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The Readiness of Organizations to Apply the DMAIC Methodology: A Diagnostic and Analytical Study of the Opinions of a Sample of Employees in the General Company for Electricity Distribution in The North

Raafat Assi Hussein
Assistant Professor, Administrative Technical College, Northern Technical University, Iraq
rafat_asai@ntu.edu.iq

Abstract

The current research seeks to determine the readiness of organizations to apply the (DMAIC) methodology, a diagnostic and analytical study of the opinions of a sample of employees in the General Company for Electricity Distribution in the North, to establish an advanced industrial environment capable of providing services that meet the needs of customers in terms of distinctive quality and cost, in addition to securing a competitive advantage that gives it the ability to confront competing organizations by relying on production systems of superior quality, including the (DMAIC) methodology. The research problem was based on the following questions:

- To what extent do managers in the company under study know the concept of the (DMAIC) methodology?
- Do managers in the company under study seek to apply the (DMAIC) methodology?
- What are the most appropriate applications for implementation in the company under study?

The Research Reached a Set of Conclusions, the Most Important of Which are:

- There is a readiness in the company under study to establish the (DMAIC) methodology.

- There is great importance in applying the (DMAIC) methodology in the company under study.

In Light of the Previous Conclusions, Several Proposals Were Presented, the Most Prominent of Which are:

- The interest of the management of the company under study in the applications of the (DMAIC) methodology is increasing.
- Determining a timetable for the tasks through which services are produced in the company under study.

Keywords: (DMAIC) Methodology.

Introduction

Due to the changes that the industrial world is experiencing and the technical fluctuations it is going through resulting from developments in various production systems, and what globalization has cast its shadow on the earth, everything in the latter has become different from what it was before, and everything in it has changed, including the business environment that has been turned upside down, as it has become necessary for those in charge of implementing administrative work to change their ideas, and to open up consciously to everything that is new and to search for what is better in order to enable the organization to adapt to the conditions of the new business environment by adopting modern methods and techniques through which organizations can overcome the winds of competition, including the (DMAIC) methodology, as this methodology is considered the means by which these organizations can keep pace with technological developments by adopting an organized work method that relies in its tasks on five basic stages represented in (analysis, measurement, definition, improvement, control or control). Given the above data, the researcher has built a comprehensive framework based on the proposals of writers and researchers on the possibility of investing the capabilities embodied in the (DMAIC) methodology in a way that enables the organization under

study to enhance its field reality and invest it in implementing its work through its expertise and talents. Accordingly, what the researcher has reached has been documented in the axes of this research, which are sequenced as follows: (The first section: Research methodology, the second section: The theoretical aspect, the third section: The field aspect, the fourth section: Conclusions and proposals).

The First Section: Research Methodology

First: The Research Problem

The DMAIC methodology is one of the effective ways that drive organizations to use smart manufacturing methods to achieve sustainability and thus economic benefit, as this methodology represents an effective value chain starting from suppliers to final products, including specialized infrastructure by activating and developing it in a way that ensures its access to prosperity and maintaining competitive advantage ... Therefore, through the researcher's review of the topics of the DMAIC methodology, it became clear that it did not receive sufficient attention at the level of the relevant field in order to ensure that it achieves the best possible productivity through what the organization under study produces of unjustified expenses and costs that led to a decline in the level of production, especially since most of the stages of this methodology are adopted in the field under study, but not under its academic title due to the limited knowledge of administrative leaders of its theoretical and practical concepts, in addition to the fact that there are many variables that organizations must understand and interact with in a way that enhances their uniqueness and success in implementing their tasks and then achieving their goals by establishing automated control systems that contribute to the optimal implementation of production processes and reaching excellence and brilliance ... Based on the above, and in order to determine the possibility of establishing the DMAIC methodology at the level of the field under study, this research attempt came to address the problem of the extent The ability of the field under study to apply this

methodology according to its available capabilities in order to achieve the advantages it achieves.

Second: The Importance of the Research

The importance of the current research comes from the importance of the variable that was studied according to what some writers mentioned to give an expressive overview of it, as the (DMAIC) methodology is one of the important production quality methods in the world of manufacturing due to its ability to give organizations the ability to meet the increasing demands of customers and provide advanced products with a distinctive quality that gives them a competitive precedence compared to their counterparts in the fiercely competitive global market, as this methodology can give workers confidence and the ability to design and manufacture advanced products by gaining them the experiences and skills that qualify them to deal with mechanical devices, sensors, and motors as one of the important issues that have a major and direct impact on production quality at all levels.

