

**Analyzing the efficiency of the Six Sigma methodology in processes optimization-
Case study of the Tunisian - company SFBT****تحليل فعالية منهجية 6 سيجما في تحسين العمليات -دراسة حالة المؤسسة التونسية-SFBT****Jallouli Fayza¹, Belbel Riad²**¹Assistant Professor at Higher institute of industrial management, Sfax, (Tunisia),
fayzajallouli@gmail.com² PhD student at FSECSG, Lariedd laboratory, Badji Mokhtar University, Annaba, (Algeria),
riad.belbel@univ-annaba.org**Received:** 03/11/2022**Accepted:** 27/12/2022**Published:** 31/12/2022**Abstract:**

This study aims to evaluate the number of accidents and to optimize the use of the Six Sigma methodology in health management and work safety in SFBT company-Sfax-Tunisia. Based on Six Sigma method tools, such as histograms, cause-effect charts, Big Five personality test, SPSS version software 22, Matlab Software, The Bradley Curve, the HEXACO 25-Faceted Personality Model; it has been shown that work safety is one of SFBT's primary interests and that adopting Six Sigma method in SFBT improves the quality of the product and services in the framework of DMAIC model (Define, Measure, Analyze, Improve, and Control), which affects the design of a new service "security service". The study concludes with a set of recommendations that may help SFBT managers to better adopt of Six Sigma method in health and safety management.

Keywords: Six Sigma methodology; Process Optimization; Controlcharts; Big5 model; SFBT company.

JEL Classification Codes: M11 ; M13 ; L15.

ملخص :

تهدف هذه الدراسة إلى تقييم عدد الحوادث وتحسين استخدام منهجية 6 سيجما في إدارة الصحة وسلامة العمل في شركة SFBT بصفاقس-تونس. واستنادا إلى أدوات طريقة 6 سيجما، مثل الرسوم البيانية، مخطط السبب والنتيجة، اختبار الشخصية Big 5، برمجيات SPSS 22 و Matlab، منحني Bradley، نموذج شخصية HEXACO ذو 25 جانبا؛ تبين أن السلامة في العمل هي إحدى اهتمامات SFBT الرئيسية، وأن اعتماد أسلوب 6 سيجما في شركة SFBT يحسن جودة المنتج والخدمات في إطار نموذج DMAIC (التحديد والقياس والتحليل والتحسين والتحكم)، مما يؤثر على تصميم خدمة جديدة "خدمة الأمن". وتختتم الدراسة بمجموعة من التوصيات التي قد تساعد مديري SFBT في تبني طريقة 6 سيجما بشكل أفضل في إدارة الصحة والسلامة.

كلمات مفتاحية: منهجية 6 سيجما؛ تحسين العمليات؛ دليل المتابعة، نموذج Big5؛ مؤسسة SFBT.

تصنيفات JEL: M11؛ M13؛ L15.

INTRODUCTION:

In the last decade, Six Sigma has been initially applied in the manufacturing sector. Six Sigma approach offers benefits and eliminate unnecessary activities delivered by existing approaches. Hence, the importance of observing, in the workplace, the links between the employee's reactions and the risks inherent to his tasks and his work environment, and to act, as an agent of change, to that he adopts a safe behavior.

No one is able to define the set of problems that may arise in the workplace and the actions that may cause in an individual. As an employer, in addition to eliminate dangerous work situations, it is important to equip yourself to counter the behaviors so-called unsafe.

In contrast to safety awareness, behavioral analysis focuses on behavioral patterns to detect internal threats, whether accidental or intentional. A behavioral analysis tool will generally develop a mud plot of user behavior and, from there; point out possible anomalies to call for a thorough examination.

For this purpose, we will present in this article our practical study in the company SFBT Sfax, which relies on the effectiveness of the Six Sigma methodology in the management of health and safety service, by applying the tools of the Six Sigma method. Such as histograms, cause-effect diagram, AMDEC, Big Five personality test, SPSS software version 22, Matlab software, - Bradley curve, and HEXACO model in 25 facets of personality.

1- Literature review:

Six sigma as a methodology for process improvement involves a vast library of tools and knowledge, at the most basic definition, six sigma is a statistical representation for what many experts call a "perfect" process.(certification, 2018, p. 10)

Six Sigma can be articulated as a long-term vision, as an objective that the company seeks to achieve in order to achieve excellence and increase the return on investment of the implementation in the SMI, among other things. investments related to the certification of quality, hygiene, safety, health and environment standards, as well as the costs generated by improvement and control actions.(Bentley & Peter, 2010, pp. 21-24)

Over time, Six Sigma has undergone significant changes(Aghili, 2009). Antony (2007) grouped these changes into three generations. The first generation of Six Sigma (1987-1994) was focused on reduction of defects and saw success with Motorola. The second generation (1994-2000) was concentrated on 15 cost reduction and was adopted by companies such as General Electric, Du Pont and Honeywell. The third generation (2000 onwards) is oriented to creating value for the customers and the enterprise itself, and finds its application within companies like Posco and Samsung. This is more oriented to service and commercial business processes including transactional systems quality.(Tjahjono, 2010, pp. 14-15).

To adopt Six Sigma, the organization must follow four phases: (Simplilearn, 2022).

Measure: In this step, the organization measures existing systems to learn what can be considered a baseline or benchmark, among other things.

Analyze: This step focuses on analyzing the system to identify ways to eliminate defects. This can be done in a variety of ways, including statistical analysis to determine the cause of an issue.

Improve: During this step, project teams seek optimal solutions, then develop and test the plan of action for improving a process or goal.

Control: The Control step can be ongoing—an organization may modify operating instructions, policies, or procedures to help prevent future defects.

2-Company Presentation SFBT:

To determine the effectiveness of the Six Sigma methodology optimization process and its impact on health and safety service work, we have chosen SFBT Company in Sfax. In this section, we will present the background of this company and its activities.

