



Applying The Six Sigma Methodology To Enhance Accounting Information Quality And Boost Tax Revenue- An Applied Study

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Abstract. *The purpose of the research was to boost tax revenues and enhance the accuracy of accounting information by implementing the SIX SIGMA technique. In order to gather primary data from the study sample, which consisted of (148) personnel in the quality and internal audit departments or the representatives of them in the Iraqi General Tax Authority, a questionnaire with (148) items was created. The study came to several conclusions, chief among them being that Six Sigma standards—which include senior leadership commitment and support, feedback and measurement, continuous improvement, processes and systems, and human resources—have a major influence on enhancing the degree of accounting information quality and collecting tax revenue (internal audit activities management, risk management evaluation, planning and carrying out the audit procedure, and sharing the findings) at a significant level (0.05). The report advised focusing on the Six Sigma idea and showcasing its potential for reducing mistakes, enhancing the caliber of accounting data, and boosting tax revenues.*

Keywords: *Six Sigma, Quality of Accounting Information, Increase Tax Revenues.*

Abstrak. Tujuan penelitian adalah untuk mendongkrak penerimaan pajak dan meningkatkan keakuratan informasi akuntansi dengan menerapkan teknik SIX SIGMA. Untuk mengumpulkan data primer dari sampel penelitian, yang terdiri dari (148) personel di departemen kualitas dan audit internal atau perwakilannya di Otoritas Pajak Umum Irak, dibuat kuesioner dengan (148) item. Studi ini menghasilkan beberapa kesimpulan, yang utama di antaranya adalah bahwa standar Six Sigma—yang mencakup komitmen dan dukungan kepemimpinan senior, umpan balik dan pengukuran, perbaikan berkelanjutan, proses dan sistem, serta sumber daya manusia—memiliki pengaruh besar dalam meningkatkan tingkat informasi akuntansi. kualitas dan pengumpulan penerimaan pajak (pengelolaan kegiatan audit internal, evaluasi manajemen risiko, perencanaan dan pelaksanaan prosedur pemeriksaan, serta pembagian temuan) pada tingkat signifikan (0,05). Laporan tersebut menyarankan untuk fokus pada gagasan Six Sigma dan menunjukkan potensinya dalam mengurangi kesalahan, meningkatkan kualitas data akuntansi, dan meningkatkan pendapatan pajak.

Kata Kunci : Six Sigma, Kualitas Informasi Akuntansi, Peningkatan Penerimaan Pajak.

1. INTRODUCTION

To enable to achieve the highest levels waste quality, the Six Sigma strategy is predicated on monitoring performance, activities, and everyday work in order to reduce the proportion of waste and faulty opportunities in a way that eventually leads to satisfying client expectations. This approach is a conceptual material encompassing a methodology that improves operations, a management system for attaining leadership performance and leadership at a high level, and a statistical measure of accomplishment linked to product manufacturing, service delivery, and operations. Consequently of the developments taking place in the overall work of organizations, there was a need for tools and means to help these

organizations improve the monitoring and evaluation process. Therefore, new methods were started to be used based on reducing errors, providing the best service or product to customers, and reducing the risks of decline due to the strength of competition. Therefore, ways were started to be found. And new and advanced methods for reducing errors through accounting information and increase tax revenues.

The first section: research methodology

First: the research problem:

Led the increase in diversity And complexity Processes Finance Especially in Shade expansion Activities Service institutions , including tax authorities, have increased pressure on them to adopt and adopt methods and tools that include administrative and accounting approaches to achieve high levels of performance compared to competitors. Because achieving this requires institutions to monitor and control their performance, this requires internal auditing of their financial and non-financial activities, and thus the use of Using quality systems to achieve accuracy to improve the quality of accounting information and increase tax revenues.

Second: The importance of research:

Six Sigma approach and internal auditing as methods of control and oversight, thus achieving high performance levels for organizations compared to competitors from organizations operating in the same sector. This requires the Iraqi General Tax Authority to recognize the needs of its clients to improve the process of providing its services. Thus, reducing costs, which ultimately results in an increase in tax revenues.

Third: Research objectives:

This study aims to identify the nature of the application of the Six Sigma approach in the Iraqi General Tax Authority, and to what extent improvement of the quality of accounting information and increasing the tax revenues of its affiliated bodies to improve the quality of accounting information and increase the tax revenues.

Fourth: Research hypothesis:

The study is based on a basic hypothesis, namely: Because isn't a statistically pertinent difference in the two hexa diffraction methodology, improving the quality of accounting information, and increasing tax revenues at a significance level 0.05 .

