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Problem Solving Method and Change Management in Universities (Applied case-Jordan)

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Abstract

TQ/M is a style of management that has worked for several decades all over world and is receiving growing attention, new some colleges and universities are beginning to recognize that T.Q.M values are more compatible with higher education that many existing control originally coined by Feigenbaum (1983), also used in higher education want the service we provide to be the highest quality.

The purpose of this study was to provide an over view of T.Q. M thou (problems solution method). It's feasibility for higher education and academic libraries, and the results of its implementation by colleges and universities. And the change management helps to control the success. Questionnaire was designed to measure the knowledge and perception of academic library directors, dependent heads. Each college has framework which named strategically planning concerned of the problem solving method. In the initial of the educational stage of a process, improvement program, quick results are often obtained because the solutions are obvious or someone has a brilliant idea... However long term, a systematic approach will yield the greatest benefits.

In this research scientific method as applied used to constitute the improvement, on fact some control chart can be used effectively utilized is more than one step of the method, while process. Of improvement is the main goal, also in addition to management of changes are mapping to be as way of improve the process and to increase the satisfaction of the performing the process. Therefore the research is divided in to three parts

First part care of problem solving method and how to utilize of it in colleges, second take the change management, third part applied among the stuffs of universities (120), who are dealing of education. The data analysis yields the following results**:**

There was a significant differencing found among the respondents concerning their option (member of colleges staffs) indicates that there is an evidence result of improvement through the applied data, and the rest of results listed in the research .

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Introduction

The participative management philosophy of scientists that makes Use of a set of techniques and procedures for transforming products and services has been extensively and successfully used by various organizations to improve the effectiveness, efficiency, cohesiveness, flexibility and Competitiveness of a business as a whole (Glenn, 1991; Lab Ovitz, 1991; Marchese, 1992; Zentmyer & Zimble, 1991).

T.Q.M. philosophy quality aimed at the present and future needs of the customer, (Deming, 1998); conformance to requirements set by consumers (Crosby, 1979); the totality of features and characteristics of a product or service that bears on its ability to satisfy stated of Implied need (BSI, 1994); the value a product impact to a customer from the time the product is Shipped (Taguchi & Clausing, 1990); and a quality product as being most economical, most useful, and always satisfactory to the consumer (Ishikawa, 1992).

Extending T.Q.M. principles, Seymour (1992) adopts and embraces the improvement strategy based on the plan-do-check-act (PDCA) cycle of Deming (1986), to coordinate continuous improvement government and private industries that hire the Graduating students? Should students be involved as customers in shaping the educational?, Some authors such as, (Brower, 1991; Cloutier & Richards, 1994; Helms & Keys, 1994) argues that by satisfying students, institution might risk compromising the needs of society as whole; These authors preferred a process that modeled a fitness centre where student defined their long-term goals and the institution prescribed the programmed . In order to develop broad perspectives as indicated above, it is necessary to explore the approaches to quality both in the historic past and recent development in higher education to understand its origins and trends…Historical imperative The role of a university as understood in its earliest days of formation was one of subservience to religious dogma and political ideologies, at least in different parts of Europe, in the authoritarian heel of ecclesiastical or secular power (Cobban, 1975, p.235).

But in academia, who is the customer? Can we recognize students who are the direct recipients of meeting those goals? However, others (Brigham, 1993; Rubach & Stratton, 1994) believe that both students and businesses need to be treated as customers and they employ the concept of co-production that requires the involvement and cooperation of educators, students, parents or businesses to achieve the quality outcome .Principles of quality management are a relatively new entrant to the arena of management practices.

Even though the original literature in the area (e.g. Shewhart, 1931; Feigenbaum, 1951) dates back to the era of "human relations development" of management theory (1930-1960), a serious discussion of it in the Western management literature began only since early 1970s (e.g. Chapman, 1969; Juan and Gryna, 1970), after the phenomenal success of its application in Japan.

Higher education followed nearly a couple of decades later (e.g. Sherr and Teeter, 1991; Mayhew et al., 1990). But presently, as a theory supported by a set of techniques, quality management (TQM) has gained dominance in organizational practice.