2-1 Presentation of the SFBT SFAX

S.F.B.T: Refrigeration and brewery Company-Tunisia: its head office is located in BAB SADOON and it has installed other production and sales sites in various regions: S.F.B.T Sfax, S.F.B.T Mahdia, S.F.B.T Charguia.

Fig (1): presentation card of S.F.B.T Sfax

- **Company name : Tunisian Beverage Manufacturing Company**
- **Date of creation : 1983**
- **Location: in the Powder Industry Zone 2, S.F.B.T Sfax**
- **Staff : 296 employees including 9 women**
- **Activity : production and marketing of soft drinks**

Source: the company's files

The main products manufactured by SFBT Sfax are: Coca Cola, Fanta (orange, lemon), Boga (lemonade, cider), and Tropical Hawaii.

The plan of S.F.B.T Sfax consists of three production groups:

- A line for family production (1L) with a capacity of 6000 bottles per hour (H.K) ;
- A line for standard production with a capacity of around 24,000 bottles per hour (S.I.G)
- A line for the production of plastic with a capacity of 7000 bottles per hour (P.E.T).

Table (1): Soft drink production in 2015

Production lines	Packaging	Speed
PET plastic line	PET (1l, 1,5l)	20.500 B/h
Small Glass Line	Glass(19 cl-33cl-25 cl)	20.000 B/h
Large Glass Line	Glass 1 l	9000 B/h
	Glass (33-19-35)	18000 B/h

Source: company outputs

2.2 Communication based on the display of identified hazards

The study explains the state of communication in SFBT Sfax based on the display identified dangers in table 2.

Table (2): Communication based on the display identified dangers

State of progress	Max score	Audit Score	Qualitative assessment
Low	5		No communication
Basic	10	8	Existence of a communication supported by drawings, photos and pictograms On: the risks incurred, the PPE to wear and the rules to respect, the general information, the OHS policy, the objectives. The latest accidents recorded, etc.
Improvement	15		a- All meetings include a security point on the agenda, b- The members of the senior management and the middle management discuss security with their teams at least once a month, according to an established schedule, c) Executives regularly visit the workplace to discuss safety with employees (as verified through employee interviews), d- Existence of regular communication on the policy and values supported by management, on incident trends, on the status of indicators in relation to objectives, on the importance of prevention in everyday life etc. e- Existence of visual communication standardized and managed by one or more defined persons.
Excellent	20		Establishment and implementation of a communication improvement program involving employees at the workplace.
	20	8	

Source: the meeting outputs of SFBT company about the project

2-2-1 Comments External evaluation

Communication based on the display of identified hazards, PPE to wear, safety instructions to be respected is present in the majority of workplaces. The SST policy is posted in various places of the factory with no communication about accidents. Lack of communication about the objectives. Security is dealt with in meetings only within the framework of the SST Committee.

2-3Risk Analysis

Analysing risks is the cornerstone of HSO system, and Table 4 explains how SFBT Sfax analysis its risks.

Table (4): Risk Analysis

State of progress	Max score	Audit Score	Qualitative assessment
Low	5		Absence of a formal or informal risk analysis process
Basic	10	8	a- A general risk analysis is conducted at least every 3 years and whenever there is a change of direction. b- The risk analysis is conducted at least for dangerous workstations (work without protection, old equipment, etc ...) c- Employees are involved in risk analysis d- An action plan to reduce risks is established.

Improvement	15		<p>a- Identical to the previous one + there is a follow-up of the progress of the action plans</p> <p>b- A detailed risk analysis is conducted for each department and for each hazardous work</p> <p>c- A risk analysis program is established for all work buddies and tasks ; This program specifies the planning and monitoring dates for the reviews of the analyzes.</p> <p>d- Line managers are trained in risk analysis and begin to take charge of this analysis at the level of their services.</p>
Excellent	20		<p>a- A detailed risk analysis is conducted for each department or department and for each workstation and the results of the analysis are formalized.</p> <p>b- Staff is involved at all levels of the analysis.</p> <p>Newly recruited employees carry out a risk analysis of the activities assigned to them.</p> <p>d- Visual communication on risk analysis is in place.</p>
	20	8	

Source: the meeting outputs of SFBT company about the project

2-3-1CommentsExternalevaluation

Risk analysis is annually documented but it is not planned to review it at each change of management in order to ensure that management remains informed and involved. The analysis covers all places where the danger manifests itself. Executing staff and their direct supervision are involved in the analysis only in a partial way: staff are only consulted in cases where there is a need for clarification. A formal plan of action for risk reduction is established but there is no evidence of monitoring its implementation.

2-4Worker Accident Survey

The results of worker accident survey are the following

Table (5): Worker Accident Survey

State of progress	Max score	Audit Score	Qualitative assessment
Low	5		No analysis
Basic	10	6	<p>a- A formal analysis to identify root causes is conducted for accidents with lost time, accidents without work stoppage and almost significant accidents</p> <p>b- Each supervisor is trained in the accident investigation procedure and the identification of root causes.</p> <p><i>(Feed-back according to BU-RQ-110)</i></p>
Improvement	15		<p>a- Identical to the previous +: all accidents are recorded by area of activity, by activity, by location of the injury, trend analyzes are conducted.</p> <p>b- The middle management staff is responsible for the conduct of investigations and their follow-up.</p> <p>c- Involvement of the staff in the process</p> <p>d- Employees and middle management are trained to analyze the</p>

Analyzing the efficiency of the Six Sigma methodology in processes optimization-Case study of the Tunisian company SFBT-

			<p>root causes of accidents</p> <p>f- The SST Committee verifies that the root causes of accidents have been identified.</p> <p>g- Plans of action are drawn up and the feedback of experience following the corrective actions is communicated.</p>
Excellent	20		<p>Same as above:</p> <p>a- An updated list of corrective actions reviewed by SST Committee</p> <p>b- A follow-up of the preventive corrective effectiveness actions is implemented.</p> <p>c- A specific committee is set up for the conduct of work-related accident investigations</p> <p>The plant's SST committee ensures that the work accident investigation and corrective action process is working properly.</p>
	20	6	