The second section: The theoretical framework of the research

First: The SIX SIGMA approach :

One of the quality initiatives that numerous enterprises rely on for strategic and financial difficulties is quality management, which depicts the current state of affairs in the sectors (Harry, 2018:33). One of the most significant of those endeavors is the methodical approach known as Six Sigma, which was introduced in the 1980s by Motorola, the industry leader in technical communications. The base of Motorola's quality management approach was idea (6), which placed an emphasis on improving manufacturing processes to the highest (very excellent) level in order to for no products to be defective. The phrase (SO GOOD) was defined as matching the six deviations of the process within the limits of permissible tolerance. It is in the product.

Six □Sigma Quality Program provides more than just measuring defect rates, as implementing the Six Sigma approach includes introducing and integrating a wide series of tools and methods through the stages of improving performance and then improving profits as the ultimate goal (Breyfogle, 2019: 1) The basic idea of this concept is based on measuring the crucial basic customer requirements as goals that the organization seeks to achieve and then performing against these goals during manufacturing instead of achieving those goals after the product is made.

Define (Paul, 2020: 15) Sigma Six Sigma As the mathematical expression that indicates (99.99966) accuracy, which is thought to be close to being completely accurate and is likely to reach ideality, six is defined as the performance of the process that results in 3.4 issues per thousand Defects Per Million Opportunities (DPOM). The defect or error could be anything from an improper component to an incorrect customer. bill.

Regarding the healthcare industry, Wooderd (2005) said that the Six Sigma methodology was well-known. According to Lazarus and Stamps (2012), the Six Sigma method defines sigma as the process of examining technological processes to improve the quality of health care and services in compliance with patient criteria. In the healthcare industry, Six Sigma is a methodical statistical procedure that identifies and eliminates performance flaws by utilizing clinical and mechanical bottlenecks that result in excessive waiting times, exorbitant expenses, and subpar patient care. results.

Second: Principles of the SIX SIGMA approach :

Pande & Holpp (2002: 14-16) pointed out that To the basic principles underlying the Six Sigma approach Sigma which is result, as the increase the Six Sigma method defines sigma as the process of examining technological processes to improve the quality of health care and services in compliance with patient criteria. In the healthcare industry, Six Sigma is a in the diversity and complexity of operations has led to Finance, especially in light of the expansion of institutions' activities and the increasing pressure on them to adopt and adopt methods and tools that include appropriate the Six Sigma method defines sigma as the process of examining technological processes to improve the quality of health care and services in compliance with patient criteria. In the healthcare industry, Six Sigma is a accounting approaches.

Third: DMAIC 's continuous improvement methodology To improve the quality of accounting information and increase tax revenues

The Six Sigma approach's main goal is Sigma is the practice of minimizing variations in services and processes via the application of a continuous improvement procedure known as the DMAIC methodology, which lowers errors in procedures that are already in It is a series of actions meant to lessen errors in the way that current processes operate. There are five steps in this methodology: which are: (Eckes , 2021: 43 ; Pande & Holpp , 2002: 14-16):

- 1- An explanation of the issue: That is, choosing team members who then assess the demands of the client. Critical qualities of quality are those that are thought to have the most influence on quality, and they are defined as the expectations and requirements of the client. Through surveys or interviews, the demands of the consumer are ascertained, and an illustration is created following the collection and analysis of high-quality data. Regarding the procedure the group will work on.
- 2- Measurement involves This involves the team identifying the internal processes that influence the crucial aspects of quality, quantifying the defects related to those processes, and researching the fundamental elements of the system, which include the outputs, or the process's final products, like the quantity of defects, the degree of customer satisfaction, or profits. The things you do that change inputs into outputs; inputs are what go into the process and get changed into outputs..
- 3- Examination: The group determines the discrepancies, flaws, and potential reasons that might have an impact on the process's result. Using scientific instruments, the team investigates the problem's dimensions in greater detail. The most commonly employed instruments in this study are cause and effect. The Six Sigma group Sigma investigates

the potential root causes of the issue that might originate from several sources, including the work's procedures and approaches; and machinery, which are the tools of the trade; And resources.

- 4- Enhance: The set of actions who go toward increasing output and elevating the organization's standard is determined. After determining the fundamental factors and their influence on the essential attributes of quality, the team applies scientific instruments to discover and pinpoint potential solutions. The approach to creating solutions that concentrate on reducing the causes is known as the improvement process. The primary issue impeding productivity at work is the Six Sigma team. As the desired result of the improvement process, Sigma focuses on the independent factors that have an impact on the issue being studied and that have an impact, either positively or negatively, on the dependent variable..
5. Regulation: At this phase, it is guaranteed that the improvements will last for a very long time, and the group creates certain scientific instruments to assist in process control. Reducing difference is the state's main objective, which is accomplished by monitoring outcomes and managing inputs.