Quality management forms the basis of the organization excellence movement (Malcolm Baldrige Awards) and evaluation standards for operational effectiveness (e.g. ISO 9000-2000). Its influence is only matched by the theories of "scientific management" by Taylor (1911) in the early part of the twentieth century, which led the industry to a relentless pursuit of efficiency through division of labor and mass production throughout the century.

Contrastingly, the industry and the universities looked at QM theories to address their problems at the opposite ends of the market spectrum. Manufacturing industry and service organizations saw quality techniques as a way of getting out of customer alienation through mystification of market and under emphasis on efficiency (Deming, 1982, Ch. 3).

To the universities, QM appeared as way out of elitism, and consequent seclusion through making its product, education, exclusive. This led to popular apprehensions about its relevance. Measurement of "quality in education" was always recognized as "an elusive concept" often prone to controversies, but overall, inspection was seen as a "vital …in the maintenance of standards" (Melia, in Green, 1994, Ch. 4). Another mechanism of control came into play, when the institution moved to offer degree courses generally recognized as the preserve of the universities.

A Council for National Academic Award (CNAA), scrutinized and approved the proposal for the offering, and appointed examiners to liner of contemporary industry norms, where quality control was extensively practiced.

In a similar way, special inspectors were employed to control and ensure quality of product with discrete measures in industry as well. In both the instances the purpose of the "quality control ethos" was the same: maintenance of an anticipated level of standard through an intervention of people from outside the process.

The intervention, inspection (or checking), as argued by Deming (1982, p. 2) invariably finished up as being "…unreliable, costly (and) ineffective …" It does not contribute to improve the process but only seeks approbation from a third party that the basic norms are met. The direct consequence of this was a steady loss of motivation for the process owners to improve quality [4].

Worse still, their focus becomes narrow, just one of crossing the hurdle of inspection. This led to the development of routines of "gamesmanship" for hoodwinking the "interloper".

On the whole, the customer had minimum gains from such elaborate control procedures measures of quality control were clearly subservient to assertions of freedom.

Higher education institutions on the other hand depended on the professionalism of the academics to do the right thing by the inspection (or checking) system. In addition, issues of quality were not as much a challenge to the survival of the higher education institutions as industries.

Each institution had a reasonably well-designated territory within the community, and barring any serious breaches, funding was reasonably well assured. In other words, quality control was never considered as a critical issue in the educational administration system.

The University Grants Commission (UGC), which disbursed the government funding, maintained a general control of student numbers and staff ratios. The universities also had a practice of appointing external examiners for their courses, which served to maintain a parity of standard with other institutions. The government strictly had no access to any reports generated from these contacts (Bird, in Shattuck, 1996, pp. 253-4). The attitude was derived from the universities' assertions of the prerogative of autonomy.

It appears reasonable to continue to develop a new approach, largely based on quality management philosophy, but adapting techniques firmly grounded in theories of educational research. In addition an examination of the history of higher education in necessary to underpin the intrinsic value system.

Nature of quality model with the logical basis for acceptance of QM as management philosophy in higher education already elaborated, it does not appear that universities need have any qualms about its basic validity. The main difficulty with the application of the industrial version seems to stem from the nature of the processes. Industrial quality systems are clearly process oriented, focused on the needs of the customer.

This is based on the assumptions that process characteristics are measurable and maintaining and improving them would adequately meet the customer requirements and give a competitive edge. But these aspects are far too subtle in relation to education, and have invariably been the source of controversy (e.g. Yorke, 1997a; Harvey, 1995).

Most of this literature focuses only on education function, but it has to be stated that in higher education as well, there is a substantial component of service both in the area of academic function (e.g. enrolment, library) and general administrative functions (e.g. cafeterias and recreation). To such service areas techniques of QM similar to any other service environment, e.g. banking or travel, would be. A recent researches study identified these problems that a majority of firms of universities experienced which has changes took more time than allocated, unforeseen problems surfaced, uncontrollable external factor, failure to define expectations and goals clearly.

A- T.Q.M model for teaching and learning:

Realizing the importance of the T.Q.M concept in improving quality and productivity in industries, an attempt has been made in this study to discuss that TQM principle which is key features. To achieving teaching and learning (T&L) goals for student, is hoped that applying particular aspects of TQM techniques to education will result not only in resource savings but also greater learning satisfaction and achievement for students. The authors have developed a simplified.

