Can Spiritual Intelligence Influence Decision Making in Software Engineers? Framework for Performance of Professionals in IT Sector

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ABSTRACT:

Performance impacts the sustainability and growth in the Information Technology (IT) sector. Effective intellectual growth and improvements are essentially focused on the versatility and agility of the mind. Since innovativeness, Software development abilities, and work satisfaction are valued in order to achieve performance excellence as required consideration for the IT industry, the concept that spiritual intelligence could have an effect on decision making and thereby performance, in the IT professionals, is strongly practicable. But this opinion is one that has not been examined yet. In this research, the possible connection between spiritual intelligence and success in the IT sector has been explored and examined through the evaluation of the influence of Spiritual Intelligence on decision-making, which manifests in performance. The research methodology included 250 participants in decision-making and spiritual intelligence (SI) surveys. The quantitative, as well as qualitative data, have been collected and evaluated to recognize if spiritual intelligence has any effect on performance/decision making and if so what abilities of spiritual intelligence, traits, attributes, or dimensions can affect what aspect of performance in terms of an individual's decision-making style. The research in India was carried out for a period of two years, including major IT organizations involved in Research and Development and providing IT-intensive systems and solutions. The study revealed that those individuals who have a high spiritual quotient are more likely to have superior or sound decision-making manifesting in high-performance levels. This result has been further confirmed by the fact that the respondents in the survey who performed well in spiritual intelligence measurement tests had also comparatively higher performance results. This article explores the results and offers a framework of the influence of spiritual intelligence (SI) on decision making, which manifests in an individual's performance in the IT sector.

Keywords:

spiritual intelligence, decision making, individual performance, impact on performance, IT sector
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Introduction

The decision-making capability of individuals, which manifests in the performance of organizations, relies significantly on their "human intellectual capital". Organizations, conscious of "human intellectual capital" ensuring the competent learning and development models are seeking at the measures and possibilities to evaluate the performance of their employees and also prepared to invest and set up a framework for research adaptations as well as explorations. "Harrison (1997)" argued that "Human Resource Development (HRD)" is directly related to the growth of individuals. In their study, Stokes et al. (2016) identified that HRD is guided by self-development initiatives. This holds particular relevance in the case of organizations in the Information Technology (IT) sector. IT companies' design is flexible and dynamic, and so

HRD is a key catalyst for achieving excellence and sustainable development (Griffin, Phillips & Gully, 2016). Research literature surveys revealed that a large number of studies have been done on an individual's intelligence and its subsequent impacts on work efficiency, stress, leadership, and satisfaction. A common purpose of these analyses is to examine and analyze the contributing factors of the various intelligence types that could affect employee performance. There is a significant difference in the methodology being practiced by organizations towards their human resources development (Wilson, 2014). The proposed work depends upon a particular form of intelligence, namely spiritual intelligence, and examines the spiritual intelligence dimensions and their effect on the decision making and thereby the performance of IT professionals, involved in R&D. The intelligence quotient till now has been

identified as the main component behind critical and logical reasoning and problem-solving skills, therefore it is assumed as a fundamental requirement in any professional seeking employment options. IQ addresses the mental capabilities of a professional, however it does not respond to the human spirit of imagination (Gavrila, 2005). R&D in the field of software engineering can be seen as a creative-emotional process by an individual that requires much training and learning, over a period of time, which mandates one to be emotionally balanced and open-minded for real learning and real understanding. The EQ (Emotional Quotient) must reinforce an individual to be more productive by assisting her/ him to judge the environment and to act suitably within the bounds of the situation, thereby allowing the situation to direct the individual ("Selman et al., 2005"). Geher and Mayer (1996) described that certain ways of problem-solving necessitate more than general comprehension. Kanyama (2014) examined the impact on various indicators of efficiency of institutions on average intelligence levels. The higher levels of human capital in the countries, therefore, have better performing organizations than those with poor levels of human resources. This study expands the overall analysis from general intelligence (IQ) as well as emotional intelligence (EQ), to take into account the value of spiritual intelligence (SI/SQ). Spiritual quotient/intelligence (SQ), provides a scheme that enables an individual to look beyond the current situation in a more holistic way, take personal responsibility, and value the human aspect therein to create new possibilities and ways to achieve it (Zohar and Marshall, 1999). It transforms individuals into approaching a situation with a mindset to best exploit the situation in which they find themselves. It gives people the chance to expand their minds and provides honesty and self-intelligence. It also encourages a balanced, holistic view of life in them. IQ and EQ have long been known to have direct effects on an individual's output. IQ is a rational and logical explanation, while EQ advises people in various situations to act appropriately. SQ, on the other hand, grants one to be imaginative, to modify guidelines, and to change circumstances. SQ helps an individual with coping skills and supports her/ him to solve problematic life problems. Such an individual may make a significant impact while simultaneously using modesty, compassion, and vision to lead another's. Development in human intellect assumes primacy in the IT sector, view established and institutionalised way of thinking. However, SI has the potential to become a reinforcer of the resident intellectual capability, thereby enabling better outcomes ("Becerra et al., 2016"). Neither EQ nor IQ alone or in combination is adequate to clarify the complete complexity of the human intelligence ("Selman et al 2005"). The idea that spiritual intelligence may influence performance is therefore highly workable. Although, this view has not yet been examined (Donnelly, 2017). This research explored this void by researching and studying the possible link between efficiency and spiritual intelligence among professionals working in the IT sector and also tried to capture the effect spiritual intelligence has on decision-making. A lot of emphasis today is on innovativeness and ability of any professional to take appropriate decision, therefore analysing SQ in terms of decision making, which manifests into performance will be valuable for IT Organisations/institutions/ companies. In addition, as SQ analysis objectively assesses interaction with the inner self, therefore it should serve as a catalyst for enhanced results (Zagoršek and Slávik 2016). The article is structured, wherein; in Section 1 literature review is presented which delves into the analysis in Spiritual Intelligence and Individual Performance (SIIP) perspectives. Section 2 demonstrates the recommended structure for Spiritual Intelligence (SI) as well as Decision–Making (SIDM). In Section 3 the