Fourth: Benefits of the Six Sigma the method Sigma To raise taxes and enhance the caliber of accounting information revenues:

Anbari (2014: 5) pointed out that applying the Six Sigma approach Sigma in any sector has great application of Six Sigma Sigma in the financial sector helps to accurately complete budgets and financial reports, reduce financial errors, and improve employee performance.

Lazarus & Stamps, 2012: 27).

As for studies related to the Six Sigma approach, one of them is : (Joseph, 2005) Which aimed to use DFSS as a Six Sigma tool To measure its effectiveness in developing health care operations, it found that only four customers annually were dissatisfied with the service provided to them. As for (Gerrit (2007) His study concluded that there is a willingness among workers at the Arab Center to use the Six Sigma concept . There is a strong and positive relationship between the possibility of using Six Sigma Six Sigma in the unit and increasing patient satisfaction. While a study found (Al-Khatib , 2009) indicated that there is an impact on motivating employees; For operational operations; And the organizational structure and internal control over customer satisfaction. As for (Al-Naimi , 2010) , his study concluded that applying the Six Sigma approach gives highly accurate results with minimal errors, as the

permissible error under Six Sigma amounts to 3.4 per million opportunities, services, or even operations.

Among the studies related to internal audit is a study (Allegrini & D'Onza, 2019) which concluded to that all Big companies she has Audit units Internal and that units Audit Existing internal I have Banks And insurance companies It was completed Form it in a way Basic Response For requirements Legal. And I arrived study (Al-Salami , 2005) to that There is a relationship Significant Statistic between Bezel commitment Departments Audit Internal In companies Insurance Yemeni auditing standards Internal And variables Personal For the auditor internal, while reaching (Gerrit Sarens, 2007) until the level General To maintain On rights Contributors maybe that It increases from While doing Completely Missions Audit Interior And external. A study also showed (Al-Taweel , 2009) That Internal auditors have an image Medium Knowledge Enough By standards Audit internal, There is an organizational plan Explain location circle Audit on the structure Organizational.

Regarding studies linking the Six Sigma approach and internal auditing, a study indicated: (Peter & Jan, 2005) Six Sigma provides business companies with distinguished leaders and qualified human resources. Six Sigma enables business companies to use the high qualifications of project teams. As a study showed (Aghili , 2009).

Third section: applied aspect of the research

First: The research community and its sample:

Be Community the study from All individuals working in the Iraqi General Tax Authority. The selection of the study sample was based on the convenience sampling method (Convenience Sample) is the sample in which the community units are selected on the basis of suitability Through the availability of people to whom the questionnaire was to be distributed in the study sample, it was distributed (148) And all of them were valid For analysis It was completely subjected to statistical analysis.

Second: Description of the demographic variables of the research sample members:

The demographic variables had a significant impact on the sample members' understanding of the questionnaire questions and answering them objectively, through academic qualifications. Scientific specialization; And job title; And the workplace. It was found that (85%) of the study sample members held a bachelor's degree in their specializations, that (12 %) held a master's degree in their specializations, and that (3 %) held a doctorate degree in their specializations. This reflects knowledge of the concepts of the current study and

its most important components. With regard to scientific specialization, the results indicated that (66%) of the study sample members are specialists in accounting, that (3 %) are specialists in business administration, and that (28 %) are specialists in financial and banking sciences. Finally, it was found that (3 %) to understand the duties and requirements their jobs. Regarding job titles, the results showed that (87%) of study sample members are employees, and (7 %) of study sample members department heads, and (6 %) are managers. Finally, regarding the workplace, the results showed that (46 %) are those who work in the Quality Department, and (54 %) are those who work in the Internal Audit Department. It was also found that (92 %) are those whose ages range from less than 30 years to 49 years, and that (8 %) are those who are over 50 years of age. Regarding the number of years of experience, the results showed that (94 %) are those whose years of experience range from 5 years or less to 15 years. A percentage of (6 %) are those with more than 16 years of experience.

Third: Descriptive analysis of the research variables:

To what extent do private units that won the Does the Jerusalem Quality and Excellence Award follow Six Sigma guidelines, which focus on continuous improvement, feedback and measurement, top leadership commitment and support, processes and systems, and human resources?