TQM model for improving T&L processes, based on and similar to an industrial TQM application. In this simplified TQM model, the pattern of information flow is known as check-act (PDCA) cycle, it is shown in figure (1):

Plan – Do – check – Act
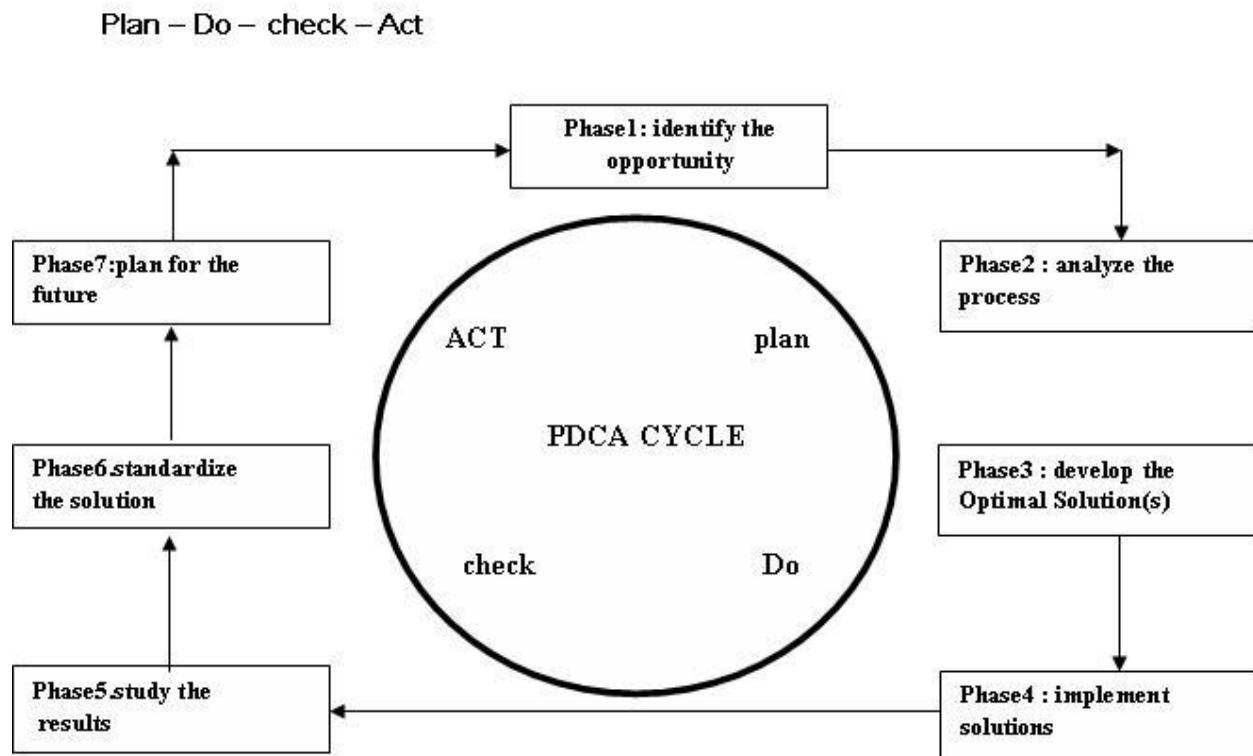
This theoretical model perceives students to be both customer and employee, and satisfies them in all the T&L processes in accordance with the TQM view that a satisfied student/employee will learn more and better than a dissatisfied student/employee.

In the model, student acting as the immediate and internal customer are being transformed into valuable manpower for the future external customer (employers of university graduates). As internal customer with raw and unprocessed skills initially, student may not be able to specifically outline how T&L practices should be performed.

Instead, they are treated as co-workers or internal employees guided by lecturers (as managers) in improving the T&L processes, and encouraged to provide their collective opinions and feedbacks, which are important for any continuous improvement efforts.