Third: Research Objectives

The current research seeks to indicate the necessity of the researched field adopting a programmed production quality system that organizes the production process in an ideal manner, each according to its priorities, to save time, effort, and cost and achieve sustainable competitiveness, thus outperforming its competitors, in addition to:

1. Contributing to providing a theoretical and philosophical framework that fully expresses the dimensions of the study, which are the stages of the (DMAIC) methodology.
2. Identifying the most harmonious and influential stages in establishing the (DMAIC) methodology in the company under study.

3. Seeking to develop the actual reality of the company under study and keeping pace with the developments surrounding it.
4. Attempting to diagnose the actual reality of the stages of applying the (DMAIC) methodology in the company under study using the checklist.
5. Determining the extent of variation in the stages of the (DMAIC) methodology in terms of importance and influence in the company under study.

Fourth: Research Hypotheses

Research hypotheses can be formulated as follows:

- **First Hypothesis**: There is a statistically significant effect between the stages of the (DMAIC) methodology.
- **Second Hypothesis**: The company under study responds to the establishment of the stages of the (DMAIC) methodology.

Fifth: The Hypothetical Research Plan

The systematic treatment of the study problem requires designing a hypothetical diagram as shown in Figure (1), which indicates the possibility of establishing the (DMAIC) methodology in the researched field.

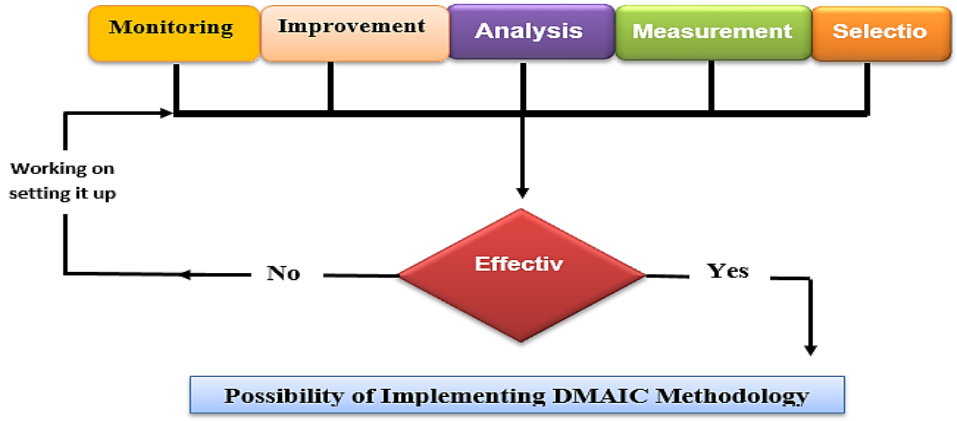

Figure (1): Hypothetical research outline

Sixth: Research Methodology

The researcher relied on the descriptive and analytical methods to complete this research.

Seventh: Research Limits

A. Spatial Limits:

This research was conducted in the General Company for Electricity Distribution in the North in Nineveh Governorate, which is one of the companies affiliated with the Ministry of Electricity. The researcher chose it because it is one of the leading companies seeking to apply modern approaches in quality management and obtain the international standard certificate (ISO) because it is one of the companies that rely on modern means in the production of electrical energy, in addition to the need for the company under study to achieve integration between its production processes by taking advantage of the advantages that result from the process of applying the (DMAIC) methodology.

B. Temporal Limits:

The research period was limited to the time period between 2/15/2024 and 10/12/2024.

C. Human Boundaries:

The current research was limited to employees in senior management and those responsible for decision-making in the General Company for Electricity Distribution in the North / Nineveh Governorate, namely the company director and his assistants, department heads, division and unit managers, distribution line supervisors, and maintenance and network engineers.

Eighth: Statistical Analysis Methods

In order to reach objective indicators that express the nature of the research, its objectives, and mechanisms for verifying its hypotheses, the ready-made software (SPSS 23) was adopted to conduct the required statistical analysis and reach scientific results that confirm the validity of the hypotheses by conducting confirmatory factor analysis to ensure the suitability of the research variables to the field under study, and to measure the extent of the impact of these stages, in addition to conducting a (T Test) to show the extent of the company's response under study to establish the (DMAIC) methodological stages.