Source: the meeting outputs of SFBT company about the project

2-4-1 Comments External evaluation

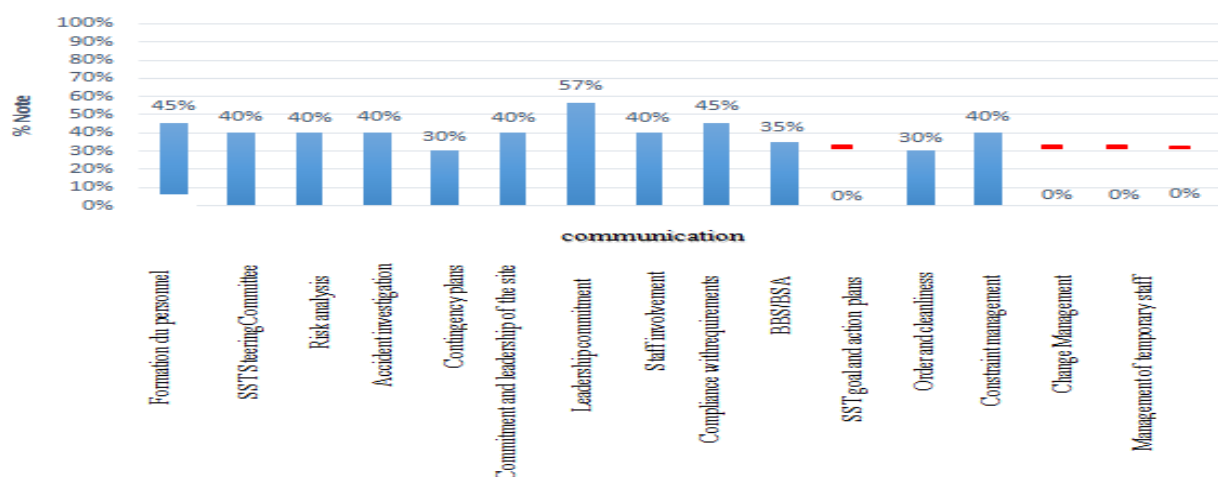
69 TAs in 2015 with 2080 days off 41% of accidents are subject to doubt (low back pain and cervical disease), 33% for various injuries, 25% for fractures and wounds. Accident investigations are limited to stop accidents and are performed in a summary manner and root causes are not always identified. The safety manager and the nurse are not trained in the investigation procedure and the analysis of the causes.

Members of the middle management are not trained in the analysis of causes.

2-5Preliminary definition of the problem

The state of preliminary definition of the problem can be presented in the histogramme below.

Fig (2): Preliminary definition of the problem



Source: the meeting outputs of SFBT company about the project

The figure of the histogram defines preliminary problem which consists of 0% BBS-BSA including behavioral analysis health and safety of employees work, 0% management of contractors, 0% change management and 0% personnel management.

2-6 Project Charter

SFBT has designed a charter for its project, it can be presented in the table 6.

Table (6): Project Charter

Project Charter		
Name of the project	Project #:	Start of project / end dates
Improve the culture culture score		From 04 April 2016 to 30 September 2018
Project Manager	Fayçal Frikha	Current status: Culture security
Membres de l'équipe		
Mohsen Kaaniche, Fayçal Frikha, Wissem ben Arfi, Yassine Masmoudi, Mohamed Idriss, Karim Zouari, Nizar Zghal, Izziddine ben Fajria, Fayçal Kénoun, Mawa Affes	Capital	Spent:
Mission / project overview:		
Improve the safety culture score from 28% to 72% by moving from the basic phase to the improvement phase for the modules: BBS / BSA, contractor management, change management, seasonal staff management, OHS objectives and action plan, accident investigation, compliance with requirements, commitment and leadership of management, contingency plan, risk analysis, OHS steering committee and communication	Improve safety culture score from 28% to 72% / Reduce work-related accidents by 50% and the number of days lost compared to 2015	
Objectives:	Net benefits:	
Improve safety culture score from 28% to 72% / Reduce work-related accidents by 50% compared to 2015 / Reduce by 50% the number of days lost		
Hypotheses:	Risks and constraints :	
The available data of the security diagnosis conducted on January 16, 2016 by an external consultant shows a basic level of culture safety of 28%, the objective is to work on the 12 modules that have a score $\leq 40\%$, improve the scores of these modules at the improvement phase, a simulation shows that the score can reach 72%	NA	
Phase 1 : definition of the project from :4/4-24/4 2016 Phase 2: Measure from April 24th to May 20th Phase 3: Analyze from May 2nd to May 30th 2017 Phase 4: Improve from June 1st to July 15th 2017 Phase 5: Check from July 15th to September 30th, 2018	High season and lack of availability of the steering committee	
Project guide time (total time required to implement)	Other key stakeholders and affected areas	
hypotheses:	Risks and constraints:	

Source: the meeting outputs of SFBT company about the project

In terms of behavior, the same situation does not trigger the same reactions in each time. People act according to their history, their interpretation of the situation and the subjectivity of it. To change a behavior, it must first make sense for us and then change it.

Hence, the importance of observing, in the workplace, the links between the employee's reactions and the risks inherent to his tasks and his work environment, and to act, as an agent of change, to that he adopts a safe behavior.

No one is able to define the set of problems that may arise in the workplace and the actions that this may cause in an individual. As an employer, in addition to working to eliminate dangerous work situations at the source and to eliminate, to the best of your ability, the risks related to your sector of activity, it is important to equip yourself to counter the behaviors so-called unsafe. In contrast to safety awareness, behavioral analysis focuses on behavioral and behavioral patterns to detect internal threats, whether accidental or intentional. A behavioral analysis tool will generally develop a mud plot of user behavior and, from there; point out possible anomalies to call for a thorough examination.