research approach is defined. Section 4 deals with analysis and discussion. Finally, the article concludes with the results of this analysis.

Literature Review

This section examines spiritual intelligence and performance-related decision-making viewpoints and then establishes the Spiritual Intelligence and Decision-Making (SIDM) paradigm towards understanding framework for decision-making performance.

Spiritual Intelligence Perspectives and Definitions

Spiritual intelligence requires ability to know and combine own mind and spirit with the outer work life, such that it positively contributes towards satisfying the ultimate goal. It could be established by researching, questioning as well as practicing. Robert Emmons (2000) describes spiritual intelligence (SI) as "the adaptive use of spiritual information to facilitate everyday problem solving and goal attainment". Emmons considered the SQ as a framework that includes a prominent capacity of divine capital to solve problems. In 1999, in his book, Spiritual Intelligence – Ultimate Intelligence, Ian Marshall and Danah Zohar (1999) detailed the entire framework of SQ. Zohar subsequently created the 12 dimensions of the SQ to assess the quality of the leadership in the workforce. Spiritual intelligence is defined in Tony Buzan's, "The Power of Spiritual Intelligence", as an "awareness of the world and our place in it" (Buzan 2001). Katheleen Noble describes spiritual intelligence as an inherent human possibility (Kathelene, 2001; Kathelene, 2000). The following SQ definition was provided by Frances Vaughan: "Spiritual intelligence is concerned with the inner life of mind and spirit and its relationship to being in the world" (Vaughan, 2002). In making spiritual decisions that lead to mental stability and the total development of human health, SQ is important in distinguishing various aspects (Vaughan 2002).

Therefore, one can see that SQ is essential to an individual's growth. Spiritual intelligence means an ability to truly understand existential questions and to understand several degrees of awareness. Cindy Wigglesworth (2012) describes "spiritual intelligence as the ability to act with wisdom and compassion, while maintaining inner and outer peace, regardless of the circumstances". Teresa and David (King and Teresa 2009) have also carried out an analysis into spiritual intelligence and identified spiritual intelligence as a collection of mental adaptive capability focused on transcendent and non-material factors of realities. It can be said from the discussions above that it is hard to measure an individual's output potential by disregarding her/his SQ. Therefore, an individual's output response cannot be decoded without measuring the SQ. To further understand its effect on performance, a comprehensive analysis and results have been presented in the following paragraphs.

Performance Perspectives and Definitions

Performance is an important criterion for evaluating various facets of today's world. Performance plays a key role in determining a person's reputation. The word performance is used in virtually every field. It is called corporate performance, employee performance, and academic performance based on the determinants of the respective industry. The aim of this review is to understand the performance principle and its determinants. In R&D in the IT sector, it may not be sufficient to be just successful in coding/ concepts, but for the holistic development of a professional, the professional inside the individual should also grow and flourish. This paper provides a brief summary of the different dimensions of success that occur over almost all professions and have also been defined to be equally valid in the field of IT.
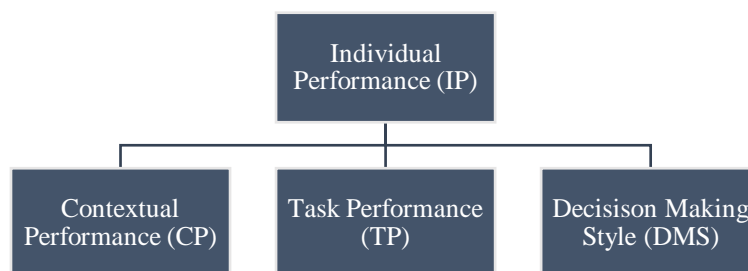
The paper considers output as a dynamic (decision making and learning process) and multidimensional concept (contextual and task).