The Second Section: The Theoretical aspect /DMAIC Methodology

First: The Concept:

Successful organizations seek to improve the quality of their products continuously and periodically in order to reach the peak of creativity and excellence by searching for the sources of errors and working to address them, in addition to predicting market conditions and seizing available opportunities and working to exploit them immediately and comprehensively by adopting various methods and methods that all serve the interest of the organization, including what is known as the (DMAIC) methodology or method. (Aditama & Imaroh, 2020, 540) confirmed that the stages of the (DMAIC) methodology are very similar to the (Deming) wheel in quality, and that it helps to identify the process in which the problem occurs, in addition to identifying the main reason behind such a problem. Other researchers, including (Harun, 2017, 22), indicated that the (DMAIC) method is an organized work method that relies in its tasks on five basic stages represented in (analysis, measurement, definition, improvement, control or control) that aim to During which the organization seeks to solve problems that the production process may face, as well as improve the level of quality. (Nondorf, 2020, 16) explained that the (DMAIC)

methodology is an approach through which organizations seek to improve the production process by relying on five basic stages that lie in (analysis, measurement, definition, improvement, control or control) in order to solve problems and discover errors before they occur by combining different quality tools. Other researchers defined the (DMAIC) methodology as a methodology based on evidence and realistic evidence seeking to provide the best results when the production process is flexible (Bhardwaj, et.al, 2021, 12). while (Mansor, et al, 2022, 86) indicated that the (DMAIC) methodology is a set of regular and sequential steps that seek to direct the production process in the right direction and solve problems and failures in order to improve production and achieve the highest levels of customer satisfaction by optimally managing time and increasing market share.

Second: The Importance of the (DMAIC) Methodology:

Most organizations are interested in improving the quality of their products by relying on a number of systematic methods and approaches that lead to uniqueness and prosperity. (Berzyczeb, 2008, 71) confirmed that the (DMAIC) methodology seeks to improve the quality of the product by continuously emphasizing the need for employees to gain the necessary experience, skill and knowledge to guide the organization in the right direction through:

1. Reducing or eliminating defects in products and processes, whether these processes are industrial or service processes.
2. Improving the organization's performance in general and quality in particular.
3. Contributing to implementing strategic change, illustrated by new products, and penetrating new markets.
4. Increasing returns by seeking to satisfy customers.

5. Focusing on improving quality by reducing errors and inspiring employees that what they do is very important by instilling a culture of love for work and cooperation among them with the aim of improving the organization's image in the market and society.

While (Haekal, 2023, 2) indicated that the importance of the (DMAIC) methodology is evident in:

1. Used to improve product quality and production process by implementing the Six Sigma methodology.
2. Improve productivity level and achieve customer satisfaction by organizing time management and increasing market share.
3. Identify, evaluate and select appropriate solutions for improvement and development by developing a change management approach with the aim of helping the organization adapt to future changes.
4. Establish continuous monitoring mechanisms and institutionalize the improvement steps taken to ensure the sustainability of the results of continuous improvement processes.

Third: Stages of the (DMAIC) Methodology:

Organizations aim, through the application of the (DMAIC) methodology, to produce a distinctive product that is free of defects and errors in a way that satisfies customers' tastes and meets their constantly changing needs and aspirations. (Houcine & Benziane, 2022: 38) indicated that the stages of the (DMAIC) methodology lie in:

1. **Identification Stage:** Organizations seek, through this stage, to identify the problems that they may face in the future by adopting a customer voice analysis policy and identifying the most important characteristics and features that must

be available in the product in order for it to rise to the level of quality required by the customer. This is achieved by setting start and end dates for implementing the product, and determining the processes required to be completed to produce that product, in addition to selecting and qualifying the human element necessary to produce that product with the agreed-upon quality.

2. **Measurement Stage:** Organizations aim through this stage to measure the level of performance achieved as a result of implementing the work in its initial form by searching and exploring the data that was collected to measure the suitability of producing this product according to the agreed specifications in terms of quality, cost and cycle time, as the data collected during the measurement stage can be displayed in the form of graphs or operating charts, as the goal of this stage is to obtain data to verify problems and opportunities and qualify them in the correct and proper manner, as well as trying to identify the main walls of the problem and work to address it in the fastest ways and at the lowest costs.
3. **Analysis Stage:** Organizations, through adopting this stage, seek to analyze and identify the essential and basic causes behind the occurrence of problems and failures in implementing the work, as they resort to using statistical means and tools with the aim of giving an accurate and clear picture of those causes and working to address them and avoid their recurrence in the future by adopting analysis maps, including:

- Process Map: It provides detailed, streamlined information about everything related to the production process by determining an organized sequence of operations and activities by giving specific codes through which the nature and type of each operation can be inferred.
- Multiple activity maps: They are used to record data resulting from on-site observation of how operations are implemented directly and to indicate any

defect or failure that may occur and inform the control department about it in preparation for addressing it according to the programs in effect.