Their level of involvement and influence should increase with the increasing level and maturity of their studies. The lecturer's job is to manage, facilitate and work continuously to improve the T&L process by soliciting feedback from students and driving students to learn. In this approach, the T&L process:

Transforms the first year students (internal customer) into knowledgeable and skilled students for employers (external customers) over a period of three to four years in which the students slowly. Increase their self-worth or value through their education experience. We propose that the output product is not the student but the education of the students, and this definition requires the students to take an active role in the development of the product (education) and hopefully too.

Develop the capacity for lifelong learning. For ensuring success, this transformation process requires the simultaneous working together of several resources from academic and supportive staff, departments and faculties, student affairs, resource centers, and financial services.

B-: Problem Solving Method

The story is now well known how E. Edwards Deming developed the principles of "total quality management" in America, only to have the Japanese endorse it wholeheartedly to improve their industrial efficiency. Basically, built in quality as part of a total process. And the Japanese have given the concept their own name of "Kaizen". As Masaaki Imai puts it in Kaizen: The Key to Japan's Competitive Success: "Kaizen strategy is the single most important concept in Japanese management-the key to Japanese competitive success" Now some aspects of Kaizen are being used to revolutionizing schooling, as well as business. In their top-selling book The Learning Revolution, co-authors Jeannette Voss and Gordon Dryden outline the key principles of both. In particular, they outline how Mt. Edgecombe High School, in Sitka, Alaska, has pioneered TQM or Kaizen methods to dramatically improve schooling. Among the major results:

- Students have set up four pilot companies, and in running them they learn foreign languages, quality control, statistical analysis, mathematics, science, exporting, marketing, accounting and much, much more.
- Teachers and students are regarded as co-managers. They set their own targets and goals, individually and collectively.
- The first week or each school year is used for building self-esteem and quality training.
- Teachers have completely changed their teaching styles, with most now being "95 per cent facilitators" rather than lecturers.
- All students learn Japanese, Chinese or Russian, as part of their vision to be key participants in the Pacific Rim.
- All students set very high improvement goals.

- The results are spectacular. Almost 50 percent of all graduates have entered college and are still there or have graduated: much higher than America's national average. In its 544 pages, The Learning Revolution has devoted more space to Mt. Edgecombe than any other school.

    The project team achieves the optimal results when the framework of the problem solving method in the initial stages of a process improvement program, quick results are often obtained because the solutions are obvious or someone has a brilliant idea, in the long term systematic approach will yield the greatest benefits.

The problem solving method (also called the scientific method as applied to process improvement has seven phases:

A- Identify the opportunities.
B- Analyze the current process.
C- Develop the optimal solution.
D- Implement changes.
E- Study the results.
F- Standardize the solution.
G- Plan for the future.

    These steps are not totally dependent they are sometimes interrelated. In fact some techniques such as the control chart can the effectively utilized in more than one step.

Phase one: identify the opportunity:

    The objective of this phase is to identify and prioritize for improvement, it has two parts: identify the problem and form the team.

Problems can be identified from verity of inputs, such as following:

A- Pareto analyze of repetitive alarm signals, as companies, returns, others.
B- Pareto analyze of repetitive internal alarm signals for example scrap, rework, sorting.
C- Data on performance of products, d-Comments of key people outside the organization.
D- Customer's surveys.
E- Brain storming by work groups.
F- Proposal from suggestions schemes.

Phase two: Analyze the current process:

    The objective of this phase is to understand the process and how it is currently preformed. Key activities are determine the measurement needed to analyze the process; gather data, define the process boundaries, outputs and customers (students), inputs and suppliers, and process flow; identify root causes and identify levels of customers.

i-   Establish performance measures with respect to customer's requirements.

ii-   Determine data needed to manage the process.
iii-   Establish regular feedback with customers and suppliers.
iv-   Establish measures for quality/ cost/ timelines of inputs and outputs.

The team wills the customers and their expectations as well as their inputs, and interfaces of the process. Design information, such as specifications, drawings, functions, bills of costs of materials which used in educational process, field data, services, and maintainability process information. Statistical information's are used in analyses the data and results, such as an average, median, range, slandered deviation, kurtosis, skew ness, and frequently distribution.

Phase three:

This phase has the objective of establishing problem solutions and recommending the optimal solution to improve the process in this phase creativity plays the major role, and brain storming is the principle technique, other group dynamics that can be considered for this step are the Delphi method and nominal group technique.