3-Measurement and Analysis:

In this step, we will begin the measurement of our objective by a following the Big Five personality test, stress test at work, number of accidents including the follow-up of frequency rate, severity rate, frequency index, index of severity, self diagnostic questionnaire CEOT, software SPSS version 22.

3-1 Big Five Personality Test

This information is crucial in choosing a career. This personality test measures the five main personality traits, more commonly known as "Big Five", identified over the last thirty to forty years by different independent teams of researchers. The Big Five test is by far the most scientifically sound and reliable psychological model for evaluating personality.

At the end of the test, you will see what is the score at the level of the five major traits of personality. In addition, you can even get an extended report if you wish. The questionnaire of big five test contains 120 statements, with no time limit to answer. For each statement, the worker have to choose the answer that best reflects his opinion.

Table (7): the 5 answer of Big 5 test

--	Not agree at all	If the statement is totally wrong if you do not agree at all
-	Disagree	If the statement is generally false or you do not agree
-/+	Neutral	If you are not interested in the statement, if you cannot decide, or if the statement seems to you as true as it is false
+	Agreed	If the statement is generally true or if you agree
++	Totally agree	If the statement is absolutely true or if you agree completely

3-2 Big Five personality test results

The Big Five personality test provides a concise measure of the top five personality factors as well as the six facets that determine each factor. Factor scores provide a general and indicative description of the individual. The facet scores describe in more detail the specific personality traits that make up the general and indicative description. The report contains three parts:

Part One – Overview Brief: overview of the scores attributed to the five major personality factors and the thirty facets associated with them.

Part Two - A closer look: In keeping with best practices, this section of the report has been specifically designed to provide a deeper insight. This part contains visual and textual summaries. Accuracy: Descriptions for upper and lower scores are usually accurate. On the other hand, scores near the upper and lower thresholds may give a somewhat less accurate description of the person tested.

3-2-1 The five great factors and personality facets

Each of the five factors has six facets. It is quite common that the scores obtained for the facets are relatively similar to - or close to - those obtained for the factor. Nevertheless, there can sometimes be a clear difference. In such cases, we recommend using the facet scores rather than the larger ones attributed to the factors.

Table (8): Five major factors and personality facets

The five major personality factors	The thirty facets of personality that make up the factors	
Opening to the experience	Imagination Artistic interests Depth of emotions	Willingness to experiment Intellectual curiosity Tolerance to diversity
Professional conscience	Sense of skills Order Sense of responsibility	Fighting spirit Search results self-discipline wariness
Extroversion	Amenity Sociability Assertiveness	Level of activity Stimulation search Positive emotions
Agreeableness	Trust in each other Sincerity Altruism	Conformity Modesty Sympathy
Natural reactions	Anxiety Anger and hostility Gloom / contentment	affectation Indolence Sensitivity to stress

Source: the meeting outputs of SFBT company about the project

3-2-2 Understanding the scores

This report ranks your scores on a "very low" to "very high" scale. For comparison, the percentage of people in each category is shown. You will see that we have described the profile of people with low and high scores for each factor and facet. This method has been particularly effective in ensuring that people understand the personality trait measured. People who score average will have a variable mix of "low" and "high" descriptions, less extreme.

Fig (3): Approximate distribution of the normal adult labor force

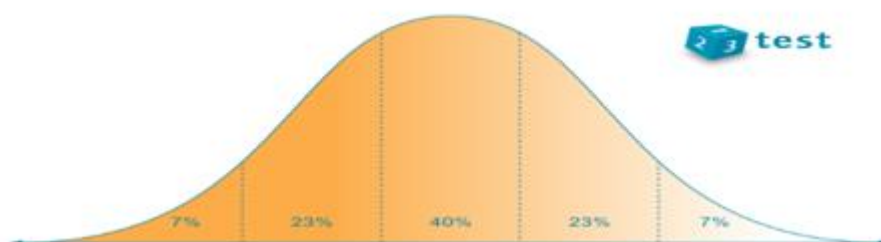


Table (9):Thescores by comparison with the percentage of people in each category.

Approximate distribution of normal adult labor force					
Categories	Verylow	Low	Average	Top	Very high
Cumulative Percentile	<7%	7%>30%	30%>70%	70%>93%	93%>
Size of the category	7%	23%	40%	23%	7%

Source : Author's outputfromsoftware Matlab

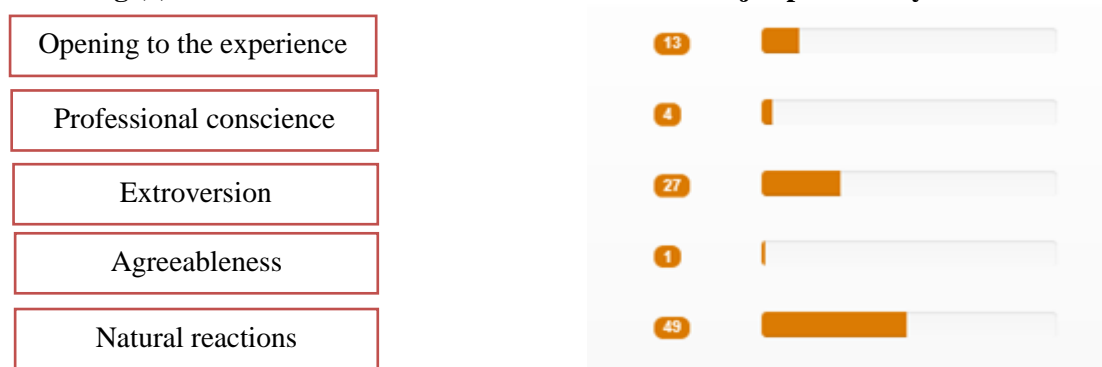
3-2-3 The strongest personality factor

The score deviates the most from the number 50, downwards or upwards, indicates the strongest personality trait of the person in question. This personality trait is likely to exert the greatest influence on your overall behavior, motivations, values and reactions in life and work. The second score that deviates the most from 50-downwards or upwards-is the second that can exert the greatest influence, and so on.