4. **Improvement:** This stage aims to redesign, plan and develop operations to become more compatible with customer requirements in terms of cost, time, benefits, capabilities, etc., where many methods are used in this stage, including the solution priority matrix, which begins with identifying the problem, guessing its causes, then holding a brainstorming meeting, then inventing multiple solutions to the problems, then arranging the solutions in relative order according to several criteria including simplicity, impact, etc. (Ruman, 2018, 98) also indicated that improvement is the organization's endeavor to implement its tasks correctly and continuously with the aim of helping the organization adapt to the surrounding environmental changes by applying the available logical solutions, conducting experimental studies to verify the validity of the solutions provided, leading improvement performance, as well as post-action review.
5. **Monitoring:** This stage aims to ensure that the solutions that have been reached are implemented, and to ensure that they are appropriate for the customer's requirements, and to work on monitoring the quality of the products and confirming their compliance with the established specifications, and recording corrections and modifications and making them the basis for the current situation, where a set of tools are used in this stage, such as the process quality control map, which is used to record and document the stages of the processes that have been developed according to the method: Plan, Implement, Review, Adjust, as well as control maps of all types, whether maps that deal with a fixed time period and fixed samples, or those that deal with different time periods and variable samples, and other researchers, including (Jamil, et.al, 2020, 338), confirmed that this stage seeks to ensure that all workers perform improvement operations in a

unified manner by establishing a set of continuous monitoring mechanisms, and institutionalizing the completed improvement operations.

Fourth: Success Factors for Applying the (DMAIC) Methodology:

The (DMAIC) methodology is one of the important methods for entrepreneurial organizations seeking to obtain a distinct market share. It is the means through which abundant material returns can be achieved, which gives these organizations a sustainable competitive advantage by adopting successful methods in its application. (Kootanaee, et. al, 2013, 15) confirmed that the success factors of this methodology lie in:

1. Increasing the company's ability to compete in the long term, as its competitive ability increases with its application of the (DMAIC) methodology at the specified time by following ideal production methods that take into account the surrounding variables in the business environment.
2. Increasing the degree of efficiency in the company's production processes by achieving a high level of productivity.
3. Reducing damaged and defective production, and reducing the time and effort associated with the production process in a way that contributes to reducing the cost of production.
4. Achieving customer satisfaction by producing products that meet the needs of its customers in the appropriate quantity and time.
5. Achieving quality in products while taking into account the cost by achieving a balance between cost and quality.
6. Exploiting the company's resources and working to reduce inventory to the lowest possible level.

7. Creating and building trust between the company and its suppliers in a way that contributes to supplying raw materials at the right time and with the right quality.
8. Achieving flow and flexibility in production through good arrangement of factories and machines.

The Third Section: The Practical Aspect

First: Description of the Research Sample:

A deliberate sample was chosen, which was represented by the researched individuals who have experience and knowledge and are aware of the company's work and tasks, to ensure that the accurate and useful information provided by them is achieved, in addition to the possibility of obtaining ideas and suggestions that enhance the importance of the research. In line with this, the researcher proceeded to distribute (205) forms that included the general manager, department heads, branch managers, units and divisions, in addition to production line supervisors. (202) valid forms were obtained for analysis, meaning that the response rate reached (98%).

Second: Confirmatory Factor Analysis:

Confirmatory factor analysis provides a set of indicators called goodness-of-fit indicators, which must fall within the range of the hypothetical scheme indicators in order for the model to be acceptable and valid for analyzing research hypotheses. In the current research, we relied on the balanced Scale Free Least Square method instead of the Maximum Likelihood method, which requires a set of conditions, including that the data be normally distributed, there be no outliers, and the sample size must be five or ten times greater than the number of observed variables (Hsien, 2016, 375) (Al-Sabaawi, 2019, 20). This condition was not met in the data for the current research, as shown in Figure (1) and Table (1).