The goal of this analysis is to connect determinants, dimensions, and performance principles with the research perspective. Campbell (Campbell 1990) proposed three main determinants, i.e. skill and procedural knowledge, declarative knowledge, and performance elements motivation. A professional in R&D must have declarative information on the subject she/ he is pursuing research. He/she must have comprehensive information, values, and concept on the subject. It should also be presented with procedural information on how to use the data collection method, the utilize of instruments and methodologies, etc. Eventually, the main determinant that encourages an individual and sustains her/ him on the job is motivation. Campbell (Campbell, 1990) formulated an eight-factor performance model focused on factor analytical investigation that aims to record (to a more or less extent) the current dimensions of work performance in employment. A closer look at each of these aspects makes it possible in the IT sector too, and all eight variables play a key role in deciding one's efficiency, although some play a smaller extent role than the others. Some of these factors include, task basic behaviour, job-specific task proficiency, oral and written skills, effort demonstrating factor, a factor for maintaining personal discipline, etc. The opinions of Motowildo and Borman (1993; 1997) were considered more appropriate for success as a multi-dimensional term. Task performance relates to the capability of an individual in that he or she conducts tasks that lead to the 'technical' center of the organization. This contribution could be both indirect (for example in the case of staff personnel or managers) or direct (for example, in the case of production workers). Contextual success requires tasks that are not part of the technological core organization, however, which promote the social, psychological environment and organizational in

that the organizational objectives are followed (Motowidlo and Borman, 1993). The contextual success does not only encourage behaviours like assisting co-workers or being an organization's reliable member, but also make recommendations to develop processes for work. The ability of able, logical, and empathic decision-making is an essential framework for assessing and evaluating the performance of individuals in the high-technology sector viz. information technology. The connection with spiritual intelligence can contribute to a new viewpoint in human success. SQ was researched primarily in isolation until now. Furthermore, until now no one has attempted its linkage or effect to the efficiency of a person in the employment sector.

Spiritual Intelligence and Individual Performance (SIIP) Framework

This article aims to investigate how SQ effects decision-making and thereby the performance of a professional involved in R&D in the IT sector. Taking into cognisance the literature review on the past research undertaken on SI, 21 dimensions of spiritual intelligence (classified into four categories) and three dimensions of individual performance are proposed. It is observed that various dimensions are used to measure individual success in IT companies. Some of these dimensions involve projects, honours, consultancies, awards, patents, and publications, etc. Five-Factor General Decision-Making model (GDMS Model) has been taken, which is based on theory of Motowidlo and Borman (1993; 1997) and Scott and Bruce (1995); and accordingly, the 'Individual Performance (IP)' of IT professional in the R&D sector can be divided into contextual performance, task performance and decision-making style, as illustrated in figure 1.

Figure 1: Individual Performance Framework

Contextual and Task Performance

Four factors of contextual performance (CP) have been identified (Upadhyay, 2012; 2017). These variables are dependent upon the inputs provided by Motowidlo and Borman (1993; 1997). A brief overview of each of these variables is as follow:

Coordinating and cooperating in projects as peers or team leaders (CCP): A variety of Coordination and cooperation in various forms of projects are important, in particular, if a project needs support and a joint effort by a team. This is typically apparent in consortia where a community, consisting of different individuals, from various teams/ divisions, cooperates and works together. In these situations, it is important for the team leader/project manager to appropriately coordinate and support to complete the project successfully.

Combining knowledge and experience with research (CKE): A team member is important to use his/her skills and expertise to succeed in the project/work. It is noted that the members of the team may seek to consolidate and discover new options. In such a case, the difficulty of the task is minimized due to previous experience and learned skills.

Helping others to view the problems from different angles (HPA): A member of the team involved in his work often fails to see and consider challenges objectively and sometimes lack prospects to look at them differently. The demonstrative factor for contextual success is that a member helps to perceive the issue from a particular viewpoint.

Providing useful suggestions/support in non-duty assignments or projects (PNP): While a participant cannot be a part of the project, he/she participates eventually in the total development of this organization, project, and community if it agrees to provide recommendations and help. Suggestions and encouragement from expertise often contribute to development and growth, given even for non-duty appointments.

For performance, besides the above listed contextual performance factors, there are about 6 key elements that can be quantified and contribute to individual 'task performance'. These include (Upadhyay 2012): patents (PA), project supervision (PS), consultancies (CON), awards and honors (AH), projects (PRO), and publications (PUB).

Decision-Making Style

The third aspect of an individual's performance i.e., decision making, forms a basic feature of behaviour an individual. The corresponding decision-making style is consistent with individual paradigms of making distinction (Hayes and Allinson, 1996; Rayner and Riding, 1998; Smith-Sadler, 1998). The empirical creation of individual theory depends fundamentally on the validity of measures; one such test is being GDMS. Previous exploratory research (Scott and Bruce, 1995), further confirmatory and exploratory research (Loo, 2000) indicates that it is most suitable for a five-factor structure/ model.

The GDMS was designed to evaluate how an individual approaches decision making situations. It distinguishes between five decision making styles i.e., *Dependent* (relying on others' support); *Rational* (logic-based approach); *Intuitive* (hunches/ feeling-based approach); *Avoidant* (deferring decisions) and *Spontaneous* (making decisions spontaneously).

Bruce and Scott (1995) and Loo (2000) interpreted that the decision-making scales are connected while conceptually distinctive. Indeed, people must preferably balance different approaches, as adhering to only one approach may prove to be detrimental. A logical approach requires the discovery of evidence and knowledge that may still be problematic in support of decision making if the study itself becomes more significant than the final decision. Intuition enables fast and uncertain activity. The dependent scale generally has been observed to be viewed negatively, in the context of this research, without other evidence of the findings of individuals who cannot act. The effect that considerations other than preferences for a particular strategy are a part of the decisions that are not yet properly considered, has on an individual's decision making, such as the time effect. For example, Familiar activities are possibly guided by intuition whereas unidentified activities are directed by logical responses, where we use research to help a new choice of decision. Similarly, emotional involvement might influence us to rely on "gut feelings" (intuition).