3-2-4 Part one -Overview

Brief overview of the scores attributed to the five major personality factors and the thirty facets associated with them. We can present a Visual summary of our results in figure 4.

Fig (4): Result of the scores attributed to the five major personality factors



Source: Author's output from software SPSS

Table (10): Result of the scores attributed to the five major personality factors

The five major personality factors	Description of a person in the category Low	Percentile	Cate gory	Description of a person in the Top category
Opening to the experience	Traditionalist Down to earth Convenient Tory Emphasize traditional viewpoints and problem solving	13	Low	Imagination + Open Mind + Focuses on creative and conceptual problem solving
Awareness	Spontaneous disorganized Prefer flexible plans + Does not appreciate precise details	4	Very low	Conscientious Disciplined + Effective + Organized + Appreciates the details + Great sense of duty

Extroversion	Reserved + Formal + Serious + Calm + Prefers to work alone + Avoid roles requiring live leadership	27	Low	Open + Friendly + Assertive + Enjoy working with others + Enjoy roles requiring direct leadership
Nice personality	Stubborn + Skeptical + Competitive + Proud + Prefers Competition to Collaboration	1	Very Low	Feels compassion + needs to please + good mature + prefers collaboration to compassion and conflict
Natural reactions	Do not get angry easily in stressful situations Relaxed Resilient + Calm	49	Aver age	Experiencing emotional reactions and negative feelings Easilygetupset

Source: the meeting outputs of company about the project

3-2-5 Part two a closer look

The facets of the five major factors describe in more detail the distinctive and particular traits of an individual. Each factor has six facets. The scores and statements in this article are based on worker's response profile to the Big Five Personality Test. These scores were interpreted by a team of occupational psychologists.

Resist the reflex of translating the scores or statements by the words "good" or "bad". The attitude of a person is always "good" or "bad" depending of the situation. What can be considered an asset in a situation - strength and assertiveness, for example - may prove to be a handicap in another situation.

3.2.5.1 Measured sphere opening to the experiment

The openness to the experience describes the active search and the appreciation by a person of the experience as such. People who score high are imaginative and open-minded. They enjoy working in a changing, challenging environment. People who score a low score tend to prefer the routine and are more conventional. The figure 5 presents a visual summary to this part.

Fig (5): Visual summary of the opening to the experiment



Source: Author's output from software SPSS

Openness is often perceived as a sign of health or maturity. However, both ways of thinking - open and closed - are both necessary depending on the environment. The intellectuality of the open person can be an asset for a teacher or strategist. But research has shown that introverted thinking is linked to superior professional performance in areas such as investigation, sales, and a variety of services.

The answers to the Big Five Personality Test indicate that Opening Experience Score is 13, and belongs to the Low category. People who know you well - not just those who love you - are likely to describe you in these terms: Practical - Down to earth - Conventional - Stubborn - Hostile to change - Not really sensitive.

The following facet scores will not always be in the same category as the factor score. They can sometimes be very different. These differences reflect the uniqueness of your personality. Differences can also help you more accurately identify your strengths and limitations, and focus on your needs while controlling them.

For a description and a thorough understanding of your behavior in this area, you will need to analyze the scores of the six facets of this factor.

3.2.5.2 The facts of openness to experience

a) Imagination

For imaginative people, the world is often too simple and ordinary. For this facet, high scores use imagination not as a leak but as a way to create a richer and more interesting inner world. Low scores are more likely to stick to the facts and less to their imagination. The score is 50, and ranks in the middle category.

b) Artistic interests

The high scores of this facet appreciate beauty, both in art and in nature. They get involved and are easily absorbed by artistic and natural events. They do not necessarily have talents or artistic training but many would like it. The fundamental characteristics of this facet are the interest and the appreciation of the natural and artificial beauty. Low scores lack aesthetic sensitivity and artistic interest. The score is 10, and ranks in the low category.

c) Depth of emotions

In this facet, high scores solicit and easily perceive their own feelings. Low scores are less aware of their feelings and tend not to openly express their emotions. The score is 10, and ranks in the low category.

d) Willingness to experiment

High scores aspire to discover new activities, to travel abroad, to experiment with new things. Familiarity and routine annoy them. Low scores tend to experience discomfort in change and prefer the familiar routine. The score is 40, and ranks in the middle category.

e) Intellectual curiosity

In this facet, high scores enjoy juggling ideas. They are open to new and unusual ideas and appreciate debates and intellectual questions. They appreciate the problems, thoughts, puzzles and riddles of the mind. Lower scores prefer to confront people and things rather than ideas. They consider intellectual gymnastics a waste of time.

Intellectual curiosity must not be associated with intelligence. Intellectual curiosity is a style of intellectual apprehension, not an intellectual skill.

However, high scores in this facet tend, more than the low scores, to score slightly higher scores on standardized intelligence tests. The score is 30, and ranks in the low category.