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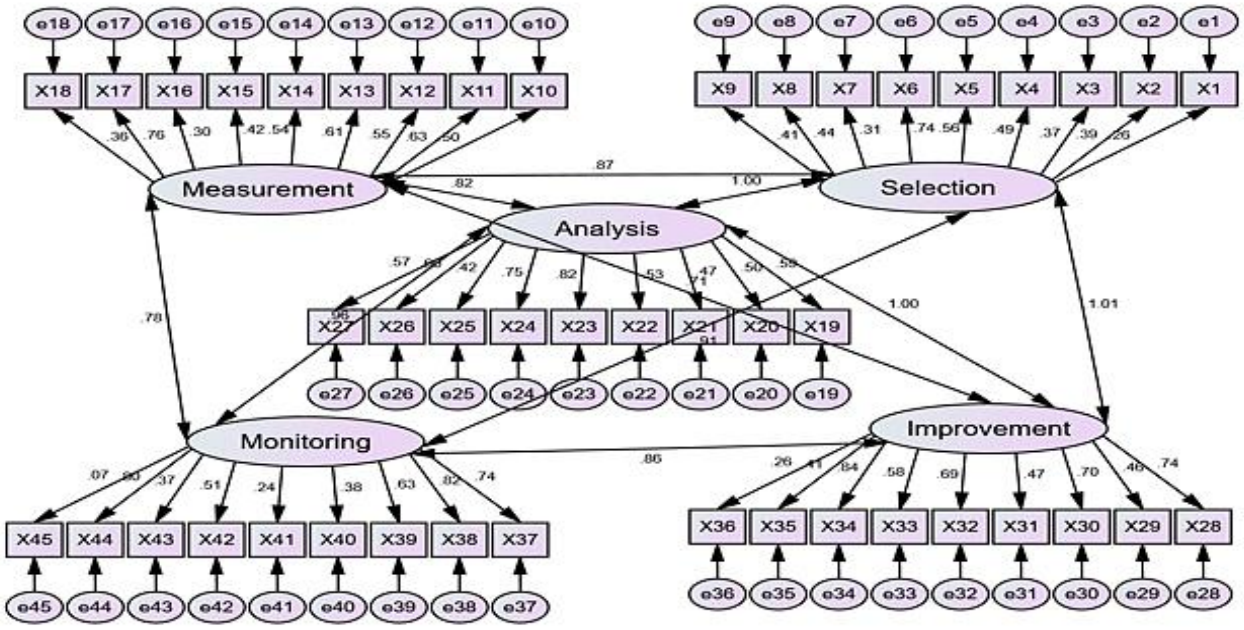

Figure (2): the initial model

Table (1): Quality Indicators of the Initial Research Model (Source: Table prepared by the researcher based on the results of the electronic calculator)

Matching result	Model indicators	Acceptance limits	Standard indicators
identical	.9200	GFI > 0.90 Model quality	**GFI**
identical	0.912	AGFI > 0.90 Best fit	**AGFI**
identical	0.081	RMR value between 0.08 and zero	**RMR**
identical	0.901	NFI > 0.90 Best fit	**NFI**
identical	0.900	>0.90(RFI) Data fit the model	**RFI**

We note from Table (1) that the hypothetical diagram indicators are good and fall within the limits of the model quality indicators, and thus the model is accepted without modification and becomes qualified for the research hypothesis testing stage.

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Third: Hypothesis Testing:

After conducting confirmatory factor analysis and ensuring that our research model matches the field data and that the model reaches the required quality of matching standards, we will move on to testing the research hypotheses as follows:

- The First Hypothesis:

There is a significant effect between the stages of the DMAIC methodology (together) at the level of the organization being studied. In order to test this hypothesis, a structural equation model was built, as shown in Figure (2), and the values of the tests of this model were shown, which lead us to accept our hypothesis or not, and are shown in Table (2), as follows:

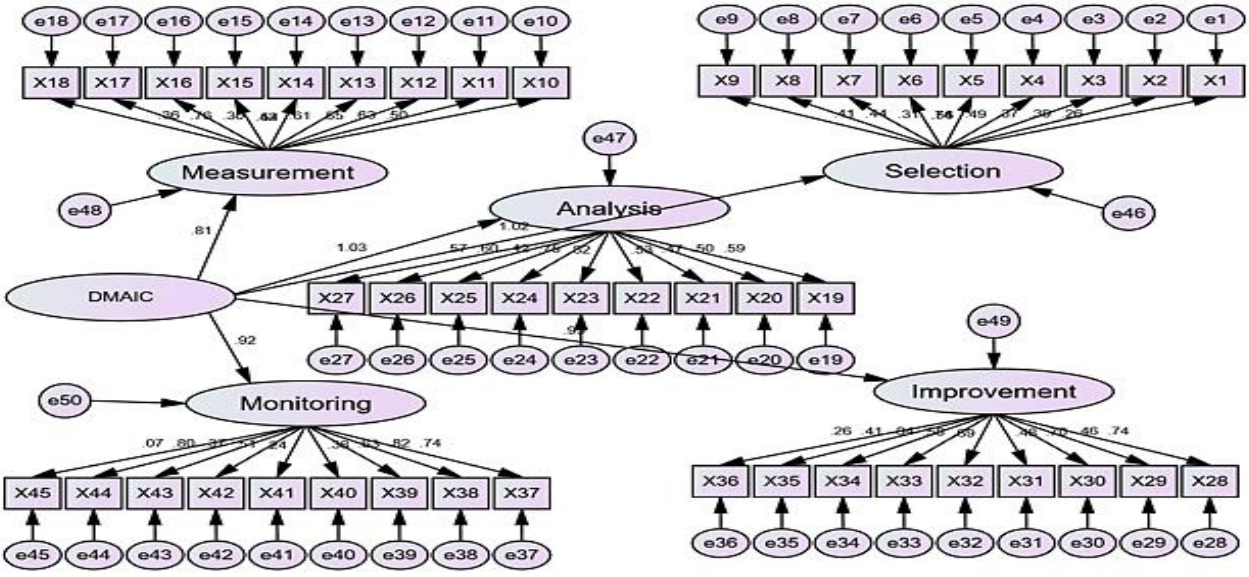

Figure (3): DMAIC Methodology Dimensions Impact Model

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Table (2): Model test Values (Source: Table prepared by the researcher based on the results of the electronic calculator)

P	Lower	Upper	Estimate	The Variable Affected by it	Direction of influence	The influencing variable
0.00	0.986	---	1.017	Selection	←	DMAIC Methodology
0.02	---	0.866	0.809	Measurement	←	DMAIC Methodology
0.01	0.997	1.054	1.207	Analysis	←	DMAIC Methodology
0.16	0.907	0.984	0.954	Improvement	←	DMAIC Methodology
0.05	---	0.956	0.920	Monitoring	←	DMAIC Methodology

The results of the statistical analysis of the structural equation modeling showed the significance of the model designed to test the second main hypothesis, as indicated by the positive indicators obtained and shown in Table (2) as well as the high saturation values that exceeded (45%) and as shown in Figure (2). By following the standard error values, it becomes clear that the highest impact was in the (analysis) stage in the DMAIC methodology combined, while the lowest impact was in the (measurement) stage. Table (3) also showed that there is a significant impact, but in reverse, in the DMAIC methodology, specifically in the (improvement) stage, through the value of the non-standard regression coefficient (impact) Estimate, which amounted to (1.674), while the critical ratio C.R. (3.17) is higher than the standard value of (1.96) at a significance level of 0.005) and its value of (2.15) at a significance level of (0.01), which is equivalent to the value of (T) in the regular regression test, **and thus the first main hypothesis is accepted at the research level**.

- **The Second Hypothesis**:

Determining the extent of the company's response under study to the implementation of the DMAIC methodology stages: In order to identify the company's response under study to the application of the DMAIC methodology, the T-Test was used, as shown in Table (3).

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Table (3): Results of the Statistical laboratory (T) for the respondents' answers to the research variables (Source: prepared by the researcher Tabular (T) value = N = 202 3.3)

V . N	Variable	MEN	ST.D	T	P Valu	Response Rate*
Selection	VAR 1	3.717	0.825	12.361	0.000	% 88.8 = 100* 9 / 8
	VAR 2	2.455	1.022	7.570	0.000	
	VAR 3	2.272	1.017	10.167	0.000	
	VAR 4	3.554	0.897	8.780	0.000	
	VAR 5	3.470	0.887	7.531	0.000	
	VAR 6	2.960	1.096	0.513	0.608	
	VAR 7	2.826	0.984	2.501	0.013	
	VAR 8	3.549	0.941	8.299	0.000	
	VAR 9	2.707	0.874	4.746	0.000	
Measurement	VAR 10	2.965	1.038	0.474	0.636	% 77.7 = 100* 9 / 7
	VAR 11	2.410	0.905	9.244	0.000	
	VAR 12	2.346	0.891	10.418	0.000	
	VAR 13	2.608	0.869	6.390	0.000	
	VAR 14	2.153	0.779	15.428	0.000	
	VAR 15	2.247	0.827	12.925	0.000	
	VAR 16	2.084	0.821	15.849	0.000	
	VAR 17	2.747	0.864	4.152	0.000	
	VAR 18	2.945	0.893	0.866	0.387	
Analysis	VAR 19	3.099	0.930	1.512	0.132	% 44.4 = 100 * 9 / 4
	VAR 20	3.277	1.003	3.926	0.000	
	VAR 21	3.475	0.811	8.323	0.000	
	VAR 22	2.430	0.912	8.863	0.000	
	VAR 23	2.920	0.984	1.144	0.254	
	VAR 24	3.049	0.970	0.725	0.470	
	VAR 25	2.539	0.747	8.759	0.000	
	VAR 26	2.955	0.963	0.657	0.512	
	VAR 27	2.990	0.992	0.142	0.887	
Improvement	VAR 28	3.252	0.864	4.152	0.000	% 55.5 = 100 * 9 / 5
	VAR 29	2.960	0.945	0.595	0.552	
	VAR 30	2.950	1.020	0.689	0.492	
	VAR 31	2.207	0.820	13.723	0.000	
	VAR 32	3.207	0.912	3.239	0.000	
	VAR 33	2.970	0.891	0.473	0.636	
	VAR 34	3.044	0.973	0.650	0.516	
	VAR 35	2.396	0.798	10.743	0.000	
	VAR 36	2.222	0.922	11.977	0.000	
Monitoring	VAR 37	3.000	1.050	0.000	1.000	% 55.5 = 100 * 9 / 5
	VAR 38	3.099	1.115	1.262	0.209	
	VAR 39	3.000	1.031	0.000	1.000	