The topic above presents concerns about how individuals may resolve limitations or create strong decision making and biases in decision-making styles. A significant phase in this method could be an awareness of one's own preferred decision-making styles. This can be accomplished by GDMS, and once aware of an individual's exceptions and the corresponding advantages and limitations of methods, individuals should try to find the locations where they are more vulnerable or/and collaborate with those who show styles complementing themselves.

The results obtained in this research support the idea that suggests the style of decision-making is indeed a "surface" expression of more stable underlying dimensions, that can be adapted or modified by individuals, which directly affects their overall performance.

Spiritual Intelligence

The 21 dimensions of SQ (Zohar and Marshall, 1999) selected for this study, which could be utilized to measure the SQ of an individual effectively, into four broad categories i.e., social mastery/spiritual presence, higher self/ego self-awareness, higher self/ego self-mastery, and universal awareness, (Wiggleworth, 2012). These categories, encompassing respective dimensions have been represented in Figure 2, as follows:

Figure 2: Spiritual Intelligence Skills

In figure 2, higher self/ ego self-awareness (category 1) always precedes the development of universal awareness (category 2) and higher self/ ego self-mastery (category 3), which are in turn necessary for social mastery/ spiritual presence (category 4). Based on the above dimensions, a measurement instrument has been developed, quantifying each of the 21 skills on a Likert scale. The proposed SIIP framework will help IT professionals and leaders to grow and maintain their human capital and develop a good environment for education research. The following research questions are devised, based on the above-mentioned discussion:

- Is there any impact on decision-making and efficiency by spiritual intelligence?
- Is there any effect on contextual output manifesting in the overall performance of an individual by spiritual intelligence?

Research Methodology

In this section, the assessment and study of the spiritual intelligence aspects, decision making, and effect of spiritual intelligence in results, a systematic graph theory-based method is proposed. The methodological protocol recommended is simpler to implement than other multi-criteria approaches (Saaty, 1980; Upadhyay et al., 2011, 2016) for monitoring parameter and their relationships in a systematic way. This research study, gathered quantitative and qualitative data to enable for assessment of the decision making and spiritual intelligence of each participant (manifesting in performance). These assessments have been evaluated in a spiritual intelligence awareness programme prior to and after participation. This pre- and post-schedule have been permitted to make adjustments in the Spiritual Intelligence or success of the respondents involved during the research study. Cohen et al (2007) note that a sample survey is

most appropriate to collecting "data at a particular point in time to describe the nature of existing conditions". In this research, a set of questionnaires has been utilized to gather data on participants' decision-making and spiritual intelligence. The sample population comprised of respondents from the subject organization involved in this research study. The respondents have been both men and women professionals, in full-time work and different age ranges. The participants covered a broad spectrum of several years of experience, research activities, projects, qualifications, and leadership positions. All gathered data has been analyzed ensuring that the identity and confidentiality of respondents were preserved.
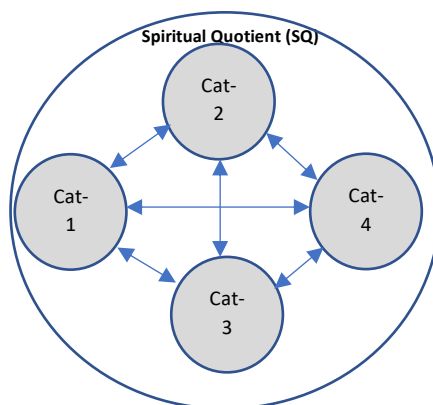
Graph-Theoretic Systems Approach

The assessment and study of SQ and its relationship with decision-making (DM) have been carried out using a structural method called theoretical graph methodology. The theory of graphs is a rational and structural method (Deo 2004). The approach for determining, designing, and assessing alternative designs, processes, and products has been widely used (Senthil and Paramasivam 2009; Upadhyay et al 2009, 2011). The approach can record the interactions in the process among various parameters at all levels. Therefore, as a data analysis method for this review, it was chosen over other tools available. There are a variety of reasons responsible for establishing an environment for activation of SQ and correspondingly DM. However, an individual's performance is based on the degree to which these variables have interdependencies/ inheritance and the number of interactions present between them. These interactions could be independent or dependent on direction. The framework representing these variables and interactions has been utilized as an analysis model. The graph could easily display this network. If interactions do not depend on
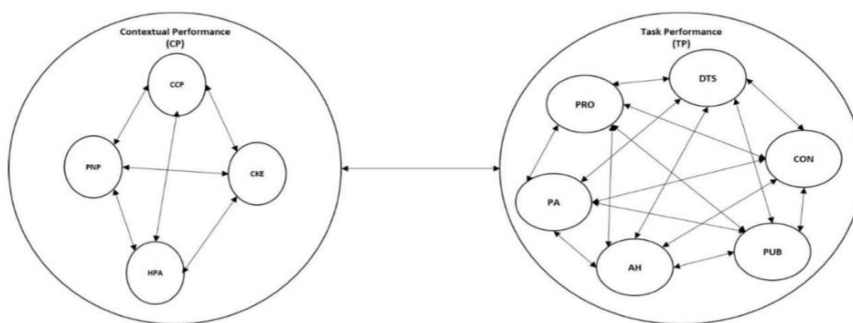
direction, a graph is undirected in the SQ and DM environment; if dependent on direction, it is known as a digraph representation. For SQ and DM, a digraph model has been created (also known as the directed graph 'G'). G comprised the set of edges E={e1,e2,…, em}, a set of vertices V={V1, V2,…, Vn}, and a mapping function which maps each edge into a pair of vertices ordered (Vi, Vj). For SQ and DM, digraph models were established which showed the significance of interrelationships between attributes. Therefore, the digraph for evaluating attribute SQ and DM comprises 2 sets of nodes and respective boundaries to demonstrate the