Note: (The other phases cannot be described in this research due on the limited space for the research), will I have give more description for the first three phases, because they are the essential of the method.

C: CHANGES OF EDUCATIONAL MANAGEMENT PROCESS:

On the keys to deal with change is to understand that change in never over, change brings opportunity to those who can grasp it, and discontinuities of the new economy after unlimited opportunities.

The following issues need to be considered for effective enabling changes:

1.	Peace	5.	Scope
2.	Depth	6.	Communication
3.	Structures	7.	Drive
4.	Resistance		

Planning changes of management of educational processes such as:

i-   Establish clear start and end point of process.
ii-   Identify the areas where changes are needed.

iii-   Set goals and objective challenging but realistic.

While the major issues of the management changes of educational process are:

1- Ensure using the change levers effectively.
2- Insure that sub-units are aligned with changes.
3- Insure that all involved:
    i-   Understand the purpose of, change.
    ii- Have a perspective of desired outcomes.
    iii- Play apart in planning and implementing change.
    iv- Acquire new behavior.
4- Developed much alternative vision as capabilities that deal with resources of the factors of educational process.

Where getting commitment to vision is too important such as:

i-   Having the support of higher management to the vision.
ii- Identify people readiness for change.
iii- Share vision with other levels of the organization.
iv- All employees should participate in defining the vision.

It is very important to size gaps and agree where the priorities lie, and clear the defining and illustrate sharing strategies:

i-   Educated people to understand what if happening.
ii- Analyze and deduct the human elements of resistance.
iii- Over resistance and reluctant to change, Therefore, it is very important to create the momentum for changes to the new educational improvement, also it is too important to create a shared of understanding at senior levels, also to identify the people who are productive and efficient and who are not, and most important is to manage people through this process to assure efficiency & effectiveness, and to follow-up and update the plane doe the dynamic nature of educational environ.

Change process of agents often confront issues of integrity in their interactions with organizations such a universities and schools, where the agents are students, the ethical dilemmas include:

i-   Misrepresentation and conclusion.
ii- Misuse of Data in change efforts.
iii- Manipulation and coercion.

iv- Value and goal conflict.

v- Technical ineptness.

Finally To have great results and remediation of weakness of outputs of higher education we should begin from the base (school) then higher education, but we should draw the plane for to achieve this goal, we suggest the plane as:

First stage: Establishment of School Development Management Team consists of teachers, students, principal, support persons; parent (SDMT), Furthermore, the representative of Industry and Trade Chamber and representative of others may also be invited to the meetings.

Second Stage: Determination of strategic planning and school development targets by SDMT.

Third Stage: Preparation and implementation of separate necessity determination questionnaires for managers, students, and parents, support personnel and teachers by SDMT.

Fourth Stage: Determination of priorities by SDMT and establishment of study groups.

Fifth Stage: Preparation of working plans by the study groups.

Sixth Stage: Preparation of annual school development plan by SDMT.

Seventh Stage: Implementation of annual school development plan by the study groups.

Eighth Stage: Evaluation and correction by SDMT.

Ninth Stage: Implementation of corrected development plan by SDMT.

Tenth Stage: Final evaluation and preparation of report by SDMT.

These steps can be followed by the higher stuff who are design the educational policies in all Arab countries to have a good quality of outputs of higher education, as to begin of base then to stipulate to the upper stages.

According to these steps and analyses of the objective goal of this research some of the major problems confronting Jordanian h. education, such as:

1- Unexpected enrollment expansion associated with a rapid growth of free-paying student resulting in a disproportionate high gross enrollment ratio.

2- Low per student expenditure with a negative impact on quality outcomes.

3- Large number of relatively isolated narrowly-focused on high training schools (education institutions)

4- Separation of teaching and research centers in to relatively discounted systems.

5- Problems interact with institution-specific issues such as ageing of staff, low Academic salaries not attracting young staff, therefore they immigrated outside country, poverty of obsolete teaching methods, lack of innovative leadership,, weak internal governance structures, no strategic planning, and if there is not stable due changes of chair man, insufficient information management procedures, excessive number of rules with which to comply.

6- Non-existence of a coherence policy frame work and government sector strategy, coupled with weak system-man assessment.