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	VAR 40	2.302	0.871	11.387	0.000	
	VAR 41	2.282	0.883	11.547	0.000	
	VAR 42	3.604	0.786	10.915	0.000	
	VAR 43	3.727	0.852	12.135	0.000	
	VAR 44	2.866	1.015	1.870	0.063	
	VAR 45	3.707	0.908	11.079	0.000	

(*) Response rate = Number of significant variables for each dimension /Total variables for one dimension

The Results of the Table Can Be Described as Follows:

A. Results of the Statistical Test (T) for Variables (X1 - X9): Table (3) showed the results of the statistical test (T) for the respondents' answers that the majority of the sub-variables achieved compatibility within the dimension (identification), as the calculated value of (T) for these variables was greater than its tabular value of (3.3) at a significance level of (0.05), and the percentage of compatibility of the company under study with this component was (88.8%), and this result is consistent with the study (Haekal, 2023, 2) in which he emphasized that improving the performance of the organization in general and quality in particular depends primarily on the correct identification and accurate diagnosis of the problems and obstacles that hinder the implementation of work in the correct manner, so this came after the organization under study in order to avoid these obstacles and make the production process flow in the best possible way.

B. Results of the Statistical Test (T) for Variables (X9 - X18): Table (3) showed the results of the statistical test (T) for the respondents' answers that the majority of the sub-variables achieved compatibility within the dimension (measurement), as the calculated value of (T) for these variables was greater than its tabular value of (3.3) at a significance level of (0.05), and the percentage of compatibility of the research sample with this component reached (77.7%), and this result is consistent with the study (Ruman, 2018, 98) which indicated that achieving quality is done by achieving

a kind of balance between cost and quality and thus coming out with effective results that contribute to the success of the application process of the (DMAIC) methodology.

C. Results of the Statistical Test (T) for Variables (X19 - X27): Table (3) showed the results of the statistical test (T) for the respondents' answers that some sub-variables achieved compatibility within the (analysis) dimension, as the calculated (T) value for these variables was greater than its tabular value of (3.3) at a significance level of (0.05), and the percentage of compatibility of the research sample with this component reached (44.4%), and this result is consistent with the study (Nondorf, 2020, 16) in which he emphasized that task analysis and situation assessment are among the most important points that contribute to reducing damaged and defective production in a way that contributes to reducing production costs to the lowest levels without compromising quality.

D. Results of the Statistical Test (T) for Variables (X28 - X36): Table (3) showed the results of the statistical test (T) for the respondents' answers that most of the sub-variables achieved compatibility within the dimension (improvement), as the calculated value of (T) for these variables was greater than its tabular value of (3.3) at a significance level of (0.05), and the percentage of compatibility of the research sample with this component reached (55.5%), and this result is consistent with the study (Bhardwaj, et.al, 2021, 12) which confirmed that continuous improvement is the essence of the organization's work by the organization's endeavor to implement its tasks correctly and continuously, in addition to conducting experimental studies to verify the validity of the work completed, as well as post-implementation review.

E. Results of the Statistical Test (T) for Variables (X37 - X45): Table (3) showed the results of the statistical test (T) for the respondents' answers that most of the sub-variables achieved compatibility within the dimension (monitoring), as the calculated value of (T) for these variables was greater than its tabular value of (3.3)

at a significance level of (0.05), and the percentage of compatibility of the research sample with this component reached (55.5%), and this result is consistent with the study (Kootanaee, et. al, 2013,15) which confirmed that the effective organization seeks to use a set of tools such as the process quality control map to record and document the stages of the processes that were developed according to the method: plan, implement, review, modify, as well as control maps of all types, whether maps that deal with a fixed time period and fixed samples and others in order to document all activities and processes and identify the sources of errors and address them as soon as possible. And in line with what was presented, the second main hypothesis is accepted at the research level.