f) Tolerance to diversity

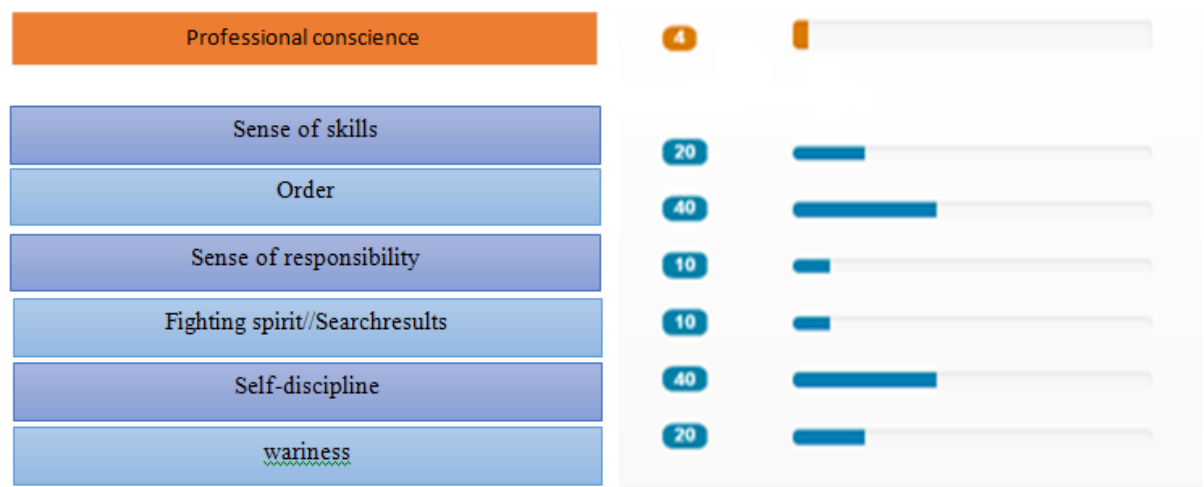
Tolerance to diversity refers to a disposition to challenge traditional authority, conventions and values. In its most extreme form, it can even result in outright hostility to the rules, sympathy for the rebels, and a taste for ambiguity, chaos, and disorder. Low scores tend to accept authority and prefer stability and security of conformity to tradition. They are generally conservative in their apprehension of life.

The score is 60, and ranks in the middle category.

3.2.5.3 Measured sphere professional consciousness

Professional conscience describes the degree of organization, motivation and thoroughness of a person in his life and in pursuit of his goals.

Fig (6): Visual summary of the professional conscience



Source: Author's output from software SPSS

High scores are methodical, motivated and organized. Low scores are casual, less focused and less inclined to plan things. The benefits of a high professional conscience are obvious. Conscientious individuals avoid problems and achieve high levels of success because they plan their goals and are persistent.

They are viewed positively by those around them who see them as intelligent and reliable people. The flip side of the coin is that they can be compulsive perfectionists and job junkies. On the other hand, extremely conscientious people can be perceived as old-fashioned and boring. Unconscientious people may be criticized for their unreliability, lack of ambition and inability to follow the path. But they will experience many pleasures without result and will never be considered old fashioned.

the answers to the Big Five Personality Test indicate that : Your Professional Consciousness score is 4, and belongs to the very low category. People who know you well - not just those who love you - are likely to describe you in these terms : Very casual - Casual - Rather unreliable - Easily distracted - Impulsive - Need to be a little more focused – Disorganized.

The following facet scores will not always be in the same category as the factor score. They can sometimes be very different. These differences reflect the uniqueness of your personality. Differences can also help you more accurately identify your strengths and limitations, and focus on your needs while controlling them.

For a description and a thorough understanding of your behavior in this area, you will need to analyze the scores of the six facets of this factor.

3.2.5.4 The facets of Professional Consciousness

a) Sense of competence

The meaning of skills describes the confidence that the person has in his ability to accomplish things. High scores think they possess the intelligence (common sense), strength, and mastery to succeed. They have a high level of self-esteem and tend to feel prepared to face life. Low scores feel less effective and may feel like they are not controlling their lives.

The score is 20, and ranks in the low category.

b) Order

High scores are very organized, orderly and clean people. They like routine and a programmed life. They keep lists and plan their lives. Low scores tend to be disorganized, disordered and less methodical. The score is 40, and ranks in the middle category.

c) Sense of responsibility

This facet reflects the strength of a person's sense of duty and obligation. High scores have a strong sense of moral obligation. These people tend to have a strong sense of ethics and strict principles. The low scores consider contracts, rules and regulations to be "enclosing". Their approach to life is more casual, and they are sometimes less reliable or even irresponsible.

The score is 10, and ranks in the low category.

d) Combateness - Finding results

People who have a high score for this facet are fighting for excellence. Their struggle for their successes to be recognized keeps them in suspense; they work hard to achieve their goals. They have high aspirations and know how to give direction to their lives. However, very high scores can be obtuse and obsessed with work. They can even become workaholics. Low scores are not driven by the need to succeed; they tend to be content with a minimum of effort and work. Although they may not experience the need to succeed, they are often very happy with the results they get. The score is 10, and ranks in the low category.

e) Self-discipline

Self-discipline, often called "willpower," is defined as the ability to persist in difficult or unpleasant tasks until they are completed. People with a high level of self-discipline are able to overcome their reluctance to start tasks and not succumb to distractions. They are driven by a strong motivation to finish their work. People revealing a low level of self-discipline put things back into the day, get discouraged easily and show little perseverance. They often cannot finish their tasks, even those they really want to close. The score is 40, and ranks in the middle category.

f) Circumspection

Distrust describes the willingness to think carefully about all possible options before acting. High scores for the Circonspection facet are meticulous and take their time before deciding. The low scores tend to say or make the first idea that goes through their head, without taking into account the other possible options and the possible consequences of these options.

The score is 20, and ranks in the low category.

3.2.5.5 Measured sphere extraversion

Extraversion describes the energy and enthusiasm of a person in dealing with people. It refers to the person's preferences for the amount and intensity of interpersonal relationships.

Fig (7): Visual summary of the Extraversion



Figure 7: Visual Summary of Extraversion

High scores are sociable and actively seek the company of others. The higher the score, the more faithful the description will be. Low scores tend to be serious and reserved, and prefer not to be too numerous a company.

Your answers to the Big Five Personality Test indicate that: Your Extraversion Score and 27, and belongs to the Low category. People who know you well - and not only those who love you - are likely to describe you in these terms: Calm - Sober - Reserved - A little lonely - Cold - Quiet - Placed.

The following facet scores will not always be in the same category as the factor score. They can sometimes be very different. These differences reflect the uniqueness of your personality. Differences can help you more accurately identify your strengths and limitations, and focus on your needs while controlling them. For a description and a thorough understanding of your behavior in this area, you will need to analyze the scores of the six facets of this factor.