D -1 - : Data and Methodology:

A - An applied of answers questionnaires brings the research in to sharper focus, While we have demonstrated this aim by analyses of homogeneity of levene test, directional, and symmetric measurements, and other estimates the quantities just in different forms.

B – The data generating process from the answer questionnaires for (15) phrases which are related to the main subject of research. The researcher argue that the professors in universities position supports research by their co operative and accuracy answers, the data phrases contains three categories, first is; concerned with T.Q.M and problem solving method Q;1-5, where second related to change management of education Q11-14, therefore the data designed in 14 questions, has a likert five sealers, scores distributed as (5) to agree strongly, (4) to agree, (3) to disagree strongly, (2) to disagree, (1) to with no answer, and the sample constructed from the professors in Jordan Universities as member teaching stuff. A descriptive static's has order, symmetric measurements, directional measurement, also T-test, chi-square to insure of good of fitness of results.

D -2 - : Results

Klomogorov-simirnov test indicates for each groups of answer of the questionnaires sample as following:

A: 0.123 (sign 0.200)

B: 0.117 (sign 0.200)

C: 0.313 (sign 0.004)

D: 0.210 (sign 0.192)

: 0.180 (sign 0.200)

This test considered as non-parametric test, represents good of fitness, examined the null hypothesis that says all observations of the variable follow style of normal distribution, and against the acceptable hypothesis that all data observation not follows normal distributed the suitable for other process of analyses.

Chi –square test; appears that

Person chi-square 172 (sign 0.128)

Likelihood ratio   147(sign 0.598)

The results are noted that the level of significant 5%> person chi square therefore we reject the null hypothesis, good of fitness has been meet. Skew ness tests indicates the data distributed in a normal distributed due to the results of skew ness results lesser than (<) St/ Error, Also the kurtosis results.

Directional measures appear

Lambda   0.795   (Aproxi-sign 0.000)

Goodman & kruskal Tau 0.782   (Aproxi-sign 0.1665)

Somers d   ..0.457 (Aproxi-sign 0.00)

These results marked all questionnaires answers that all significant and represents actual situation of using problem solving method and follow the changes of management which absent mostly in all universities.

Symmetric measurement

Phi   1.768   (sign 0.128)

grammars V   0.884   (sign 0.128)

Contingency coeff   0.879   (sign 0.128)

Kendal's Tau   ..0.503 (sign 0.00)

Gamma   ..0.560 (sign 0.00)

Where ETA is computed for numerical data.

These results signed that all 14 questions answers are significant.

T- value computed as 7.147   (sign 0.00)

This marked that all scores of answer are significant, while the ,Mean is 84.1818, and the St/d is 80.8745, and the St.error is 10.9051.

Conclusion

This paper has proposed a new type of analyses of data (answers of questionnaire), an explore for data has been applying, through this process homogeneity test has been required, then Chi-square to insure of good of fitness of data, also retrended Q-Q Plot and other tests was motivated by our desire to reflect the term of relationship between answers and the hypotheses which seems some time break down over quit prolonged period. This type of behavior of analyses is quite often predicated by economic and statistical theory.

The frame work of this research of some established education theory and economic by using T.Q.M, mainly problem solving method depends on T.Q.M and implied in education fields, then the changes happened due some involvements during the applied process, therefore surely change management needed.

To constitute this purpose theoretical approach assigned, finally this paper reported some results as significant to improve the quality and quantity of output in Arab universities, such as;

1. To encourage the changes of improvement and explore the environment a fruitful soil for successes.
2. Improve skill of the teachers in schools, and professors in universities such as skills of computers and modern technology.
3. Encourage those groups by offering the essentials of life as housing, commodities, salaries, insure their families.
4. Increase the budgets of scientific researches in Arab countries which is accumulated to all Arab countries 1.4 billion dollars, and this amount spent yearly by Harvard university alone.
5. Treat and deal with the changes of management, and to stand against the resistant the change.
6. It main corollary that problems should be solved by identifying the problem, causes, then check out alternative solutions, and select the best and economic choice.
7. The applied part appeared that most of Professors in universities against the change some times if it against their benefits, also most of them has a little information about problem solving method, and not use this method or others, while they solve the problems as stochastic, and treat with as white noise.

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