Tensile No. 1 Arithmetic means, standard deviations, t- values, and the extent accounting information and increasing tax revenues in the research sample.

Independent variable	SAMA	Standard deviation	t " value Calculated	Sig Significance level(5%)	Commitment
Senior leadership support	4.2512	0.8923	11.5543	0.000	Very high
Feedback and measurement	4.0121	0.8565	9.2274	0.000	high
continuous improvement	4.3467	0.8389	11.5723	0.000	Very high
Processes and systems	4.0343	0.7435	12.2294	0.000	high
HAR.	3.8319	1.0012	5.9291	0.000	high
Professional care	3.6628	0.9756	5.0722	0.000	high
Managing internal audit activities	3.7826	0.84 89	5.7383	0.000	high
Risk management assessment	3.9143	0.7276	8.2047	0.000	high
Planning and implementing the audit process	3.9975	0.7734	11.4268	0.000	high
Communicating results	4.0834	0.8412	12.7289	0.000	high

The table above indicates that the use improvement of the quality of accounting information and increasing tax revenues in the research sample from the sample's point of view was high, and the answers of the study sample indicate that the research sample's commitment to the standard of supporting senior leadership from the study sample's point of view was Very

high, and the research sample's commitment to the standard of feedback and measurement from the study sample's point of view was high. The research sample's commitment to the standard of continuous improvement from the study sample's point of view was very high. The research sample's commitment to the standards of operations and systems from the study sample's point of view was high. The research sample's commitment to the human resources standard from the study sample's point of view was high. The research sample's commitment to the standard of professional care from the study sample's point of view was high. The research sample's commitment to the standard of managing internal audit activities from the study sample's point of view was high. The research sample's commitment to the risk management evaluation standard from the study sample's point of view was high. The research sample's commitment to the standard of planning and implementing the audit process from the study sample's point of view was high. The research sample's commitment to the standard of communicating results from the study sample's point of view was high.

Fourth: Six Sigma level Six Sigma In the Iraqi General Tax Authority:

Sigma standards For the study, and according to the investigation's sample members' says, the Six Sigma Formula software, version 2008, from the consulting firm QIT, was utilized. The analysis's findings demonstrated that the value of Sigma standards for the study area As shown in Table (2).

Tensile number 2 Sigma standards in the study sample

No.	Standard	Sigma level
1	Senior leadership support	3.2823456
2	Feedback and measurement	3.4083687
3	continuous improvement	3.2824851
4	Operations and systems	3.2822491
5	HAR.	3.2822892

It is clear from Table (2) that each had different values for the chances of defects occurring, but they converged to the sigma level of (3.282). While the standard (feedback and measurement) obtained a different value for the chances of defects occurring, the defect values were low compared to its predecessor at the Sigma level of (3.4083687). This reflects that the study area operates at the third level of Sigma, which is the level where defects per million opportunities range from (126,8200) to (66,800,574) and success rates range from (81,287,99.1 %). And (93.322245%). Table (3) shows the number of defects per million opportunities and the sigma level.

Tensile number 3 Number of defects per million opportunities and sigma level

Defects recorded per million	Sigma level	Cpk	Defects recorded per million	Sigma level	Cpk
933,200	0.00000	52,1004	52,1001	3.1252	1.0421
915,450	0.12534	40,1003	40,1002	3.253	1.0832
894,400	0.25644	30,4008	30,4008	3.3755	1.1253
869,700	0.37434	22,7009	22,7009	3.56	1.1675
841,300	0.50933	16,8004	16,8008	3.6258	1.2085
809,200	0.62523	12,2002	12,2002	3.7512	1.2512
773,400	0.53434	8,8003	8,8003	3.8751	1.29226
734,050	0.87512	6,2007	6,2004	4.5632	1.33323
691,500	1.67675	4.3505	4,3507	4.1253	1.37545
645,650	1.12523	3,00078	3,0002	4.255	1.41745
598,700	1.25128	2,0504	2,0501	4.3756	1.45834
549,750	1.37527	1,3002	1,3005	4.5787	1.5564
500,000	1.52344	90092	90067	4.6251	1.5421
450,250	1.62553	600454	60045	4.7598	1.58323
401,300	1.75875	40034	40078	4.87598	1.62534
354,350	1.87534	2303	23023	5.00453	1.66745
308,500	2.89322	18024	18012	5.1252	1.70878
265,950	2.12522	1301	13023	5.2524	1.7533
226,600	2.25341	802	8012	5.3753	1.79222
190,800	2.37534	306	3043	5.5244	1.83367
158,700	2.53432	23.412	23.416	5.6253	1.87569
130,300	2.62534	16.712	16.7123	5.7573	1.91708
105,600	2.75341	10.112	10.1129	5.8757	1.95821
84,550	2.87512	3.445	3.455	6.0076	2.0034
66,800	3.67621	1.676	0.00322	0.00214	0.00158