3.2.5.6 The facets of extraversion

a) Amenity

High scores naturally like talking to others and openly expressing positive feelings towards others. They quickly become friends and it is easy for them to form close and close relationships. Low scores are not necessarily cold or hostile but they do not go to others and are more reserved and formal. The score is 10, and ranks in the low category.

b) Sociability

Sociable people find the company of others pleasant, stimulating and rewarding. They appreciate the excitement caused by the crowds. Low scores tend to feel overwhelmed in large crowds and large gatherings. Therefore, they tend to avoid getting into such situations. It is not that they do not appreciate the company of others but their need for intimacy and time for themselves is far superior to that of people with a high score for this facet.

The score is 50, and ranks in the middle category.

c) Assertiveness

High scores in Assertivity appreciate speaking, taking charge and directing the activities of others. They tend to be the leaders in the groups. Low scores tend to stay behind and leave others in control. They are likely to be less talkative and less sociable than those who scored high for this facet. The score is 20, and ranks in the low category.

d) Activity level

Active people lead a rhythmic life; their actions are fast, they are dynamic, vigorous and involved in many activities. People who do not have a high score for this facet follow a slower, quieter, more measured pace. The score is 40, and ranks in the middle category.

e) Stimulation search

High scores for this facet of personality are easily bored if the stimulation rate is not important. They appreciate the brilliance, the swirl of activities. They tend to take risks and look for chills. The low scores are overwhelmed by noise and agitation and they avoid thrills. The score is 80, and ranks in the high category.

f) Positive emotions

This facet measures moods and positive feelings. People who score high usually have a range of positive feelings including happiness, enthusiasm, optimism and joy. Low scores are not necessarily unhappy people; they are simply less exuberant and less fiery.

The score is 40, and ranks in the middle category.

3.2.5.7 Measured Sphere agreeability

The pleasurable character of a person refers to the attitudes they adopt towards others. People who score high are compassionate, frank and cooperative. Pleasant people have an optimistic view of human nature. They think that people are basically honest, respectful and trustworthy. Low scores are emotionally resilient and generally unresponsive to others. They are independent, autonomous and competitive. Sometimes their skepticism about others' motives makes them suspicious, enmity and refusal to cooperate.

Pleasure is clearly an asset if one wants to achieve and maintain certain popularity. In general, nice people are appreciated more than they are rejected. Nevertheless, being endowed with a pleasant personality is useless in situations that require strictly objective decisions.

Fig (8): Visual summary of agreeability



Source: Author's output from software SPSS

People with low scores can make excellent scientists, critics or members of the armed forces. The answers to the Big Five Personality Test indicate that: Your Achievement Score is 1, and belongs to the very low category. People who know you well - not just those who love you - are likely to describe you in these terms: Stubborn - Avoid getting involved - Arrogant - Independent - Insensitive - Egocentric. The following facet scores will not always be in the same category as the factor score. They can sometimes be very different. These differences reflect the uniqueness of your personality. Differences can also help you more accurately identify your strengths and limitations, and focus on your needs while controlling them.

For a description and a thorough understanding of your behavior in this area, you will need to analyze the scores of the six facets of this factor.

Note: Your facet scores will not always be in the same category as your factor score. They can sometimes be very different. These differences reflect the uniqueness of your personality. Differences can also help you maximize the impact of your strengths and minimize the impact of your limitations.

3.2.5.8 The facets of Agreeability

a) Trust in the other

People with high scores in this facet fundamentally believe that people are generally honest, frank and well meaning. They judge people on their appearance and are quick to forgive and forget. The low scores for this facet tend to be rather skeptical and suspicious of the intentions of others. They tend to believe that others want to try to trick them or that they are devious.

The score is 20, and ranks in the low category.

b) Sincerity

The high scores for this facet do not feel the need to pretend or manipulate in relationships to others and are therefore candid, frank and genuine. Low scores suggest that partially distorting or omitting some truth in social and professional relationships is acceptable or even necessary. People find it relatively easy to be in touch with direct people who score high for the Sincerity aspect. On the other hand, they generally find it more difficult to relate to low scores. It should be noted that low scores are not devoid of principles, or immoral : they are simply less inclined to express their true opinions and feelings.

The score is 10, and ranks in the low category.

c) Altruism

Altruistic people find real value in helping others. Therefore, they generally appreciate helping people in need. Altruistic people believe that helping others is a form of self-fulfillment rather than sacrifice. Low scores do not particularly like helping people in need or getting involved in others' problems. They welcome requests for help as a burden imposed on them rather than as an opportunity for self-realization. The score is 10, and ranks in the low category.

d) Compliance

The high scores in this facet are about people who do not like confrontations. They are perfectly willing to compromise or deny their own needs to get along well with others. Low scores are more likely to favor competition than cooperation. They are frank, have no inhibition to express their anger. They can intimidate others to achieve their own ends.

The score is 10, and ranks in the low category.

e) Modesty

The high scores are modest people, rather oblivious and humble. However, it is important to understand that they do not lack self-confidence or self-esteem. Low scores believe they are superior to others. They may tend to arrogance and be perceived by others as pretentious.

The score is 30, and ranks in the low category.

f) Sympathy

High scores are tender and compassionate people. They viscerally feel the pain of others, empathic and easily pitted with pity. Low scores are not strongly affected by human suffering. They are more interested in truth and impartial justice than in mercy. The score is 20, and ranks in the low category.

3.2.5.9 Measured sphere natural reactions

Natural Reactions measure the different ways that people react emotionally to the pressures and stresses of everyday life. People scoring a low score at this level are emotionally resilient and do not easily do it. They tend to be calm, relaxed, and rarely experience negative feelings. They handle the pressures well.

Fig (9): Visual Summary of Natural Reactions



Source: Author's output from software SPSS

People who score high are endowed with strong, overly sensitive and emotional natural reactions. They respond emotionally to events that do not usually affect many people, and their reactions tend to be more intense. They are more likely to interpret ordinary situations as threatening and minor frustrations as "big problems". These strong "natural reactions" can reduce a person's ability to think clearly, make decisions, and manage stress effectively.

