Technology Quotient (TQ)
for Industry 4.0

Athanasios Charemis
Allilon mentor & Innovation Consultant ● LinkedIn

Key ideas:

1) The current rise of emerging technologies requires new measures for the adaptability of persons in the new normal.

2) Emerging technologies achievements and innovations in deep-tech are arriving in a fast pace.

3) Technology Quotient is the core mindset to develop a set of hard and soft skills required for the future of work

Industry 4.0 inaugurates a new era for the economy and society. The current and forthcoming changes are expected to leave nobody unaffected. Technological change enhance is a cliché to assert that technology is ubiquitous in the workplace. Accordingly, the current rise of emerging technologies requires new measures for the adaptability of persons in the new normal. Emerging technological achievements and innovations in deep-tech are arriving in a fast pace. Although, the speed and volume of these radical tech changes contribute to the widening of digital skills gap. The range of this gap is crucial for the performance and productivity of employees, who need to advance their skills in order to face the rising challenges from this technological disruption and the automation process.

Every personality is multidimensional and characterized by universal uniqueness, formed by the person's: a) internal world (strengths, weaknesses, interests), b) external world (community relationships, social and tech interaction) and c) experience, in a triadic approach. Good news is that all these variables that define our "being" are subject to adaptability and change. In this way, new challenges that rise from Industry 4.0 require new intelligences and competencies, while generating new possibilities, leveraging creativity and innovation. Though the process of this transformation of the industries creates the need for new skills and competencies. The transition to the new era leads to a technological and digital gap.

It is common sense that the tech innovations of the past, have entered our lives and eventually turned into core tools in the workplaces and everyday life. Nowadays and in the near future, our lives will be increasingly defined by technology and the need for new digital and tech skills will be inevitable. Following Darwin advice for change and adaption, it is necessity for citizens to broaden their thinking and empower their intelligence to deal with the challenges that new technologies bring into their lives. The future of work needs a higher Technology Quotient (TQ).

Human Intelligence

The use of the term "Intelligence" triggers long discussions, as far as its definition and classification are concerned. All humans are considered to have multiple intelligences or one single general intelligence. For example, Howard Gardener defined 9 types of intelligence: Spatial, Naturalist, Linguistic,