Fifth: Testing the study hypotheses

The research hypothesis was tested and increasing tax revenues at a significance level of (0.05) through the use of multiple regression analysis, as follows:

Table Number 4 Results of multiple regression analysis testing the research hypothesis

Data	(R ..) Link	\coeffic ient of determi nation	valueF Calcula ted	valueDF Degrees of freedom	B...	valueT Calculated	* Signific ance		
Improving the quality of accounting information and increasing tax revenues	0.8394	0.7053	30.049 2	Between groups	5	Senior leadership	0.1724	2.0916	0.0412
						Feeding and measuring	0.2233	2.1752	0.0332
				the total	61	continuous improvement	0.1585	1.8303	0.0723
					66	Operations and systems	0.0501	0.5301	0.5896
					HAR.	0.2501	3.7854	0.000	

Table four demonstrates how the Six Sigma approach's standards have improved the research sample's tax revenue and accounting information quality across all aspects. The statistical analysis's findings demonstrated that the Six Sigma approach's standards have a statistically significant impact on raising the caliber of accounting information and increasing the tax revenue in The study sample reached the correlation coefficient R (0.839) at ($\square \square 0.05$). As for the coefficient of determination 2R It reached (0.705), meaning that the A change in interest in the Six Sigma approach's dimensions led to changes in the quality of accounting information and tax revenues in the study sample, with a value of (0.705). The degree of influence was found to be β (0.172) for top leadership support, 0.223 for feedback and measurement, 0.158 for continuous improvement, 0.050 for processes and systems, and 0.250 for human resources. This indicates that a one-degree rise in the degree of interest in the Six Sigma approach's standards across its dimensions results in an improvement in the quality of accounting information and a 0.172 increase in tax revenue in the research sample. of this impact validates the value F. The computed value came to (30.049), a function bearing a significance level of (0.05). Thus, the alternative hypothesis, which reads as follows, is accepted and the null hypothesis is rejected: Six Sigma criteria (commitment and support of senior leadership; assessment and measurement; continuous improvement; procedures and systems; and resources) had a major impact on raising revenues from taxes and raising the caliber of accounting information in the research sample. at the significance level (0.05). Consequently, the findings suggest that there is a link. between the Six Sigma approach , improving the quality of accounting information and increasing tax revenue in the study sample

2. CONCLUSIONS AND RECOMMENDATIONS

First: Conclusions:

- 1- The Six Sigma standards, particularly focus on senior leadership commitment and aid, feedback and gauges, ongoing enhancement of processes and systems, and human resources, have a major impact on raising the level of accuracy of bookkeeping information and increasing tax revenue in the study sample at a significance level (0.05).
- 2- The study the specimen at indicates that senior leadership's commitment and support have a significant impact on raising tax revenue and improving the quality of accounting information (professional care, managing internal audit activities, evaluating risk management, planning and implementing the audit process, communicating results). a significance level (0.05).

- 3- There comments and measurement have had an important effect on raising tax revenue and enhancing the quality of accounting information (professional care, managing internal audit activities, assessing risk management, planning and carrying out the audit process, and communicating results) in the study sample. level (0.05).
- 4- There is a significant impact of continuous improvement on improving the quality of accounting information and increasing tax revenue (professional care; managing internal audit activities; evaluating a significance level (0.05) .
- 5- There is a significant impact of processes and systems on improving the quality of accounting information and increasing tax revenues at a significance level of (0.05).

Second: Recommendations:

- 1- emphasizing the Six Sigma concept and demonstrating how it could be utilized in units owing to its scientific meaning, which reduces medical errors and boosts the standard of treatment to beneficiaries' expectations, which is reflected in raising tax revenues and improving the quality of fiscal data.
- 2- Unit management's commitment and support to work with the Six Sigma concept contributes to planning all audits and risk assessments.
- 3- Unit management's commitment and support for quality excellence enables determining the extent to which goals are achieved and identifying deviations .
- 4- Unit commitment to working with the approach improves the results of the controlling process in theses.
- 5- The General Tax Authority under study adopted the Six Sigma approach because of its importance in developing risk management and control systems in the Unit.

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