Section Four: Conclusions and Suggestions

First: Conclusions:

1. Ensure that the company under study applies the solutions reached from the current study, and ensures their suitability to the customer's requirements, and works to monitor the quality of the products and confirm their conformity to the set specifications.
2. The researcher concluded that the company seeks to reduce damaged and defective production, and reduce the time and effort associated with the production process in a way that contributes to reducing the cost of production.
3. The results of the statistical analysis proved that the highest impact of the stages of the (DMAIC) methodology was in the (identification) stage through the structural equation model, while the lowest impact of the stages of the (DAMIC) methodology came in the (measurement) stage, which indicates that the organization under study seeks to adopt the stages of this methodology in implementing its tasks in a complete manner.

4. The results of the statistical analysis proved that the response rate of the individuals surveyed to apply the stages of the (DAMIC) methodology was in the (identification) stage, where this stage obtained an agreement rate of (88.8%), followed by the measurement stage, while the lowest response rate to apply the stages of the (DMAIC) methodology was in the (analysis) stage with a measurement rate of (44.4%).

Second: Proposals:

1. Increase the interest of the management of the company under study in applying the stages of the (DMAIC) methodology such as identification, measurement and analysis in an effort to provide products that meet the needs of its customers in terms of appropriate quality and appropriate cost, in addition to the economic benefits that the company reaps from applying this methodology.
2. The necessity of increasing the degree of efficiency in the company's production processes by achieving a distinctive level of productivity.
3. Identify the essential and fundamental causes behind the occurrence of problems in the organization under study, where resorting to the use of statistical means and tools in order to give an accurate and clear picture of those causes and work to address them.
4. Generate a state of cooperation and partnership between those responsible for implementing the tasks directly and senior management in order to remove all obstacles that prevent the organization under study from applying the (DMAIC) methodology in the future in a sound and smooth manner.

References

1. Penelope Berzeczeb, (2008), Six Sigma for Business Excellence /A Manager's Guide to Supervising Six Sigma Projects and Teams, Translated by: Muhammad Yousef, Al-Obeikan Publishing, Riyadh: Saudi Arabia, First Edition.
2. Aditama, R., Imaroh, T., S., (2020), Strategy for Quality Control of Ayam Kampung" Production Using Six Sigma-DMAIC Method (Case Study in CV. Pinang Makmur Food, International Journal of Innovative Science and Research Technology, vol.5,Issue.1.
3. Harun, N., A., B., (2017), Integration of DMAIC methodology and CAPA concept for quality improvement in semiconductor industry, Master Thesis, University Sains, Malaysia.
4. Nondorf, E., R., (2020), Applying Six Sigma DMAIC to Decrease Variation in Process Cheese, Master thesis, University of Wisconsin-Stout, USA.
5. Mansor, N., N., Mustafa, S., A., ahmad, R., Doi, M., A., C., SinT., C., Jusoh, M., S., (2022), DMAIC Steps Application to Improve Ergonomics Problem: A Case Study in Coffee Manufacturing Industry, Malaysian Journal of Ergonomics, vol.4, No.1.
6. Haekal, J., (2023), Application of Six Sigma and KAIZEN Techniques to Non-Conformities: A Case Study of Pharmaceutical Companies, International Journal of Scientific and Academic Research (IJSAR), vol. 3, Issu.2.
7. Houcine, M., Benziane, R., (2022), Towards spreading the adoption of Six Sigma in the small and medium-sized enterprises sector, Research Gate Economics and Management, vol. XIX, Issue. I.
8. Ruman, A., R., (2018), Quality Management in Construction Projects, 2 Edition, Taylor & Francis Group, USA.
9. Jamil, N., Gholami, H., Saman, M., Z., M., Streimikiene, D., Sharif, S., Zakuan, N., (2020), DMAIC-based approach to sustainable value stream mapping: towards a sustainable manufacturing system, Economic Research, vol.33, No.1.
10. Kootanaee, A., Babu, K., and Talari, H., (2013), Just in Time Manufacturing System: From Introduction to Implement International Journal of Economics, Business and Finance, Vol. 1, No.1 March.
11. Bhardwaj, J., Yadav, A., Chauhan, M., S., Chauhan, A., S., (2021), Kano model analysis for enhancing customer satisfaction of an automotive product for Indian market, Materials Today: Proceedings, vol.46, Issue.20.