Musical, Logical, Existential, Interpersonal, Bodily and Intra-personal. Alternatively, Charles Spearman supports the existence of a General Intelligence (g factor). Robert Sternberg (1997) defined intelligence as "*the mental abilities necessary for adaptation to, as well as shaping and selection of, any environmental context*".
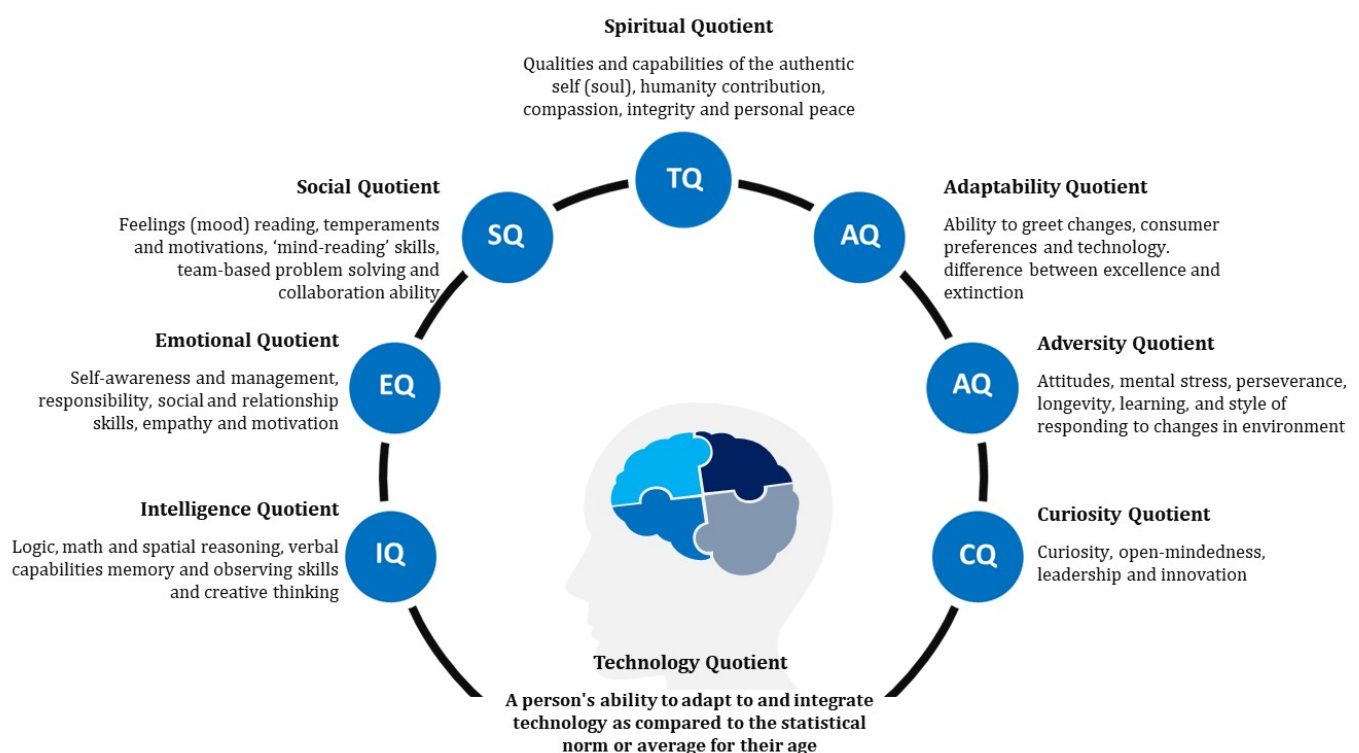
Intelligence is structured in multi-disciplinary aspects and characteristics such as logical thinking, reasoning, understanding and learning ability, self-awareness, emotional and social interaction, critical and creative thinking, and problem-solving and decision making. From a general point of view, it describes the overall ability to perceive or analyze information, turn it into knowledge and apply this accumulated knowledge into behavior, while applied towards adaptive behaviors within an environment or context.
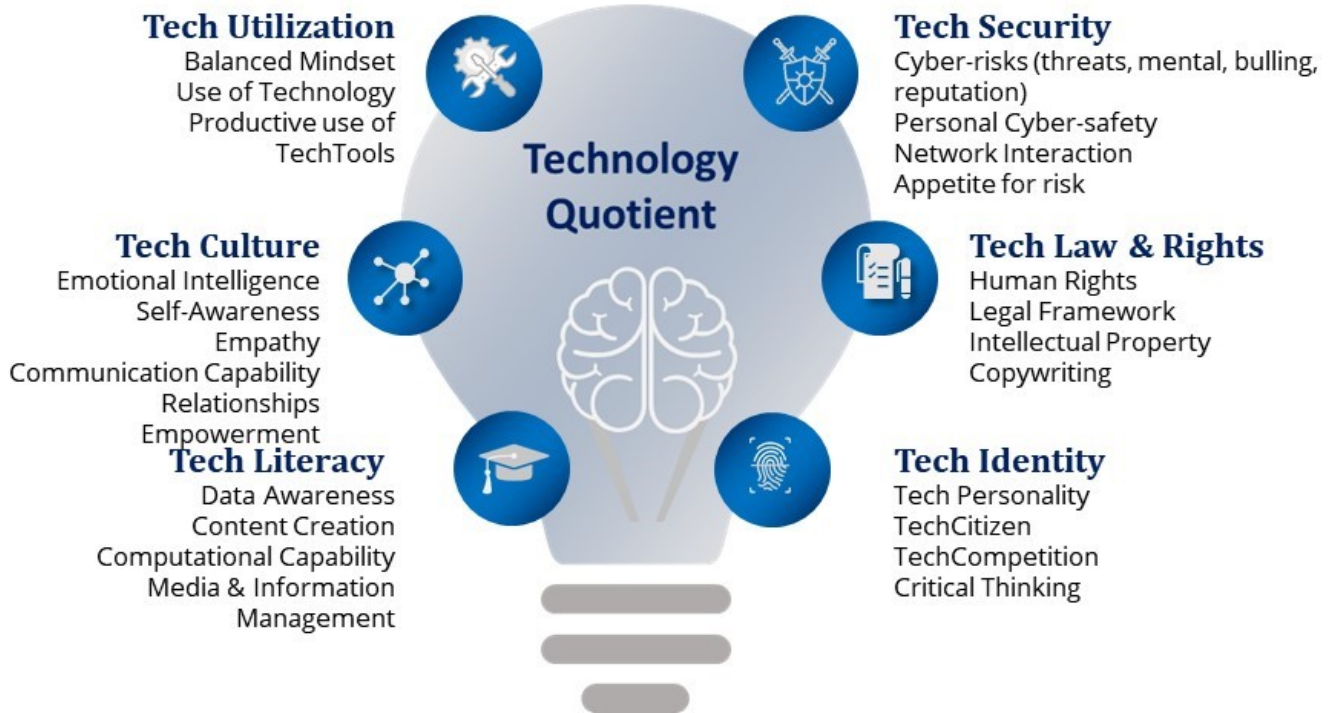
The ideation and definition of existing quotients is widespread. All existing quotients are extremely popular as accompanied with metrics which facilitate the comparison in terms of "*intelligence*", "*emotional state*", "*socialization*", "*spirituality*", "adaptability" etc. which are measured for every individual using the quotient metrics. The main measures are the well-known Intelligence Quotient (IQ), Emotional Quotient (EQ), Social Intelligence (SQ), Spiritual Intelligence (SQ), Adaptability Quotient (AQ) and many others including Technology Quotient (TQ).

What is "Technology Quotient (TQ)"?