interactions. It should be found that in each set, the range of evaluative attributes for SQ and DM equals the number of each node. The SQ and DM attributes have been described depend upon the SQ and DM structure proposed. Figure 3 demonstrates the interaction for SQ, contextual performance (CP), task performance (TP), and decision making (DM), respectively. Figure 4 displays a SQ Digraph Interaction model. Likewise, models of DM digraph have been established.
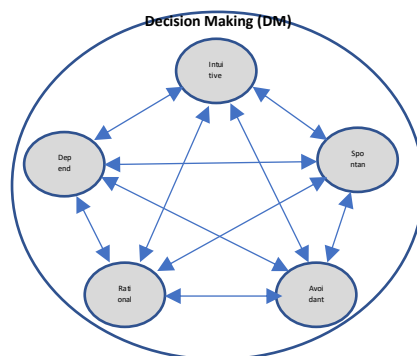
Figure 3a: SQ Interaction Model
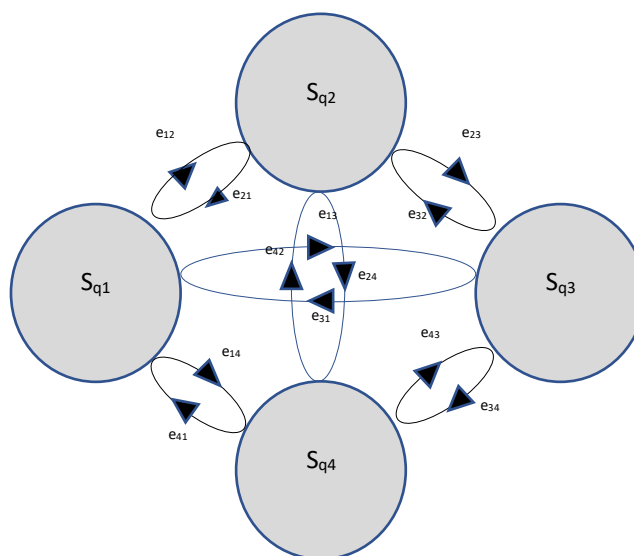

Figure 3b: RP and TP Interaction Model

Figure 3c: DM Interaction Model

Figure 4: Spiritual Quotient (SQ) Diagraph Interaction Model

The graph theory is used in this paper for the quantification of the SQ with DM indices. Thus, Figure 3(a;b;c), as well as Figure 4 graph models, are then translated according to equation to an equivalent matrix (eq.1). The Ai elements of matrix S (expressed in the graph as a node) are a form of the contribution from the ith dimension of the SQ and DM sub-attributes/ dimensions) source

for each index. To allocate value to these elements a scale must be used. The off-diagonal elements (a_{ij}) (depicted by the edge between two nodes in the graph) comprise the relation or interdependency of sources. The importance attributed to each context and its connections has been assessed by special judgment and the participants in the index measuring system.

$$S = \begin{bmatrix} A_1 & a_{12} & a_{13} & . & . & a_{1M} \\ a_{21} & A_2 & a_{23} & . & . & a_{2M} \\ a_{31} & a_{32} & A_3 & . & . & a_{3M} \\ . & . & . & . & . & . \\ . & . & . & . & . & . \\ a_{M1} & a_{M2} & a_{M3} & . & . & A_M \end{bmatrix}$$

(eq.1)

Permanent Function Approach

The permanent function is a combinational mathematics expression based on the values of A_i and a_{ij}, that evaluate the index of uncertainty. This function is the sum of many terms and is the determinant of a M×M matrix which takes all terms as positive and thus, does not lose information (Rao, 2007). In equation (eq. 2), is given the general term for M×M matrix permanent function:

$$
\begin{aligned}
Per(S) = \prod_{i=1}^{M} A_i &+ \sum_i \sum_j \sum_k \cdots \sum_M (a_{ij}\, a_{ji}) A_k A_L \cdots A_M \\
&+ \sum_i \sum_j \sum_k \cdots \sum_M (a_{ij}\, a_{jk}\, a_{ki} + a_{ik}\, a_{kj}\, a_{ji}) A_l A_m \cdots A_M \\
&+ \left\{ \sum_i \sum_j \sum_k \cdots \sum_M (a_{ij}\, a_{ji})(a_{kl}\, a_{lk}) A_m A_n \cdots A_M \right. \\
&\left. + \left[\sum_i \sum_j \sum_k \cdots \sum_M (a_{ij}\, a_{jk}\, a_{kl}\, a_{li} + a_{il}\, a_{lk}\, a_{kj}\, a_{ji}) A_m A_n \cdots A_M \right] \right\} \\
&+ \left(\sum_i \sum_j \sum_k \cdots \sum_M (a_{ij}\, a_{ji})(a_{kl}\, a_{lm}\, a_{mk} + a_{km}\, a_{ml}\, a_{lk}) A_n A_o \cdots A_M \right. \\
&\left. + \sum_i \sum_j \sum_k \cdots \sum_M (a_{ij}\, a_{jk}\, a_{kl}\, a_{lm}\, a_{mi} + a_{im}\, a_{ml}\, a_{lk}\, a_{kj}\, a_{ji}) A_n A_o \cdots A_M \right) + \ldots
\end{aligned}
$$

(eq. 2)

The SQ and DM digraphs equivalent matrices and evaluative (permanent) function are established following equations eq.1 as well as eq. 2 respectively. The advantages of the evaluation function are that they combine all of its characteristics and interactions without losing detail. An individual's SQ and DM parameters/ dimensions have been assessed and evaluated. The main assumption for this analysis was that there are no isolated parameters and that there is an interaction between the parameters. The respondent's data on DM and SQ attributes/ dimensions was gathered by using a questionnaire designed according to the SIIP study in the Indian context. The whole sample has been split into 2 sections. Section 1 is composed of SQ (Spiritual Quotient) dimensions aspects while section 2 deals with Decision-Making styles (DM), which incorporated aspects of CP and TP. The questionnaire was framed using a psychometric method. SQ questions have been focused on the categories proposed by Wiggleworth, 2012 and questions on DM were based upon the GDMS model (Scott and Bruce, 1995), as illustrated by the conceptual structure (Figure 1 and Figure 2). The scale of 1 to 5 (1 - extremely "disagree, 2 – disagree, 3 – partially disagree, 4 – agree and 5 – extremely agree") has been utilized for allotting degrees of agreement in the questionnaires. There were 16 questions in total, of which eight were positive and eight were negative (psychometric test-based). The participants were advised to select only a single choice. The diagraph interaction model of Figure 4 is represented into an equivalent matrix described in the following equation (Eq. 3):

$$
SQ = \begin{bmatrix} Sq1 & e12 & e13 & e14 \\ e21 & Sq2 & e23 & e24 \\ e31 & e32 & Sq3 & e34 \\ e41 & e42 & e43 & Sq4 \end{bmatrix}
$$

(eq.3)

The relative value of the attribute (off-diagonal) elements of aij is shown in Table 1. The relative values assigned according to the perception by the author regarding SIIP implementation effectiveness has been assumed, wherein, the relative value of the various attributes is maintained as equally relevant. The level of relative significance variation could be made for sensitivity analysis and would be taken up in future contributions to research. (Table 1).

Table 1. Attributes/Dimensions Relative importance

Class Description	Relative importance of attributes	
	aij	aij= 10 - aij
Two attributes are of equal importance	5	5
One attribute is slightly important	6	4
One attribute is very important over others	7	3
One attribute is most important over others	8	2
One attribute is extremely important over others	9	1
One attribute is exceptionally important over others	10	0

Eq. 4 represents the permanent function for SQ digraph which is developed by considering eq. 3.

$$Per(SQ) = \prod_i^4 S_{qi} + \sum\sum_{1\ 2\ 3}\sum\sum (a_{ij})S_{ql}S_{qk}S_{ql'} + \sum\sum_{1\ 2\ 3}\sum\sum (a_{ij}a_{ji})S_{qk}S_{ql}S$$

$$+ \sum\sum\sum\sum_{1\ 2\ 3}\ (a_{ij}a_{jk}a_{kl} + a_{ik}a_{kj}a_{ji})S_{ql'}$$
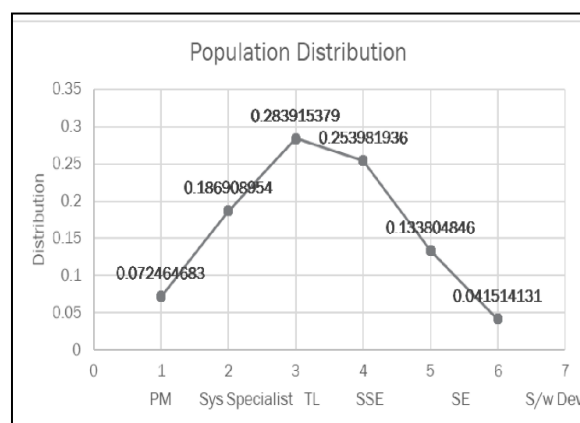
(eq. 4)

The participants' index for SQ was generated by putting the values of questionnaire for SQ attributes (dimensions) and considering relative importance among them as equal (Table 1). For all the participants the same procedure is repeated to generate the SQ index. Similarly, DM index was also developed.

