particles are excellent performers and contributes to the profit of the organization.

(4) Three, one, three and one Particles fall under the range of 3.1 – 3.5, 3.6 – 4.0, 4.1 – 4.5 and 4.6 – 5.0 respectively of QP depicts high range performer contributing to the organizational success and profit.

(5) The Particle falling under the range 5.6 – 6.0 and 7.6 – 8.0 one each of QP depicts that the Particles are high performers but unaware of their potentials and of course yes, they are contributing to the organizational success and profit.

In the end the proposed model says that there is a significant change in the Particles when Quantum Management, Q^2M theoretical introduced and practically induced.

5.2 Final Words

Quantum Management, Q^2M enhances the quality status from the very basic level of an organization (Particle/Microcosm) to the top most level (Organization/Macrocosm) considering all the domains of the workplace. Wherein the Particle discovers:
(1) An Intent to see a broader perspective;
(2) A problem can have "n" possibilities of solutions, and all equally valid;
(3) The parts-whole relationship;
(4) An effective transfer of information;
(5) A Sense of "I-ness" in PS-DM
(6) The potentiality of "I";
(7) The emotional-feeling domain - Normalization
(8) Uncertainty allows improvement, evolution-adaptation is

the key for the growth in every domain.

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