As a result, TQ aims to measure the ability of adaptiveness and integration of technological advancements. More specifically, the term Technology Quotient (TQ), also known as Digital Quotient® (DQ) measures performance and productivity across four key dimensions of digital maturity and prioritize the initiatives of greatest potential impact[1]. In the same sense with all other quotients, aims to scale and measure the tech intelligence of an individual. Technological Intelligence (TQ) expresses the capacity building on several social, emotional, and cognitive capabilities that enable individuals to deal with the challenges, changes and disruptions that occur due the "*evasion*" of innovative technologies in our life and work. In fact, TQ is the ingredient that excels the capabilities of "*extraordinary men*", in the sense of Elbert Hubbard's statement in the beginning of the cur-

Spiritual Quotient
Qualities and capabilities of the authentic self (soul), humanity contribution, compassion, integrity and personal peace

Social Quotient
Feelings (mood) reading, temperaments and motivations, 'mind-reading' skills, team-based problem solving and collaboration ability

Adaptability Quotient
Ability to greet changes, consumer preferences and technology. difference between excellence and extinction

Emotional Quotient
Self-awareness and management, responsibility, social and relationship skills, empathy and motivation

Adversity Quotient
Attitudes, mental stress, perseverance, longevity, learning, and style of responding to changes in environment

Intelligence Quotient
Logic, math and spatial reasoning, verbal capabilities memory and observing skills and creative thinking

Curiosity Quotient
Curiosity, open-mindedness, leadership and innovation

Technology Quotient
A person's ability to adapt to and integrate technology as compared to the statistical norm or average for their age

Tech Utilization
Balanced Mindset
Use of Technology
Productive use of
TechTools

Tech Security
Cyber-risks (threats, mental, bulling, reputation)
Personal Cyber-safety
Network Interaction
Appetite for risk

Technology Quotient

Tech Culture
Emotional Intelligence
Self-Awareness
Empathy
Communication Capability
Relationships
Empowerment

Tech Law & Rights
Human Rights
Legal Framework
Intellectual Property
Copywriting

Tech Literacy
Data Awareness
Content Creation
Computational Capability
Media & Information
Management

Tech Identity
Tech Personality
TechCitizen
TechCompetition
Critical Thinking

rent article.

Technology Quotient is the core mindset to develop a set of hard and soft skills required for the future of work. This set of skills is composed of big data and analytics, Augmented Reality/Virtual Reality (AR/VR), machine learning and artificial intelligence, internet-of-things, 3D printing, robotics the positioning in digital ecosystems. In addition, the set must include the necessary awareness of both ethical, regulatory and legal aspects, as well as security. TQ aims to turn the several options on tech into an imperative, applicable in corporate culture, strategy, organization and capabilities[2]. Digital Quotient® (DQ) measures an organization's performance across four key dimensions of digital maturity. Executives use the results to compare their performance against hundreds of organizations and digital leaders, identify their digital strengths and weaknesses across business units, and prioritize the initiatives of greatest potential impact. TQ also shows a person's ability to adapt, manage and integrate technology based on the needs of the organization, throughout six dimensions, presented in Graph 2. New generations need to build awareness on tech, data and information, as well as a redefined culture and skills to that they will be able to utilize it. Issues of high importance are also

the security and legal aspects of new technologies. In a world where technology generates uncertainty and fear, young persons need to seek for a digital identity and define an ambitious purpose, as they will become the leaders of the future.

Conclusions

Despite the fact that recorded quotients have been abused in many ways in the past and that most possibly this abuse will continue in the future with the rise of automation and artificial intelligence, they compose a holistic life and career compass. Quotients are representative and apocalyptic for the set of values, beliefs and interests of a person, the necessary forces for anyone to detect their own right pathway and most important to define their purpose. Technology Quotient is only one but it represents an important ingredient for future success, as enhances the skills (both mental and digital) for a harmonic relationship with technological (r)evolution and the disruption it generates. Understanding the incremental nature of TQ with the support of well-structured assessments will support persons not only to achieve fluency in digital skills for their career but to empower their mindset to deal with tech's psychological and emo-

tional impact. TQ awareness is considered to be crucial also to deal with cyber-threats, cyber-bullying, emotional dangers, fake news and misinformation.

A modern view on technology and its purpose was described successfully by Steve Jobs: "*Technology is nothing. What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful things with them*". From his point of view, it is humans that are able to unlock technology's potential and true value. The use of technology needs talent, and TQ represents this talent and the type of intelligence (set of knowledge, abilities and skills) needed to leverage technological achievements for a successful future career and a happy life. Most importantly TQ shall be combined with the other intelligences such as IQ, EQ, SQ, AQ as well to complete human identity and personality.

---

[1]For more details see McKinsey (2020), Digital 20/20: Discover your digital future. Available here.

[2]See Catlin, T., Scanlan, J., & Willmott, P. (2015). Raising your digital quotient.

References

Spearmen, C. (1904). General intelligence objectively determined and measured. American Journal of Psychology, 15, 107-197.

Sternberg, R. J. (1997). The concept of intelligence and its role in lifelong learning and success. American psychologist, 52(10), 1030.