Discussion and Analysis

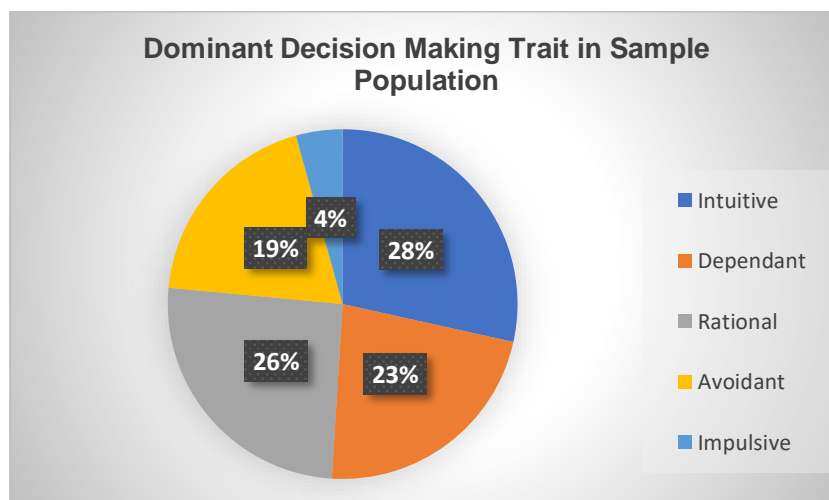During the evaluation of SQ and DM, 100 percent of confidentiality has been maintained. A total of 250 responses have been obtained from IT professionals (Software Developers/ Sw Engineer/ Sr Sw Engineer/ Team Lead/ System Specialist/ Project Manager) of a reputed IT organization involved in niche R&D in India. Proportionate Stratified Random Sampling Technique was employed to select 250 engineers/ software developers from the Organisation. Stratification was done on two factors, first on the basis of qualification (i.e., graduate and postgraduate) and second on the basis of position/ level. Figure 5 indicates the distribution of participants.

Figure 5: Total Population Distribution in the Organisation (Distribution: Mean (μ) = 3.29; Std Dev = 1.37)

Out of 250 respondents (participants), around 5% respondents were in the age range of more than 40 years, 23% respondents were in the range of 30-40 years of age, and 72% in the range of 23-30 years of age, which strongly suggested that participants have been mainly young software professionals. This is a significant conclusion for the purpose of this research as it expressed that bulk of the workforce in niche IT-based R&D institution is occupied by a large number of 'young professionals' and their spiritual quotient levels is a key component in influencing their performances and also overall performance/productivity of the Organisation. Also, a low percentage (of 5%) of respondents in the age range of more than 40 years indicates high attrition existing in the demanding R&D field which requires constant knowledge updating and upskilling from the employees to be relevant in the market. The bulk of the population below 30 years, were fresh graduates/ postgraduates and researchers. Age is considered a significant factor of both SQ as well as DM, people acquire knowledge, experience, and maturity with age. But this aspect did not play an important role in interpreting the data because of less senior respondents. It also showed that there is a desperate need for senior professionals in this field. It has been seen that the DM process in an individual is a combination of all five styles (of GDMS), however, the performance and SQ depends on which style has a strong influence. Based on the survey, Figure 6 depicts the distribution of dominant DM trait in the population under research.

Figure 6. **Distribution of population-based on dominant DM trait**

Dominant Decision Making Trait in Sample Population

- Intuitive — 28%
- Dependant — 23%
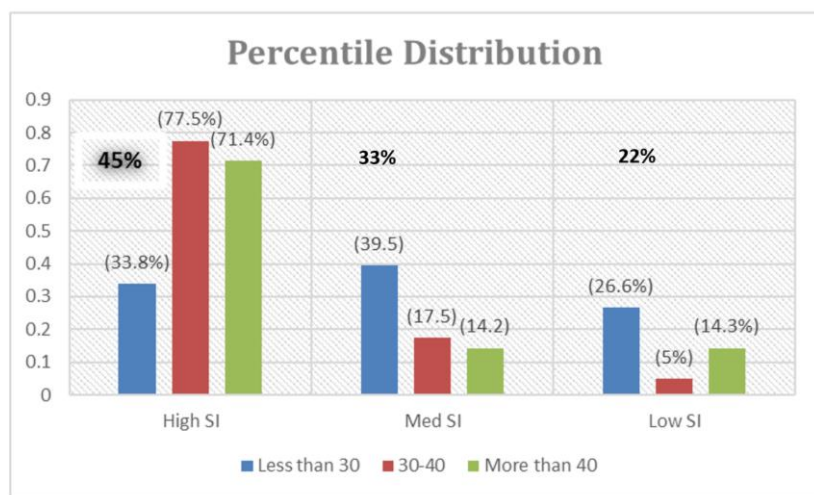- Rational — 26%
- Avoidant — 19%
- Impulsive — 4%