Your answers to the Big Five Personality Test indicate that: Your Natural Feedback Score is 49, and belongs to the average category. People who know you well - not just those who love you - are likely to describe you in these terms: Balanced - Rather relaxed - Reasonably laid-back - Normally lucid - Usually not one to tense up.

The following facet scores will not always be in the same category as the factor score. They can sometimes be very different. These differences reflect the uniqueness of your personality. Differences can also help you more accurately identify your strengths and limitations, and focus on your needs while controlling them. For a description of your behavior in this area, you will need to analyze the scores of the six facets of this factor.

Note: Your facet scores will not always be in the same category as your factor score. They can sometimes be very different. These differences reflect the uniqueness of your personality.

3.2.5.10 The facets of natural reactions

a) Anxiety

The "fight or flight" system, characteristic of the minds of anxious individuals, is too often and easily started. This is why high scores for this facet often have the impression that something unpleasant, threatening or dangerous is going to happen. They may be frightened by certain situations or simply fearful in nature. They often feel rather nervous, irritable and tense. The low scores in the Anxiety facet are generally laid back and calm. They tend not to be scared when things go wrong. The score is 60, and ranks in the middle category.

b) Anger and hostility

This facet measures the tendency to feel angry. (Whether or not a person expresses boredom and hostility depends on the degree of enjoyment). People who score a high score in the anger, hostility side get enraged when things do not go as they want. They get irritated easily and are overly sensitive to being treated properly. They feel bitter and disappointed when they think they have been betrayed. Low scores are more flexible and less likely to be irritated. They do not get upset often or easily. The score is 30, and ranks in the low category.

c) Morosity / contentment

This facet measures differences in how people react to the ups and downs of life. People who score high tend to experience sadness, depression, guilt and discouragement in case of problems. They often have difficulty putting things in place that could help solve their problems. People who have a low score are less likely to experience these emotions. This does not mean, however, that they are more vigorous, more lighthearted or lighter (these behaviors are associated with extraversion). The score is 60, and ranks in the middle category.

d) Assignment

Affected or susceptible people are sensitive to what others think of them. Their fear of rejection and ridicule drives them to shyness and embarrassment in society. They embarrass themselves easily. They harbor an excessive and unrealistic fear that others criticize or mock them. However, their embarrassment and clumsiness can turn this fear into a self-proven prediction. In contrast, low scores do not suffer from this false impression that everyone looks at them and judges them. They do not necessarily have good social skills, but they just feel less nervous in society. The score is 40, and ranks in the middle category.

e) Indolence

High scores are driven by strong desires and needs and are difficult to resist - even if they know they may regret it later. They tend to look for rewards and immediate pleasures rather than thinking about the long-term consequences. The low scores do not experience overwhelming, irresistible needs and, therefore, are not tempted by excesses.

The score is 30, and ranks in the low category.

f) Sensitivity to stress

High scores have difficulty managing stress. They tend to feel vulnerable. They experience fear, confusion or helplessness under pressure and in an emergency. Low scores feel more able and able not to lose their temper under difficult circumstances or under pressure.

The score is 90, and ranks in the top category.

Some people are more modest in nature while others do not hesitate to sing their own praises. As this report reflects how you perceive yourself, the results may have been influenced one

way or the other. You can also ask someone who knows you relatively well to complete this test about you. The differences between your test and yours can tell you more about your self-image or how you portray yourself to others.

Personality traits are generally considered to be relatively constant over time. It is therefore more useful to identify the traits that are yours and see how to use them to your advantage instead of trying to change them. It is a lot harder, not to say impossible, and it takes a lot more energy. In addition, a less desirable trait in certain situations or professional activities may be highly advantageous in other circumstances. The challenge is to find the hobby, education, partner, home or work environment that best fits your personality. The more your environment reflects your personality, the more comfortable you will feel.

Conclusion:

Six Sigma is a management method that has an effective impact on processes, which can satisfy customers, by offering quality products. Theoretical results, as all service and business processes could be at this level, but most businesses today operate at 3 sigma and thus lose 10-15% of their total revenue, due to errors, and waste. As well as this method helps to reduce the deviation or any deviation from the target desired by the company, or the quality 6σ which represents an efficiency of 99.99966% and a failure (deviation-loss-defect) of 0.00034%.

Today, to apply the theory of a Six Sigma approach, it is first necessary to survey customers about their real needs. Indeed, for the method to be effective, it is above all necessary to take into account the voice of the customer, which is to say to collect and analyze customer opinions. The theory applied according to experiments with many customers, is not always applied despite declarations of good intentions. Six Sigma helps to put in place a sustainable approach to remedy this. In addition, Six Sigma relies on an infrastructure of change agents who work in all departments of the company, not just in a "Quality Department". These people are called Green Belt (part-time people), Black Belt (full-time people) and Master Black Belt (senior managers in process improvement strategy).

Like any complex approach at the origin of many transformations in terms of work methods and processes, Six Sigma has limits. For example, Too narrow a vision: Widen the field of vision, A complex process: A gradual implementation, An unsuitable structure: Flexibility, Openness to change: Global work, Lack of follow-up: A long-term vision.

The Six Sigma method allows, as Effects of the study, through the measurement of production data, to improve the process of a repetitive task. This is why this method is particularly effective in mass production, yet almost any company performs measurable repetitive tasks that it can improve.

Bibliography List:

- Bentley, W., & Peter, T. (2010). *Lean Six Sigma Secrets For The CIO*. Taylor & Francis Group, Boca Raton.
- certification, t. c. (2018). *Six Sigmaa complete step-by-step guide*. Buffalo: harmony living.
- Simplilearn. (2022). the role of Six Sigma in Manufacturing. Consulté le 10 21, 2022, sur Simplilearn: <https://www.simplilearn.com/six-sigma-role-manufacturing-industry-rar406-article>
- Tjahjono, B. (2010). Six Sigma: a literature review. *Internationnal Journal of Lean Six Sigma* , 14-15.