It can be observed that the IT professionals under survey demonstrated a low percentage of Impulsive style of 4% (impulsiveness proposed by the authors in place of spontaneous style, as it has been observed as a negative trait in the context of this research), with avoidant as 19%, dependent as 23%, rational at 26% and intuitive at 28%. A high percentage of rationality and intuitiveness was observed, indicating respondents effectively using critical thinking which was a positive indicator, whilst dependent and avoidant style was found predominantly in younger IT professionals (less than 30 years), who, although qualified for the job, depended on their 'seniors' for guidance and authority. Figure.7 shows the percentile distribution of SI between the three age groups. The age has been considered in three groups i.e., less than 30 years, 30-40 years, and more than 40 years. Likewise, SI has been divided into three groups i.e., high/ medium/ low. It has been observed that the age-wise population distribution in the Organisation is 76% for individuals below the age group of 30 years, 23% between 30-40 years, and only 4% above 40 years. Among these, 45% have been observed to have high SI, 33% medium, and 22% low SI. The classification of 'Medium SI' has been deliberately given, because an abrupt transition from high to low SI would be illogical and give an incorrect classification to the population and connotation to the study. High SI attributes have been observed in the age group of 30-40 years and medium-low SI in the younger population i.e., less than 30 years. Whereas the population above the age group of 40 years has a positive bias towards high SI.

Analysis reveals a correlation value of 0.723 showing a positive relationship between Age and SI. This argument is further strengthened by seeing a positive trend in the Age v/s SI test of linearity.

Figure 7. **Percentile distribution of SI on a sample population**

A significant question that needs to be answered here is whether there is an influence on decision-making and hence success, or not, of spiritual intelligence? It can be deciphered by analyzing the collected data that there is a significant amount of influence of Spiritual Intelligence (SI) on

Decision Making (DM). Based on the results obtained by factor analysis and regression, the relationship and effect of SI on DM across all designations and gender has been summarised in Table 2.

Table 2. Relationship between SI and DM

Factor # 1	Factor # 2 (DM Trait)	Relationship between SI and DM
SI	Intuitive	Strong Positive
SI	Rational	Strong Positive
SI	Avoidant	Strong negative
SI	Dependant	negative
SI	Impulsive	negative

In this research, after establishing 'qualitative relationships' among SI parameters and decision-making styles, 'quantitative relationship/ impact' of SI on various decision-making styles was also found using regression analysis. For this, SI was taken as the independent variable which impacts

decision-making styles (dependent variables), which would in turn influence the performance of an individual. Table 3 brings out the quantitative relationship results post statistical analysis using IBM SPSS software.

Table 3. Quantitative Estimates between SI and DM Traits (Regression Analysis)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1 (Intuitive)	.935ᵃ	.874	.871	.270
2 (Spontaneous)	.819ᵃ	.671	.663	.291
3 (Avoidant)	.778ᵃ	.605	.596	.337
4 (Dependant)	.848ᵃ	.720	.713	.400
5 (Rational)	.936ᵃ	.875	.872	.259

a. Predictors: (Constant), Value system

In Table 3, R denotes the correlation between the predicted and observed DM traits; the high value of R Square indicates the variance for the Independent variables account in the dependent variable and modified R square predicts indication of its predictive power more realistically. The high correlation value indicates the model predicts the relationships rather precisely and thereby validates the proposed framework. The next critical question must be replied that: is there any effect on the CP (contextual performance) of spiritual intelligence? This is a very important factor of overall performance assessment, which was extensively explored in the literature survey, as it significantly contributes to generating the efficiency index of an individual. Therefore, arises the necessity to study if CP is affected by SI or not. The data gathered from the questionnaire, show that SI has a direct and important effect on CP. Although IP relies on TP, CP, and DM it gets predominantly influenced by SI. During the research, it is noted that a direct positive relationship exists among indices of SI and CP. The proposed SIIP structure would support leaders and other stakeholders in the highly competitive IT/ R&D field to create and maintain their human capital and develop a sound ecosystem of selection/ appraisal. IP must not be calculated based on TP alone. Although CP articulates and promotes an institute's organizational, social and mental objectives, and DM articulates individual functioning and response to external stimuli, these must be given proper significance for calculating the IT professional's overall performance in the R&D field.

Conclusions

In the present article, the spiritual quotient and individual performance dimensions have been established based on decision-making styles. In order to create SQ (spiritual quotient) and decision-making style-based performance (IP) metrics, the graph-theoretic methodological structure has been used. The digraph represented experiences of the spiritual quotient, individual performance, and decision-making style; sub-dimensions and matrices identical. The SQ and DM indices were generated using permanent functions. It has been observed that SQ has a direct and powerful effect on CP as also impacts DM as per relationships found during the research. Since, IP is a mixture of TP, CP as well as DM, it gets predominantly affected through SQ. To assess the individual performance of an IT professional, merely quantifying its performance will not provide correct results. The need for an hour is a more systematic and inclusive technique. The present research analysis is one of its types since no prior research works has analyzed such an environment composed of Spiritual intelligence and Decision Making, thereby contributing to Individual Performance in the IT/ R&D sector. The proposed SIIP model would assist leaders and other IT sector stakeholders in developing and managing their human resource and establishing a sound R&D ecosystem. This article will open up a new range for the researchers as well as scholars

to leverage and expand the latest research work in a different area of interest.

Authors Contributions

The above-mentioned author has made a significant, direct, and intellectual contribution to the work, and give their approval for publication.

Conflict of Interest Statement

The author declares that the analysis was performed in the absence of any financial or commercial relationships that might be construed as a possible conflict of interest.

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